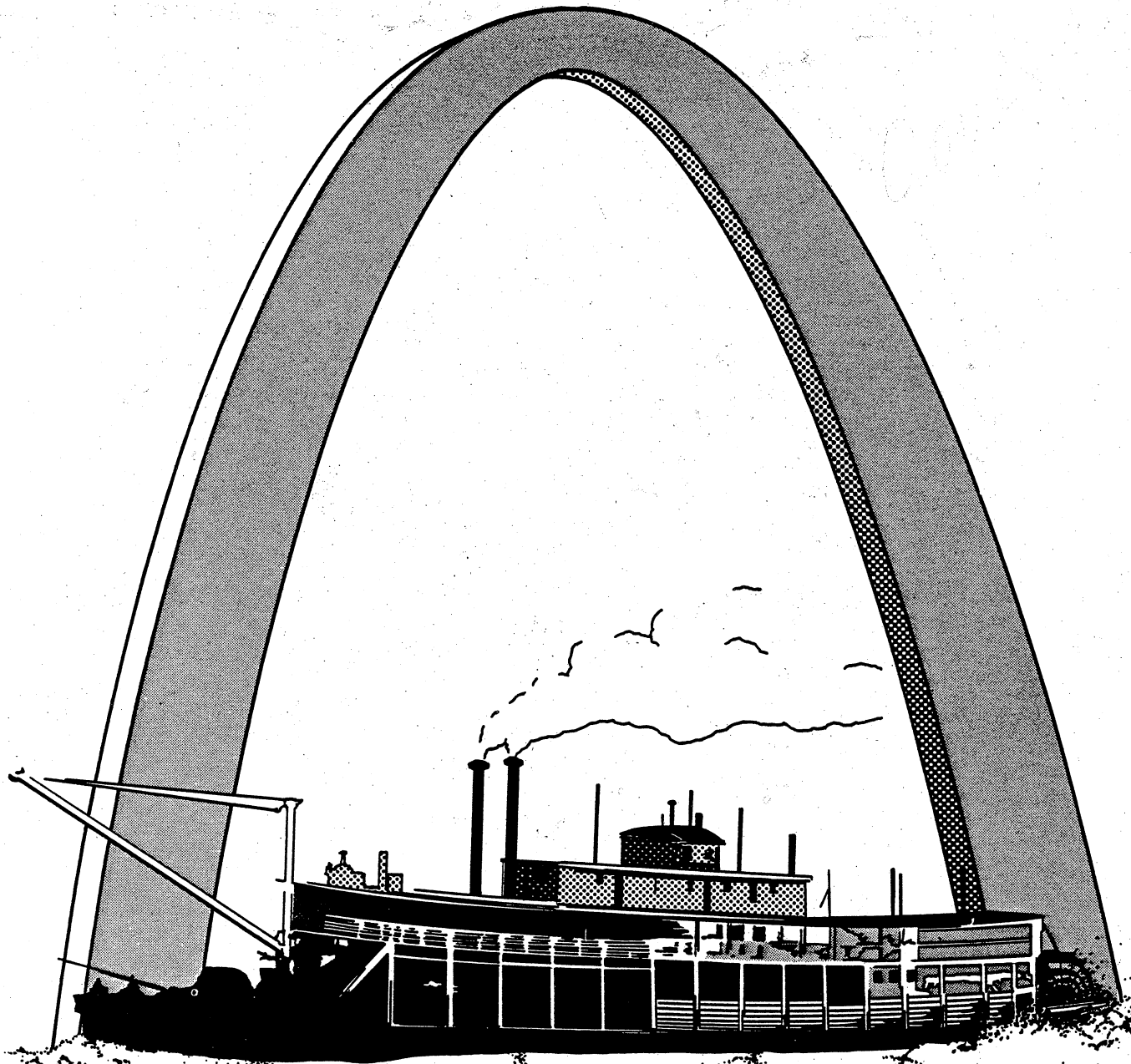


Advances in Consumer Research

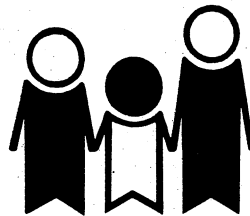
Volume IX



Andrew Mitchell, Editor

Advances in Consumer Research

Volume IX



Association for Consumer Research

Proceedings of the
Twelfth Annual Conference
St. Louis, Missouri
October, 1981

Andrew A. Mitchell, Editor

*The conference and the proceedings are dedicated to
the Memory of Robert Ferber (1922-1981)*



ASSOCIATION FOR CONSUMER RESEARCH - TWELFTH ANNUAL CONFERENCE

October 22-25, 1981 - St. Louis, Missouri

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PREFACE

In October, 1981, the Association for Consumer Research (ACR) held its Twelfth Annual Conference. The program of the conference reflects the diversity of the membership and their interest in both theoretical and applied research. Members of the Association are employed by universities, research institutions, government and corporations, and their academic training represents a number of different academic disciplines including economics, marketing, sociology, statistics, and psychology. This diversity of interests within the Association provides an important communication link between theoretical research in the basic academic disciplines, such as psychology, and the applied research interests of government and business.

This volume of the Advances in Consumer Research series contains most of the papers presented at the conference. All of the competitive papers and most of the discussants' comments are included. In addition, this volume contains the Presidential Address by Jerry C. Olson, A Memorial Tribute to Robert Ferber by Harold Kassarian, and slightly over half of the papers presented at the special topic sessions.

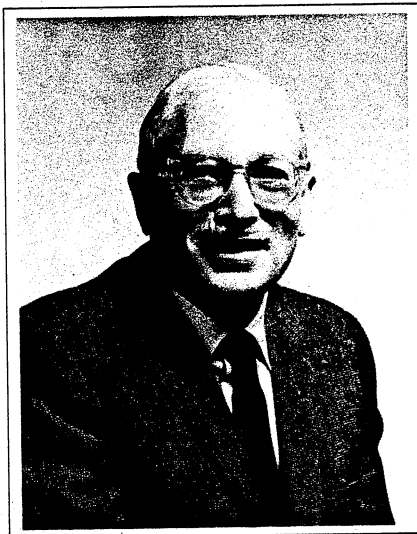
Many people contributed to the success of the conference and to this volume. The most important contribution was made by the authors of the papers, the organizers of the special topics and panel sessions, and the discussants. Their individual efforts are greatly appreciated. An important contribution was also made by the 109 reviewers (listed on p xxix) who carefully evaluated the 107 papers that were submitted and provided detailed suggestions for improving the papers. The Program Committee helped in the organization of the conference by suggesting interesting special topic sessions and carefully reviewing all the special session proposals. They also provided many helpful suggestions for improving the accepted sessions. Special assistance was provided by the Arrangements Chairperson, Richard L. Oliver, who handled registration and took care of all the small details that are so critical for a successful conference. I would also like to thank Jerry C. Olson and Kent B. Monroe, both past program chairpersons, for their useful suggestions, advice, and encouragement. Finally, I would like to thank all the members of the Association for Consumer Research. The support that I received from the membership made the task of being Program Chairperson both rewarding and enjoyable. Members of the Association were more than willing to assist in a number of largely unrewarding tasks.

At Carnegie-Mellon, several people made major contributions to the organization of the conference and this volume. Sharon Brandenstein organized a filing system for handling the flow of papers and reviews and together with Sue Sholar handled all the correspondence and made certain that the mailings went out on time. In addition, Sue Sholar put in many long hours proofing the manuscripts and organizing them in this volume. Additional typing assistance was provided by Winnie Rossmont, Gertrude Gibson, and Susan Steffensen.

Shortly before the conference, we were saddened to learn of the death of Robert Ferber. The Association for Consumer Research owed a large debt to him. Not only was he an active member of the organization and editor of the Journal of Consumer Research, but he was also one of the early researchers in consumer behavior and used his influence to support this area of research. For these reasons the conference and the Advances in Consumer Research, Vol. 9 are dedicated to his memory.

Andrew A. Mitchell
Editor

Graduate School of Industrial Administration
Carnegie-Mellon University
Pittsburgh, PA 15213



IN MEMORIAM

Robert Ferber

1922 - 1981

September 8, 1981. Robert Ferber died in an Urbana hospital. 59 years old. On that summer day, many of us lost a friend, and all of us lost a distinguished colleague. A colleague driven by a powerful intelligence and an intellectual restlessness, and yet tempered by a gentle humility. He touched so many of us: as a professor and a teacher, as a journal editor, as a co-author, as a leader in our profession, and as a human being. Surely, the world lost a gentleman and a scholar, the highest accolade we can bestow upon a colleague.

Although it would be easy to dwell on the sadness or even the unfairness of the pre-mature death of Professor Ferber, or the gaping wound that it has left in the field of consumer research; I would rather use this opportunity to express thanks for the contributions he has made.

Bob Ferber was born in February 1922 in New York City and grew up during the depression years. His bachelors degree in mathematics was from the City College of New York in 1942. In 1945 he received his MA in economics and statistics at the University of Chicago. During those years he

was employed as a statistician. From there he went to Columbia University for graduate work in mathematical statistics.

In 1948, he was hired by the Department of Economics at the University of Illinois as an assistant professor, and by 1951 completed his doctorate in economics and statistics at the University of Chicago, with a dissertation entitled, "A Study of Aggregate Consumption Functions."

For those of you who knew Bob Ferber primarily as an editor extraordinaire, it may be of interest to point out that he too had written, and he too had to deal with editors that at times may have seemed unappreciative and stubborn. For Dr. Ferber had authored at least 17 books, 32 monographs, 25 chapters in books, and 103 articles in professional journals. Journals that ranged from the American Statistician to the Journal of Business, from the Public Opinion Quarterly to the American Economic Review to the Journal of Finance, and even in the Journal of Consumer Research under its first editor. And that is just a small sample. For those professors and students in the field of Marketing Research during the adolescent years of

that field, the name Robert Ferber was a household word. Several of his textbooks: Statistical Techniques in Marketing Research, Research Methods in Economics and Business, his Handbook of Marketing Research, and readings books on marketing and survey research could be found on the shelves of most college bookstores. Several of his methodological papers on research procedures became critical to the development of that field.

With his interests in research methodology and surveys, it is not surprising that he founded the Survey Research Laboratory at the University of Illinois. Under his direction since its founding, that laboratory is recognized as one of the world's foremost academic centers for survey research. With professorial appointments at both Urbana and Chicago Circle, and with offices of the survey research laboratory in all three University of Illinois campuses, Ferber spent much of his time traveling from campus to campus. It is amazing indeed, that he could do all that he did.

With his brilliant interdisciplinary mind, his work was not limited to survey research or consumer research. He had written major papers in many fields: investment behavior and life insurance, family life style and decision making, social accounting, sales forecasting, applied mathematics in political science, housing, and even wind energy and windmill design, among dozens of others.

Professor Ferber had stayed professionally active in many fields, and particularly in statistics and economics, holding important positions both in American Statistical Association and the American Economic Association.

And, the awards were to come. The Journal of Marketing Alpha Kappa Psi award for the best article in 1955. The Ford Foundation Master Scholar Award in 1963 when he was just 40 years of age, the Hall of Fame in Distribution Award in 1964, honorary membership in the American Psychological Association, and the prestigious Charles Coolidge Parlin award in 1972. And with his renown came consulting appointments with government agencies, the Brookings Institution, and business firms, not to mention his work with the Census Bureau in an advisory capacity, or his time consuming efforts in Latin America.

Economists considered Bob Ferber one of their own. To statisticians, he was a statistician. Division 23 psychologists considered him one of theirs. In the field of marketing, he was a marketing professor, a journal editor, president of the American Marketing Association, marketing author, and marketing professional.

But we, in the field of consumer research, know better. For he was really one of us. As early as the mid 1950's, Ferber, along with Hugh Wales, edited a book called Motivation and Market Behavior. Motivation research, psychological approaches to consumer research, and even topics such as content analysis appeared in that text. And this was years before others thought about writing books in consumer behavior. But a book, or an article, a field does not make. Ferber had played a far more pivotal role.

In the early 1960's, in great part due to his efforts, the American Marketing Association finally agreed to publish a new journal with Bob Ferber as its editor, the Journal of Marketing Research. At that time consumer behavior articles were few and far between. But from the first volume of JMR, behavioral articles were welcomed and encourage by Ferber. His high standards and tough editorial policies are well known, such that within a very short few years, to have an article published in JRM bestowed much prestige upon the author. Five years later, when Bob relinquished the JMR editorship, the major complaint about the journal was that the article mix was heavily weighted in favor of consumer research. One can only wonder how many budding

assistant professors in the field of consumer behavior were tolerated in marketing departments because Ferber had encouraged and published in JMR one or two of their articles. And one can only wonder, if without Bob, how many of those articles would have been conceived, and if written, how many would eventually have been published. One can wonder, if without the prestige of JMR, how many of these authors would have stayed in the field, how many would have been given tenure, and the opportunity to reproduce their own kind, to the point that we have an association nearly 1000 members strong.

Bob was justifiably proud of the fact that JMR quickly grew and within the first year was financially self-supporting. And, was soon to become extremely profitable for the American Marketing Association. This was an important development for the field of consumer research. For, a few years later, in October 1971 a significant meeting was held at Chicago's O'Hare Airport. Representatives of several associations had flown in to discuss the creation of a new journal. The obstacles seemed insurmountable. Many felt the whole idea was a bit foolish for there simply were not enough manuscripts to support a journal, and the money for such a project was but a dream.

The representative of the American Marketing Association was its just past president, Bob Ferber. Ferber was confident that manuscripts could be encouraged and would be sufficiently forthcoming. Further, Bob felt that because of the success of JMR, the American Marketing Association could be persuaded to lend the independent new journal \$50,000 with no strings attached. Also, its subscription servicing facilities could be made available. Hence Ferber was instrumental in launching another journal. This one entitled, Research in Consumer Behavior, soon to be retitled, the Journal of Consumer Research.

Bob, then editor of a journal for the American Statistical Association, agreed to serve as Chairman of the Policy Board of the new journal. Within a few short weeks the loan was obtained. Under the able editorship of Ron Frank and the advisory role of Bob Ferber, the journal started publication. At first, quality manuscripts were sparse, but in time the journal was self supporting and shortly thereafter, the loan, with interest, was completely repaid. The journal, with a few rough interim years, has been successful since; and in 1977 Bob became its second editor. Once again, a Ferber edited journal had become the prestigious medium in which to publish. And, once again, a career could be launched because Ferber was there to accept an article, to encourage a revision.

Yes, it is sad that Bob Ferber is now gone. But, indeed, how fortunate we have been that he was here. Bob, we will miss you. We will miss your gentle rejection slips and the soft spoken encouragement to rewrite and revise. We will miss the articles and the books you might yet have written, we will miss the new journals you might yet have launched, we will miss your wise guidance and decency. We are proud that you were one of us, or better yet in front of us. Consumer research will go on now, without you, but your indelible mark can never be erased.

In the coming years there will be fewer and fewer of us who will remember your grin, your subtle dry humor, and the memorable Christmas letters your brilliantly perceptive cat used to write. But your professional contributions will remain. Scholars, yet unknown, will marvel at the depth and breadth of your work and your many significant roles. But we have known you personally. What a great privilege. Thank you, Bob Ferber.

Harold H. Kassarian
University of California, Los Angeles
(with appreciation to Carol A. Scott and H. Keith Hunt)

PRESIDENTIAL ADDRESS — 1981:
TOWARD A SCIENCE OF CONSUMER BEHAVIOR

Jerry C. Olson¹

Introduction

Developing a presidential address is an interesting process. For one thing, it forces the writer to consider what he or she feels strongly enough about to warrant inflicting on a few hundred people for 30 minutes or so. Although the process was a bit painful, I did find something I felt that strongly about. It is reflected in my subtitle, "Toward a Science of Consumer Behavior."

I will continue the recent trend in Presidential Addresses in which ACR Presidents proselytize for their own ideas and values. My talk is also an attempt to convert some of you to my way of thinking. I hope to convince most of you that the field of consumer research has problems with its theory. From what I've heard at this Conference, I don't anticipate any great difficulty doing that. However, I have no illusions that most of you will agree with my particular assessment of our theory problems or with the partial solutions I will recommend. At minimum, I want to challenge some of our traditional ways of thinking about research and theory and consider a few alternative approaches to developing theories of consumer behavior. I will be satisfied if you will think about these ideas -- even if you ultimately reject them.

A Science of Consumer Behavior?

I am not going to extensively defend the issue of whether we ought to aspire to have a science of consumer behavior. It seems to me that many (perhaps most?) of us either think consumer research is already a science or else we are trying to make it one. As my title implies, I am in the latter camp. I don't think we are quite there yet. But I do think that a science of consumer behavior is a worthwhile goal to pursue. I believe that many of us agree with Bill Wilkie (1981) in our aspirations to make consumer behavior more than an engineering-type discipline in which we apply concepts and theories developed elsewhere to solve specific problems.² Although most of us do lots of engineering type work, many of us try to do science-type work, too.

What is science-type work? What would it mean to have a science of consumer behavior? Let me suggest that whatever else we think a science is, it has a lot to do with theory. Theories are a basic requirement for a science. To have a

¹ Jerry Olson is Associate Professor of Marketing at the Pennsylvania State University. During the 1981-82 academic year, he is on sabbatical leave as Visiting Research Professor at the Marketing Science Institute, Cambridge, Massachusetts. There are many people who have helped me see the issues addressed here a bit more clearly, both by our spirited discussions (arguments) and by alerting me to books and articles I otherwise might have missed. Among these, I am particularly indebted to Jack Jacoby, Andy Mitchell, Paul Peter, William Ray, and Gerry Zaltman, and especially my students, past and present. Thanks are also due to Alden Clayton, Jack Jacoby, Paul Peter, and Diane Schmalensee for their helpful comments on earlier drafts of this paper.

² Usually we tackle marketing problems. Occasionally we address public policy problems. Seldom do we directly concern ourselves with consumer welfare problems.

viable science of consumer behavior, we must have viable theories of consumer behavior. Thus, doing consumer behavior science involves working with theories -- developing, testing, modifying, and improving theories of consumer behavior phenomena.

Current State of Consumer Behavior Theory

My basic contention is that we consumer researchers are not doing enough to develop theory. Moreover, what little theory development we do attempt is not being done well enough.³ Several previous ACR Presidents, among others, have pointed out many of the reasons why we find ourselves in this impoverished theoretical state. Jack Jacoby cited a long list of problems in our field, many of which concerned our poor work with theory. Hal Kassarian, Jerry Kernan, and Dave Gardner all tried to focus our efforts on specific topics in need of better theory. Bill Wilkie discussed the kind of scholarly commitment necessary to make contributions to knowledge, which I interpret as contributions to theory. For the most part, these problems and the proposed solutions are widely recognized, so I will not review them here.

Instead, I want to discuss a research approach to developing consumer behavior theory that is neither widely known nor commonly practiced. Although I believe this approach can help move us toward a science of consumer behavior, I recognize that it is at best only part of an overall solution to our problems. And I recognize that it is not for everyone. For one thing, this alternative research "style" requires adopting a somewhat different perspective on the procedures, methods, and philosophies of doing research than what most of us were taught in graduate school.

Why Is Theory So Important?

Before I elaborate on this research style though, let me deal with the counterarguments some of you already may be generating and try to convince you not to tune me out -- yet. Perhaps some of you are saying things to yourself like, "Oh no, another talk about Theory, with a capital T." Or, "I've got all these problems to be solved before 2:00 p.m.; I just don't have time to mess around with theory." Or the best one of all, "Don't give me a theory, just show me the data."

Please note that I'm not just talking about practitioners here. Many academic researchers have an inappropriately narrow view of theory, too. For instance, many of us tend to think that some of the things we do, do not involve theory. We may think that data, at least some data, stand alone. That is, we think some data are directly interpretable. We may think that some concepts are directly observable. These kinds of ideas reflect the basic underlying assumptions of empiricism and the positivist philosophy of science that still reigns in the social sciences (cf. Koch 1981) and in consumer behavior. This approach to research is based on the assumption that only our sense impressions -- in research terms, our empirical observations --

³ Although this talk may have a holier-than-thou tone, I don't really feel that way. I recognize that I have been part of the problem. In fact, I am directing this talk as much to myself and my research behavior as to you.

provide useful knowledge of the world. It is as if characteristics of the world are sort of waiting around for researchers to come along and observe them.

But these ideas have been repudiated by many philosophers of science.⁴ From their point of view, facts do not stand alone. Data do not have intrinsic meaning. No concept is directly observable. Even simple, apparently well-understood measures are based on complex, multichained, interconnected assumptions, which are really theories. Thus, in contrast to the empiricist perspective, this alternative view says that our abstractions -- our ideas, our theories -- provide the basic framework and rationale for everything we do as researchers, even for our supposedly "direct" empirical observations.⁵

Usually these theoretical assumptions are unstated. We seldom examine the "hidden" theories in our research; we seldom question them.⁶ Often they are very difficult to recognize simply because we have taken them for granted for so long. But these theoretical assumptions need to be explicitly recognized. Perhaps we would find that some of these theories are not justified or cannot be supported. Then we could begin the work to improve the theories.

Make Implicit Assumptions Explicit

So, one of the simplest things we can do to develop a science of consumer behavior is to make explicit as many of our theoretical assumptions as we can, including those that have been long hidden from our consideration. Certainly, we will have to stop short of examining every theoretical assumption. But even so, the practice can be very healthy. Some of you, of course, are already expert practitioners of this style -- often to the chagrin of your students and/or your colleagues. It is a wonderful habit for all of us to

⁴ In this brief talk I can not fully develop these ideas and present them in a completely compelling manner. However, a few basic references have been cited to which interested readers can refer and form their own conclusions and develop their own preferred style of inquiry. Suppe (1977) provides perhaps the best overall discussion of many of these issues. In fairness, there are philosophers who still adhere to many of the tenants of logical positivism, now reincarnated as critical rationalism (see Feyerabend 1975, Suppe 1977).

⁵ The metaphysics of this point of view can be extended even further. The idea that theories provide the logical rationale for everything we do as researchers leads to the metaphysical position that our theories actually create the reality we observe. There are, at least in principle, an infinite number of ways in which we can theoretically represent some characteristic or phenomenon of the world. Therefore, there are an infinite number of alternative realities that we can create through our theories. (It may be easier to see this in other fields than in consumer behavior. Quantum theory and particle physics are good areas to contrast with our field. Two fascinating books that clearly illustrate these points are The Dancing Wu Li Masters by Gary Zukov and The Tao of Physics by Fritof Capra.) This point of view clearly implies that we ought to be working to improve our existing theories and develop new theories rather than just trying to fit data to existing theories.

⁶ This is also true in psychology and sociology, fields from which we borrow most of our theories. A clear exception, however, is the work of Ericsson and Simon (1980) published in Psychological Review. Ericsson and Simon explicated the typically ignored assumptions underlying self-report behaviors and developed an explicit theory to explain certain aspects of self-reports.

acquire. It can make our thinking more rigorous and precise, which should help us develop better theories of consumer behavior.

Our Current Use of Theory in Consumer Research

Perhaps some of you are a bit offended by this talk so far. Maybe you are generating counterarguments like: "Who's he talking about? I'm into theory! My studies always test some theoretically-based hypothesis!"

I grant you that overt concern with theory in consumer behavior has probably never been higher. Just look back at the literature of ten years ago and see for yourself. Today nearly every article mentions some theory or another. Sometimes we even claim to be testing a theory! Hard-nosed business researchers and "softer-nosed" public policy-makers occasionally use theory to help make decisions. Why, we even have AMA Theory Conferences. And all of this has been going on for several years. But where is the progress in developing theories of consumer behavior?

In fact, we have become skilled at borrowing theories from other disciplines and applying them to our problems. This is fine, but I am concerned with what we do with those theories after we have applied them. Seldom do we do anything beyond either applying them again or dropping them. Our discipline applies borrowed theory, but does relatively little to develop theory. I echo the sentiments of Jag Sheth (1979), Jack Jacoby (1976), and others who have called for an end to mere borrowing and for beginning an extensive effort directed at theory development.

Theory Development

In the rest of my talk, I want to go beyond a simple plea for more theory development in consumer behavior. I want to present several specific suggestions for how a research approach that is intended to develop theory might proceed.⁷ I think these suggestions have the potential to improve our theories of consumer behavior. But the improvement will necessarily be gradual. It will take time. Developing good theory is a very complex process. There will be deadends. Some ideas won't pan out. Basically, we will be involved in a trial and error process. We will have to begin modestly, but we must begin. To paraphrase Bill Wilkie's (1981) message last year, more of us will have to commit ourselves to contribute to theoretical knowledge about consumer behavior in order to make an impact.

⁷ Let me be clear about my goals. Although I can be as evangelistic as anyone when I get started on a topic that interests me, I am not trying to convert everyone to this point of view. For one thing, it would be impossible. In a very interesting book entitled Methodological Approaches to Social Science, Ian Mitroff and Ralph Kilmann suggested that the style of inquiry adopted by a researcher is a function of many influences, including environmental, intellectual, and social variables. Also, a researcher's preferred style of inquiry is influenced by his or her personality or temperament. Many of you may not find the ideas presented here compatible with your own ideas about research or your intellectual temperament. This is fine. In fact, Mitroff and Kilmann argue, I think convincingly, that a viable science involves several types of scientists, with different values, working from multiple theoretical and methodological perspectives. A single approach is not sufficient to form a viable science. No one perspective has the inside track to "truth."

Basic Assumptions Regarding Theory

In keeping with my recommendation that we make our assumptions explicit, let me state the basic assumptions about theory that underlie the rest of my talk.

I consider (at least this year I do) theories to be representations, abstract conceptualizations that represent the phenomenon of interest. The phenomenon of interest can be virtually anything -- a measure, a method, a data analysis procedure, a simple behavior, or a very complex behavior. There are, of course, many alternative ways to represent any event or phenomenon. Thus, there are many possible theories of anything. Any single theoretical representation will be flawed in that it will be incomplete; it will not capture all of the aspects of the phenomenon. In other words, we know from the beginning that our theories are problematic. This idea can cause a subtle (or perhaps not so subtle) change in our typical perspective on theory and scientific research. A researcher who adopts this perspective may become less interested in testing theory. Rather, a researcher who sees all theories as imperfect representations tends to be more concerned with developing or improving theory, with trying to produce better representations of the domain or phenomenon of interest.

OK, but what is "better"? A better theory is not necessarily one that can be verified by data or that successfully survives some falsification attempt. Alternative theories could also be verified or avoid falsification. Rather a better theory is a more useful representation. But useful for what? Well, useful for whatever purpose it is you are theorizing about. For example, a theory may be useful for helping suggest solutions to a problem, or useful for explaining large bodies of complex data, or heuristically useful for generating new theories or stimulating new research directions (cf. Gergen 1978). Although we could argue about which aspect of usefulness is relevant for a particular case, these are all viable and appropriate criteria for evaluating theories. But they are not widely used as criteria in most of our research.

Instead, the dominant approach to theory research in our field seems to be concerned mainly with whether empirical data "fits" a theory (or vice-versa). Generally, we test theories against data. More specifically, we usually "test" a theoretical prediction of "X" effect by comparing it against the null of no effect. Because the null is seldom given any theoretical meaning, all we have is a theory that predicts obtaining some effect, in contrast to a strawman null. Most of our studies, therefore, boil down to simple demonstrations that the anticipated effect was obtained. Much less frequently we try to "falsify" the theory (cf. Calder, Phillips, and Tybout 1981). Although both of these types of research may be useful and appropriate for certain purposes, I argue that neither approach has been very useful for developing new theory or for producing valuable modifications of "old" theory.

A null-hypothesis-testing style of research has many other dysfunctional consequences for developing a science of consumer behavior.⁸ One is that it focuses the researcher's attention on obtaining statistical significance rather than on the magnitude of the effect itself -- e.g., the strength

⁸ There is a sizable literature that should convince you of this point, if you do not already agree with me. If you are not familiar with it, why not take a look and form your own conclusions? For starters, see Bakan (1966), Greenwald (1975), Lykken (1968), Mheel (1967), and Platt (1964).

of the relationship -- which is more relevant to its usefulness.⁹ A more serious problem is that sometimes we get lazy and let the results of our statistical inference analyses do our scientific inferencing or theorizing for us. Too often, we are content to let a statistically significant effect stand alone. We try to let the data "speak for themselves," something that data can not really do.

A Different Style of Inquiry

My major suggestion for breaking out of these patterns of behavior is that some of us adopt a different style of inquiry for at least that part of our research effort intended to develop theory. We need a research approach in which theory development, rather than merely collecting empirical support for a theory, is the primary goal. For such objectives, the traditional views on empirical research are not very useful.

Null Hypothesis Testing. In particular, we should move away from a style of research based on simple null hypothesis testing. At best, such studies can provide only weak evidence about the usefulness of a theory. Moreover, they do not tend to generate the conceptual speculations that are necessary to modify and improve the theory.

Strong Inference. As an alternative to a style of research based on simple verification or falsification doctrines and carried out by null hypothesis testing procedures, we might adopt (or adapt) a style of empirical research described almost 20 years ago by John Platt (1964) in an article entitled "Strong Inference." Basically Platt suggests that we should pit competing hypotheses against one another -- where each is based on a different theory. Thus, in the ideal study, one theory will be supported and the other will not be. Such outcomes provide an empirical basis for making strong inferences about the usefulness of both theories.

In other words, in our empirical research we should test theory against theory, not theory against data. We should also be more concerned with comparing theories with each other at a conceptual level. As we become more familiar with this style of thinking and research, we will become more skilled at identifying the contradictory features of alternative theories, some of which are likely to be implicit, metatheoretical assumptions. Then we can design better studies in which these discrepant features are compared against each other. If a test is well designed, we may have a critical experiment that clearly establishes the superiority of one idea over another.

An interesting wrinkle in this kind of study was recommended by Paul Feyerabend (1977), who suggested that we not drop the "losing" theory in such contests. Rather, our post-experimental efforts should go into modifying and improving the loser, as well as the "winning" theory. In other words, we should continually work to develop and improve alternative, competing theories, not just our favorite theory, not just the one enjoying general support at the moment.

Bootstrapping. I also believe that we need to analyze our data more deeply, more carefully and more intensively. I mean this in both a theoretical, conceptual sense and in a statistical analysis sense; however, I am not advocating more sheer number crunching. If our goal is to develop theory, then we will need better -- i.e., more conceptually sophisticated -- data about which to speculate in order to modify and improve our theories. Then, these improved

⁹ Occasionally, I have seen papers in which only the size of the obtained p values were reported. No mention was made of the absolute magnitudes of the effects themselves!

theories can guide the collection of even more sophisticated data, which in turn can be used as a speculative basis for further developing the theory. And so on.

This approach to doing science and developing theory is called bootstrapping, and is described in Theory and Evidence, by Clark Glymore. Although this style is different from the traditional scientific method, there is fairly convincing evidence that successful theory developers follow a bootstrapping approach. Bootstrapping may seem uncomfortably like "cheating" to some of you. But not if you take the point of view that all theories are imperfect representations, and our objective is to develop better representations. From this perspective, the bootstrapping approach is quite appropriate for developing theory.

Proliferate Theories

Another, perhaps more controversial suggestion is related to these ideas. Rather than seek a single, overall theory -- a single paradigm to tie the discipline together -- we might intentionally proliferate theories. Especially given our present state of ignorance about consumer behavior, we should not rush to one point of view, to one paradigm. Real knowledge and understanding (not just apparent knowledge) is most likely to come from the application of many alternative points of view (cf. Feyerabend 1977).¹⁰ This is another way of saying that we will learn more by comparing theoretical ideas with alternative theoretical ideas than by fitting data to single theoretical ideas.

Where are we supposed to get all of these alternative theoretical ideas? For one thing, we can start by doing more speculating. We should be speculating about the theoretical assumptions underlying our measures, our experimental procedures, and our analyses. In particular, we should do more speculating about the meaning, actually the alternative meanings, of our results.¹¹ Based on these speculations, new theories may develop and existing theories may be modified. Let's not be afraid to do it, and let's not dump on those who try.

Where else, besides our own speculation, can we find alternative ideas to contrast with our theories of interest? Feyerabend goes further than most of us are probably willing to go by suggesting that we look to the most eccentric sources for alternative theoretical perspectives. For instance, we could look to Voodoo magic as an alternative to the germ theory of disease to explain why people get sick and sometimes die. Or, we could proceed counterinductively, as Feyerabend puts it, by intentionally postulating irrational theories and treating them as serious alternatives to our theory of interest. Consumer research may not be ready for such extreme steps, but there are less bizarre sources to which we can turn. We can generate alternate theoretical ideas from workable solutions to applied problems, from obtained data, from the theories that we borrow from other disciplines, and from everyday life.

As comforting (and seductive) as it is to have a widely accepted paradigm for conducting our research, we should tolerate and even encourage the gadflies among us to come up with alternative perspectives that may not square with our common sense. Moreover, we should publish these ideas if they are well-reasoned and clearly presented (i.e., if they precisely describe how they differ from better-known

¹⁰ This is similar to the yin and yang principle of oriental philosophies, which suggests that extreme contrasts are necessary for understanding (cf. Capra 1975).

¹¹ I'm not speaking to only my fellow academics here; applied researchers should do more speculating, too.

theories). By comparing these alternative theories with each other, both at a logical conceptual level and at an empirical level, we will have a strong inference basis from which to work to develop both theories. In this sense, a plurality of theories and research paradigms, instead of a monolithic theoretical structure, can be seen as beneficial and as a positive indicator of progress toward a science of consumer behavior.

Address Bigger Issues

My next suggestion concerns the focus and content of our theorizing and our research. Although there are notable exceptions, to be sure, many of us need to tackle "bigger" issues. By bigger, I mean more important issues that make a difference, issues that have broad ramifications at a theoretical level or broad implications at an applications level. Too much of our research and theory is concerned with "small" issues, issues that don't make a great deal of difference either for theory or for applications.¹²

We seem to prefer to study ". . . problems, theories, or research paradigms that appear simple and are easily studied rather than the more basic and important problems that are invariably complex and difficult to resolve" (Battig and Bellezza 1979, p. 322). Does the following passage in which the late Bill Battig describes the typical "development" in cognitive psychology ring true as a descriptor of our own "progress" in developing a science of consumer behavior?

"First somebody comes up with a new theory, research paradigm, or interesting and controversial empirical result, which appears quite simple, straightforward, and easy to investigate further. This catches on, creating a new 'hot' research topic, which promises to be more productive than previous approaches, and therefore attracts the interest of a great many psychologists. But as more work gets done, the originally simple problem gets more complicated, because of failures to replicate the original findings, demonstrations that the original problem is inadequate or at best incomplete, and increasing evidence that the problem is more complicated and less general than originally thought. So as this relationship develops, it becomes apparent that any further progress will require a great deal of painstaking detailed research activity directed toward limited aspects of the overall problem or phenomenon as well as efforts to interrelate the topic appropriately with other previously distinct topics or phenomena. In other words, further research has reached a point of diminishing returns, because a threshold of too much complexity has been crossed, so the once hot topic now appears non-productive or uninteresting, and soon dies out to be replaced by one or more different more simplistic types of research. So then the cycle starts all over again, often with almost total suppression of everything that was done or learned in the context of the previously 'hot' research topic." (Battig and Bellezza 1979, p. 323).

In the brief 20-25 years of major research effort regarding consumer behavior, how many times has this happened? Think of all the theories, concepts, hypotheses, and ideas that have been dropped from favor when the going got tough, many

¹² This may be the most frequent criticism of academic consumer research by practitioners, and of applied research by theoretically-oriented researchers.

of them probably prematurely. For starters, how about motivation research, stochastic modeling, perceived risk, brand loyalty, and attitude theory? Will attribution theory, information processing theory, causal modeling, or the next "hot" idea not yet even on the horizon go the same way? Probably, unless we begin to see our task as developing and improving these theories, rather than as testing them in the sense of finding one that seems to fit the data. Until more of us stop seeing consumer behavior as an engineering-type discipline and start seeing ourselves as scientists concerned with developing theory, I don't think we will make much progress.

Don't Drop Theories Prematurely

My next suggestion expands on this one. Perhaps we should not be so quick to drop a theory that runs into trouble. The trouble could be conceptual in that the theory has some vague aspects, or isn't elegant, or doesn't explain certain phenomena very well. Or, the trouble could be empirical in that the theory is not consistent with certain aspects of the data. But all theories have problems.¹³ In fact, such problems are expected, when we think of theories as imperfect representations. So, the idea is to give a theory lots of chances to show us its virtues, along with its faults.

As Thornton Roby (1959) suggested, "Suggestive hypotheses should not be put directly to drudgery but should be entertained for awhile, as rare and welcome guests (p. 131)." Perhaps we should become a bit less concerned about whether we can produce data to support a theory, especially early in its life cycle. Early attempts to make data fit a theory are often disappointing. The resulting dissatisfaction can cause researchers to move on to other theories. But premature rejection of an idea with merit is a very serious error in terms of theoretical development. It is a kind of Type III error, which to the theory developer is much more important than the Type I and II errors of primary concern to the empirically-oriented researcher. The Type III error is more critical because it tends to stop investigation altogether on ideas and concepts that may have merit.

I am not saying that a theory should not have to account for data. Useful theories should account for data, eventually. But there is an appropriate time and place to rigorously apply this criterion. A new theory may have to wait, perhaps for many years, until the necessary measuring procedures can be developed. Or, the theory may have to be modified, or better supportive data developed, perhaps using a bootstrapping approach.

More Tolerance

My next suggestion concerns the tolerance in our field that is necessary in order that a variety of theoretical perspectives can flourish. All of us, but especially journal editors and reviewers, need to be more tolerant of new theoretical ideas.¹⁴ The need for tolerance will increase as our discipline continues to mature. Specialized sub-areas of interest in consumer behavior are beginning to crop up now and will continue to develop. We should welcome these diverse views and encourage their proliferation. But we must guard against the champions of these specialities becoming so polarized and isolated from one another that

¹³ Alternatively, most theories (even bizarre ones) probably have some value. At minimum, any theory can be useful as a counterpoint to a more reasonable theory.

¹⁴ The field of consumer behavior has always been an eclectic discipline; thus, we are probably somewhat more tolerant of new ideas than other, more insulated fields of study. However, I don't think we can be characterized as highly tolerant of new ideas, or of their proponents. There is room for improvement.

there is no communication, no understanding, and no tolerance. Let's not get into the kinds of situations common in many of the disciplines from which we borrow -- the "You're-either-with-us-or-against-us" syndrome. All types of researchers, with different perspectives and different preferred styles of inquiry, are necessary to develop a science of consumer behavior. We need the empiricist, the humanist, and the theorist. We need people interested in data analysis, methodology, modeling, marketing, psychology, sociology, and philosophy. But to make it all work, each person needs to understand the perspectives of the others and appreciate their contributions.

A Non-Marketing Perspective

My final suggestion is somewhat more specific. I think that we should expand our beginning efforts to develop concepts and theories of consumer behavior from different perspectives than that of the marketing manager. For instance, what would a theory of brand loyalty look like from the perspective of the consumer as an effort minimizer? Or, what would individual difference theories of consumers be like if they were not consciously constructed to be useful for market segmentation? Until we start explicitly contrasting our marketing-oriented theories with theories based on different values and objectives, we probably won't realize how limiting the marketing perspective is.

Conclusion

In conclusion, the field of consumer behavior research has made progress and continues to mature. But how will our future progress be charted? Will we continue to borrow theories that have enjoyed success in other disciplines and adapt them to a consumer behavior context? Will we then be content to run demonstration studies in which we attempt to show that these theories are at least somewhat consistent with our data? Or, will we develop the conceptual skills, the necessary styles of inquiry, and the courage and self-confidence that will enable us to further develop these theories and to create our own theories? I hope we will not be afraid to modify, extend, and improve the theories we borrow. I hope we will encourage those who can to boldly speculate about consumer behavior phenomena. I hope we will nourish and develop these theoretical ideas, because they are necessary for us to move toward a science of consumer behavior.

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Paper Session: THE EFFECT OF PRICE ON CONSUMER BEHAVIOR

James Eads Room

CHAIR: David M. Gardner, Univ. of Illinois

Is There a Valid Price Quality Relationship?
Richard J. Rexeisen, Univ. of Minnesota*Generics: Their Impact on National and Private Brands*
John J. Wheatley, John S.Y. Chiu, and Douglas Allen,
University of Washington*The Elusive Role of Price in Brand Choice Behavior*
C. Whan Park, Univ. of Pittsburgh
V. Parker Lessig, Univ. of Kansas
James R. Merrill, Indiana Univ.

DISCUSSANT: Kent B. Monroe, Virginia Polytechnic Inst.

Special Topic Session: CHARTING OUR THEORETICAL PROGRESS:
SOME PHILOSOPHICAL AND METHODOLOGICAL ISSUES IN CONSUMER
RESEARCH*Robert E. Lee Room*

CHAIR: Alice M. Tybout, Northwestern Univ.

In this session the underpinning of our knowledge of consumer behavior will be discussed. In particular, the philosophical assumptions that guide research design and the measures that are employed to assess research outcomes will be critically examined.

Some Philosophical and Methodological Issues in Consumer Behavior Research
J. Paul Peter, Univ. of Wisconsin, Madison*Statistical Power and Effect Size in Consumer Research*
Alan G. Sawyer, Ohio State Univ.*Why Variance Explained Measures are Inappropriate Estimators of Effect Size*
Stephen A. LaTour, Northwestern Univ.

Paper Session: RESEARCH ON MARKETING COMMUNICATIONS

Ulysses S. Grant Room

CHAIR: Ruby Roy Dholakia, Univ. of Rhode Island

Construct Validation and Empirical Testing of Guilt Arousing Marketing Communications
Morry Ghingold, Pennsylvania State Univ.
Lorne Bozinoff, Bell Canada*Order Effects in Reporting Negative Corporate Communications: Extra Fallout From Three Mile Island*
John C. Mowen, Oklahoma State Univ.
Scott B. Pollman, Oklahoma State Univ.
James Englebrecht, Oklahoma State Univ.*Threats and Promises in Advertising Appeals*
Michael B. Menasco, Univ. of California, Los Angeles
Penny Baron, Univ. of Iowa

DISCUSSANT: Peter Wright, Stanford Univ.

Special Topic Session: CONSUMER BEHAVIOR THEORY:
EXCESSES AND LIMITATIONS*Boulevard Room A*

CHAIR: Joan Zielinski, Univ. of Pennsylvania

The purpose of this session is to discuss and integrate theoretical, conceptual and empirical issues in consumer behavior. More specifically, the present state in the development of general consumer behavior theory will be reviewed, deficiencies in consumer theory will be identified and new directions for future research will be discussed.

Sociological Perspectives on Consumer Behavior
Thomas S. Robertson, Univ. of Pennsylvania
Joan Zielinski, Univ. of Pennsylvania*Consumer Research: Surpluses and Shortages*
Jagdish Sheth, Univ. of Illinois*Consumer Decision Processes: A Futuristic View*
Franco Nicosia, Univ. of California, Berkeley*The Development of Consumer Behavior Theory*
Harold Kassarian, Univ. of California, Los Angeles

Paper Session: RESEARCH ON THE TRANSFER OF INFORMATION

James Eads Room

CHAIR: Robert A. Westbrook, Univ. of Arizona

Religious Differences in Cognitions Regarding Novelty Seeking and Information Transfer

Elizabeth C. Hirschman, New York Univ.

Situation as an Influence on Anticipated Satisfaction

Kent L. Granzin, Univ. of Utah

Kathryn H. Schjelderup, Univ. of Utah

Attacking the Knowledge Gap Phenomenon

Donald P. Robin, Mississippi State Univ.

Louis M. Capella, Mississippi State Univ.

S. Roland Jones, Mississippi State Univ.

Brenda S. Harmon, Mississippi State Univ.

DISCUSSANT: Michael L. Ray, Stanford Univ.

Panel Session: RESEARCH ON THE OLDER CONSUMER: PUBLIC POLICY IMPLICATIONS

Robert E. Lee Room

CHAIR: Gerald Zaltman, Univ. of Pittsburgh

This session will focus on the public policy implications of current research on older consumers. Each panelist will specify what public policies are implied by extant research as well as those policies which might be dropped or significantly altered. Special research needs for more effective policy formulation and implementation will also be discussed.

Panelists: William Sauer, Univ. of Pittsburgh
 Ganesan Visvabharathy, Univ. of Minnesota
 Leon Schiffman, City Univ. of New York
 Benny Barak, City Univ. of New York
 Ivan Ross, Univ. of Minnesota
 Karen LeMasters, Univ. of Arizona

Paper Session: ISSUES IN SURVEY RESEARCH

Ulysses S. Grant Room

CHAIR: Richard Staelin, Carnegie-Mellon Univ.

Dealing with Indecision - Should We...or Not?

Ian Fenwick, York Univ.

Fred Wiseman, Northeastern Univ.

John Becker, President, Becker Research Corporation

Jim Heiman, Vice President, Becker Research Corp.

Latent Trait Theory and Attitude Scaling: The Use of Information Functions for Item Selection and Handling of 'Don't Know' Responses

Wagner Kamakura, Univ. of Texas

Rajendra K. Srivastava, Univ. of Texas

An Evaluation of the Characteristics of Response Quality Induced by Follow-Up Survey Methods

P. J. O'Connor, Univ. of Kentucky

Gary L. Sullivan, Univ. of Kentucky

Wesley H. Jones, Univ. of Kentucky

DISCUSSANT: Seymour Sudman, Univ. of Illinois

Special Topic Session: VALIDITY ISSUES IN CONSUMER BEHAVIOR RESEARCH

Boulevard Room A

CHAIR: David Brinberg, Univ. of Maryland

This session will examine two aspects of validity issues in consumer behavior research. First, two different conceptual frameworks that organize different forms of validity will be presented. Second, these conceptual frameworks will be used to examine specific areas of consumer information processing research.

Validity Concepts in Research: An Integrative Approach

David Brinberg, Univ. of Maryland

A Conceptualization of Validity

Jacob Jacoby, Purdue Univ.

Models of Memory: Implications for Measuring Knowledge Structures

Andrew A. Mitchell, Carnegie-Mellon Univ.

When Can Process Tracing Data be Trusted?

J. Edward Russo, Univ. of Chicago

Paper Session: CHANGING ROLES WITHIN THE FAMILY

James Eads Room

CHAIR: John Stanton, Temple Univ.

*Role Transferal in the Household: A Conceptual Model and Partial Test*Mary Lou Roberts, Boston Univ.
Lawrence H. Wortzel, Boston Univ.*Changing Sex Roles: Its Impact Upon Family Decision Making*

William J. Qualls, Univ. of Michigan

*Recycling the Family Life Cycle: A Proposal for Redefinition*Mary C. Gilly, Southern Methodist Univ.
Ben M. Enis, Univ. of Missouri - Columbia

DISCUSSANT: Gerald Zaltman, Univ. of Pittsburgh

Special Topic Session: FOCUS GROUPS: BRINGING METHOD TO MADNESS

Robert E. Lee Room

CHAIR: Martin R. Lautman, ARBOR, Inc.

The purpose of this session is to discuss the theory, method and application of focus group research. In addition, new procedures for eliciting information and analyzing data from focus groups will be presented.

Theory and Method in Focus Groups

Martin R. Lautman, ARBOR, Inc.

Application of Focus Group Theory and Methods

Larry Percy, Creamer, Inc.

Internal Focus Groups: Focus Groups within the Company

William Cook, General Foods Corporation

Further Applications of Automated Concept Analysis to the Analysis of Focus Group Data

Shel Feldman, ARBOR, Inc.

Panel Session: CONSUMER PROTECTION IN AN ENVIRONMENT OF DEREGULATION

Boulevard Room B

CHAIR: Kenneth Bernhardt, Georgia State Univ.

The Reagan Administration has instituted many changes in regulatory procedures. In this session, experts from the Federal Trade Commission, industry and academia will discuss the effects of these changes on consumer protection. Implications of these changes for consumer research opportunities will also be discussed.

Panelists: Wallace Snyder, Federal Trade Commission
Thomas Stanton, Federal Trade Commission
Craig Shulstad, General Mills, Inc.
William Wilkie, Univ. of Florida

Paper Session: USING ATTRIBUTION THEORY TO UNDERSTAND ADVERTISING EFFECTS

Ulysses S. Grant Room

CHAIR: Linda L. Golden, Univ. of Texas

The Discounting Principle in the Perception of Advertising

Richard M. Sparkman, Jr., St. Mary's Univ.

*An Approach to Measuring Thought Patterns and Gauging Causal Schemata*William R. Dillon, Univ. of Massachusetts
Chris T. Allen, Univ. of Massachusetts
Marc G. Weinberger, Univ. of Massachusetts
Thomas Madden, Univ. of Massachusetts*Causal Attributions and Source Credibility: The Case of Disconfirmed Expectancies*James M. Hunt, Univ. of Florida
Teresa J. Domzal, George Mason Univ.
Jerome B. Kernan, Univ. of Cincinnati

DISCUSSANT: Carol A. Scott, Univ. of California, Los Angeles

Special Topic Session: CONSUMERS' MEMORY FOR PRODUCT KNOWLEDGE: SOME ANSWERS AND MORE QUESTIONS

Boulevard Room A

CHAIR: Eric J. Johnson, Carnegie-Mellon

This session presents the results of a series of studies examining the structure, origin and content of consumers' knowledge about products and services. Methodological and conceptual problems in measuring consumers' knowledge structures will also be discussed.

Conceptualizing and Measuring General Domains of Knowledge in Semantic Memory

Jerry C. Olson, Pennsylvania State Univ.

*Information Presentation Format and Task Goals as Determinants of Consumers' Memory Retrieval and Choice Processes*Gabriel Biehal, Univ. of Houston
Dipanker Chakravarti, Univ. of Florida*The Acquisition and Transfer of Product Knowledge*Raymond R. Burke, Univ. of Florida
Thomas K. Srull, Univ. of Illinois*The 'One-Sidedness' Effect and Learning to Make Better Decisions*

Eric J. Johnson, Carnegie-Mellon Univ.

DISCUSSANT: Reid Hastie, Northwestern Univ.
James R. Bettman, Univ. of California
Los Angeles

COFFEE BREAK

3:00 - 3:30 p.m.

Paper Session: THEORETICAL AND EMPIRICAL ISSUES CONCERNING CONSUMPTION

Robert E. Lee Room

CHAIR: Arno J. Rethans, Pennsylvania State Univ.

Some Underpinnings for a Radical Theory of Consumption
Nikhilesh Dholakia, Univ. of Rhode Island

Exploring Success and Failure in Intended Changes of Life Style

Kjell Gronhaug, The Norwegian School of Economics
Torvald Ogaard, Jr., The Norwegian School of Economics

A Study of Factors Influencing Energy Conservation Behavior

Richard Semenik, Univ. of Utah
Russell Belk, Univ. of Utah
John Painter, Univ. of Utah

DISCUSSANT: Jagdish N. Sheth, Univ. of Illinois

Paper Session: CURRENT PERSPECTIVES ON PUBLIC POLICY ISSUES

Ulysses S. Grant Room

CHAIR: Gary T. Ford, Univ. of Maryland

Can Consumers be Protected from Themselves? The Case of Distilled Spirits

Paul N. Bloom, Univ. of Maryland
Frank J. Franzak, Boston College

Voluntary Performance Information Disclosures: Economic Perspectives and an Experimental Test

Lawrence A. Crosby, Univ. of Nebraska
Sanford L. Grossbart, Univ. of Nebraska

An Examination of Consumers' Perceptions of Purpose and Content of Corrective Advertising

George E. Belch, San Diego State Univ.
Michael A. Belch, San Diego State Univ.
Robert Settle, San Diego State Univ.
Lisa De Lucchi, San Diego State Univ.

JCR Award Winning Paper, Consumer Response to In-Store Price Information Environments

Valarie A. Zeithaml, Texas A&M Univ.

DISCUSSANT: Michael Mazis, American Univ.

Special Topic Session: NEW COMMERCIAL RESEARCH IN ADVERTISING

Boulevard Room B

CHAIR: Lawrence Gibson, General Mills, Inc.

The purpose of this session is to present the latest research approaches used by industry for copy testing and measuring advertising effectiveness.

Copy Testing is Only Part of Advertising Research

Roy Stout, Vice President, Marketing Research, Coca Cola, USA

How We Know Our Copy Testing is Valid

Charles Lamar, Director of Marketing Research, Scott Paper Company

Advertising - Commercials or Campaigns

Lawrence Gibson, Director of Marketing Research, General Mills

Special Topic Session: CONSUMER MEMORY FOR PRODUCT KNOWLEDGE: SOME ANSWERS AND MORE QUESTIONS

Boulevard Room A

(continued from 1:30 p.m.)

CHAIR: Eric Johnson, Carnegie-Mellon Univ.

How Advertising Works
William D. Wells, Needam, Harper & Steers, Inc.
Boulevard Room A and B, 6-7 p.m.

Paper Session: THEORETICAL AND EMPIRICAL PERSPECTIVES ON MEMORY

Robert E. Lee Room

CHAIR: Kenneth J. Roering, Univ. of Minnesota

Effects of Product Knowledge on Comparison, Memory, Evaluation and Choice: A Model of Expertise in Consumer Decision Making

Ann Beattie, Carnegie-Mellon Univ.

*Attitude-Free and Attitude-Bound Responses in the Measurement of Consumer Nutrition Knowledge*Joel Saegert, Univ. of Texas, San Antonio
Eleanor A. Young, Univ. of Texas, San Antonio*Memory for Logically-Deduced Conclusions*

Barbara Loken, Univ. of Minnesota

DISCUSSANT: John G. Lynch, Jr., Univ. of Florida

Paper Session: MATHEMATICAL MODELS OF CONSUMER DECISION MAKING

Ulysses S. Grant Room

CHAIR: David J. Reibstein, Univ. of Pennsylvania

*Modeling Buy/No Buy Decisions: A Comparison of Two Methods*Joel Huber, Duke Univ.
Andrew L. Czajka, Survey Data Research*The Impact of Individual Differences on the Validity of Conjoint Analysis*Armen Tashchian, Florida State Univ.
Roobins O. Tashchian, Florida State Univ.
Mark E. Slama, Florida State Univ.*Some Empirical Findings on the Estimation of Continuous Utility Functions in Conjoint Analysis*

Philippe J. Cattin, Univ. of Connecticut

DISCUSSANT: Arun K. Jain, State Univ. of New York, Buffalo

Special Topic Session: PHENOMENOLOGICAL MODELS OF INDUSTRIAL BUYING BEHAVIOR

Boulevard Room B

CHAIR: Arch G. Woodside, Univ. of South Carolina

The purpose of this session is to present specific and integrative models of industrial buying behavior developed in several different countries using ethnographic research methods. The problems and opportunities of using ethnographic research methods to build models of industrial buying behavior will also be discussed.

*Emerging Strategies of Direct Research and Model Building in Industrial Buying Behavior*Michael J. Baker, Univ. of Strathclyde
Arch G. Woodside, Univ. of South Carolina*Industrial Buying Behavior in the Electronics Industry: Case for Micro Memory Circuits and Capacitor in Noria Electronics, Finland*

Kristian Moller, Helsinki School of Economics

Emerging Purchase Strategies in a Firm Producing to Order: A Case for Steel Coating

Orla Nielsen, Copenhagen School of Economics

*A Generalized Inductive Model of Industrial Buying Behavior*Arch G. Woodside, Univ. of South Carolina
Niran Vyas, Square D Corporation

Special Topic Session: THE ROLE OF AFFECT IN COGNITIVE APPROACHES TO CONSUMER CHOICE

Boulevard Room A

CHAIR: James R. Bettman, Univ. of California, Los Angeles

The purpose of this session is to explore the role of affect in information processing models in general and more specifically, in consumer choice. Alternative positions that will be considered include models where affect precedes cognition.

A Functional Analysis of the Role of Overall Evaluation of Alternatives in Choice Processes

James R. Bettman, Univ. of California, Los Angeles

The Role of Affect in Categorization: Toward a Reconsideration of the Concept of Attitude

Joel Cohen, Univ. of Florida

Attitudes as Decision Relevant Evidence

Peter Wright, Stanford Univ.

A Low Involvement Interpretation of Halo Effects

Richard J. Lutz, Univ. of California, Los Angeles

Affective and Cognitive Factors in Preference

Robert B. Zajonc, Univ. of Michigan

Paper Session: RESEARCH ON SHOPPING BEHAVIOR

Robert E. Lee Room

CHAIR: Joseph W. Newman, Univ. of Arizona

A Socialization Model of Retail Patronage

George P. Moschis, Georgia State Univ.

Individual Search Strategies in New Automobile Purchases

David H. Furse, Vanderbilt Univ.
Girish N. Punj, Vanderbilt Univ.
David W. Stewart, Vanderbilt Univ.

The Impact of Credit Decisions on Shopping Behavior

James W. Gentry, Oklahoma State Univ.

DISCUSSANT: Donald H. Granbois, Indiana Univ.

Paper Session: CURRENT ISSUES IN MULTIDIMENSIONAL SCALING

Ulysses S. Grant Room

CHAIR: Allan Shocker, Vanderbilt Univ.

Segmentation of Complex Markets: Identification of Perceptual Points of View

Jonathan Gutman, Univ. of Southern California
Thomas J. Reynolds, Univ. of Texas, Dallas
Scott D. Alden, Univ. of Southern California

Dimensional Validity, Consistency of Preference and Product Familiarity: An Exploratory Investigation of Wine Tasting

J. Wesley Hutchinson, Univ. of Florida
Brady Farrand, Stanford Univ.

Impact of Information on Preference and Perception

Jim McCullough, Univ. of Arizona
Doug MacLachlan, Univ. of Washington
Reza Moinpour, Univ. of Washington

Special Topic Session: VISUAL IMAGERY AND PSYCHOLINGUISTICS IN ADVERTISING

Boulevard Room B

CHAIR: John R. Rossiter, Columbia Univ.

This session will explore two potentially important topics in advertising research: visual imagery and psycholinguistics. The session will consist of a detailed paper which integrates these two topics and suggests future research directions.

Visual Imagery and Advertising

John R. Rossiter, Columbia Univ.

Psycholinguistics and Advertising

Larry Percy, Creamer, Inc.

Some Further Dimensions of Imagery

Morris Holbrook, Columbia Univ.

Special Topic Session: THE ROLE OF AFFECT IN COGNITIVE APPROACHES TO CONSUMER CHOICE

Boulevard Room A

(continued from 8:30 a.m.)

CHAIR: James R. Bettman, Univ. of California, Los Angeles

Special Topic Session: MATHEMATICAL THEORIES OF CONSUMER BEHAVIOR

Boulevard Room B

CHAIR: John R. Hauser, Massachusetts Institute of Technology

This session will present examples of axiomatic mathematical models of consumer behavior. The assumptions of the models are based on empirical and experimental evidence and these assumptions are used to derive testable implications about consumer behavior.

Advertising: A Theory of Seduction
Steven Shugan, Univ. of Chicago
Agendas and Choice Probabilities

John Hauser, Massachusetts Institute of Technology
Amos Tversky, Stanford Univ.

Dynamic Consumer Models

Abel Jeuland, Univ. of Chicago
Ken Wisniewski, Univ. of Chicago

Special Topic Session: COMPUTATIONAL PROCESS MODELS AND CONSUMER BEHAVIOR: CURRENT RESEARCH AND FUTURE PROSPECTS

Boulevard Room A

CHAIR: Robert Meyer, Carnegie-Mellon Univ.

This session will discuss the applicability of computational process models to represent consumer behavior. Alternative approaches to computational process modeling will be reviewed and examples of consumer behavior research which uses computational process models will be presented.

The Applicability of Computational Process Models for Representing Consumer Behavior

Andrew A. Mitchell, Carnegie-Mellon Univ.
Terrence R. Smith, Univ. of California, Santa Barbara

Production Systems as Theories of Choice: Two Examples

Eric J. Johnson, Carnegie-Mellon Univ.
John Payne, Duke Univ.

A Cognitive Model of Planning

Barbara Hayes-Roth, Rand Corporation

A Computational Process Model of Evaluation Based on the Cognitive Structuring of Episodic Knowledge

Terrence R. Smith, Univ. of California, Santa Barbara
Robert Meyer
Andrew A. Mitchell, Carnegie-Mellon Univ.

Paper Session: THEORETICAL AND EMPIRICAL PERSPECTIVES ON INVOLVEMENT

Robert E. Lee Room

CHAIR: Michael L. Rothschild, Univ. of Wisconsin

Effects of Gift-Giving Involvement on Gift Selection Strategies

Russell W. Belk, Univ. of Utah

Involvement Beyond the Purchase Process: Conceptual Issues and Empirical Investigation

Peter H. Bloch, Portland State Univ.

DISCUSSANT: Richard J. Lutz, Univ. of California, Los Angeles

Paper Session: SEX IN ADVERTISING

Ulysses S. Grant Room

CHAIR: Richard J. Harris, Kansas State Univ.

Subliminal Implants in Advertisements: An Experiment

John Caccavale, Duke Univ.
Thomas Wanty, Duke Univ.
Julie Edell, Duke Univ.

Psychophysiological and Cognitive Responses to Sex in Advertising

Michael A. Belch, San Diego State Univ.
Barbro E. Holgerson, San Diego State Univ.
George E. Belch, San Diego State Univ.
Jerry Koppman, San Diego State Univ.

DISCUSSANT: John Cacioppo, Univ. of Iowa

COFFEE BREAK

2:30-2:45 p.m.

Paper Session: THEORIES OF ADVERTISING REPETITION

Robert E. Lee Room

CHAIR: Terrence A. Shimp, Univ. of South Carolina

A Comparison of the Effects of Repetition and Levels of Processing in Memory for Advertisements

Joel Saegert, Univ. of Texas, San Antonio
Robert Young, Univ. of Texas

Functional Exposure and Consumer Behavior: Introducing an Alternative Hypothesis on Frequency-Affect Relationships

Theo B.C. Poiesz, Tilburg Univ.

DISCUSSANT: Alan G. Sawyer, Ohio State Univ.

COFFEE BREAK

3:00-3:30 p.m.

SATURDAY AFTERNOON SESSION - II

Special Topic Session: CONSUMER INFORMATION PROCESSING:
NEW INSIGHTS FROM RESEARCH WITH CHILDREN

Boulevard Room B

CHAIR: Trudy Kehret, Northwestern University

This session will examine current developmental information processing research. Differences between the information processing abilities of adults and children and the usefulness of studying children to gain a better understanding of human information processing will be discussed.

Changing Conceptual Views of Children's Consumer Information Processing

Ellen Wartella, Univ. of Illinois

The Interaction of Context and Organismic Variables in Children's Processing of Ambiguous Stimuli

Trudy Kehret, Northwestern University
Richard Yalch, Univ. of Washington

The Role of Information Cues in Children's Inferential Abilities

Deborah L. Roedder, Univ. of California, Los Angeles

DISCUSSANT: Judy Tschirgi, Bell Laboratories

Special Topic Session: FROM THE MORPHOLOGY AND PHYSIOLOGY
OF THE BRAIN TO COMMUNICATING FEELINGS AND, IF NECESSARY,
THOUGHTS

Boulevard Room A

CHAIR: Franco Nicosia, Univ. of California, Berkeley

In this session, two basic issues are addressed. The first is the anatomy of the nervous system and its functioning (i.e., electrical impulses, chemical processes and the inputs discovered in endocrinology). The second is how brain morphology and physiology corresponds to known psychological constructs and the usefulness of their measurement for managerial and public policy decision making.

Right-Left: Male-Female: Premature Sexism in Consumer Research

Marian C. Diamond, Univ. of California, Berkeley

Physiological Ecology: Feeling, Thinking and Story Telling

William J. Ray, Pennsylvania State Univ.

Putting Humpty Dumpty Back Together Again: Cognition, Emotion and Motivation Reconsidered

James Coyne, Univ. of California, Berkeley

Measuring the Effect of Emotional and Rational TV Commercials

John Hart, Director of Research, Foote Coone & Belding/Honig

Paper Session: INTERPERSONAL INFLUENCE

Ulysses S. Grant Room

CHAIR: H. Keith Hunt, Brigham Young Univ.

Why Do Focus Groups Work: A Review and Integration of Small Group Process Theories

Edward F. Fern, Virginia Polytechnic Inst.

On the Management of Self Image in Social Situations: The Role of Public Self Consciousness

R.E. Burnkrant, The Ohio State Univ.
T.J. Page, Jr., The Ohio State Univ.

COFFEE BREAK

3:45 - 4:00

Paper Session: PREDICTING BEHAVIOR

Robert E. Lee Room

CHAIR: E.H. Bonfield, Temple Univ.

An Empirical Study of Lifestyle Correlates to Brand Loyal Behavior

Stephen Goldberg, Univ. of Pennsylvania

Predicting Behavior with Intentions: A Comparison of Conditional Versus Direct Measures

Paul W. Miniard, The Ohio State Univ.
Carl Obermiller, The Ohio State Univ.
Thomas Page, Jr., The Ohio State Univ.

DISCUSSANT: Richard Olshavsky, Indiana Univ.

Paper Session: THE EFFECT OF BRAND NAMES

Ulysses S. Grant Room

CHAIR: Richard C. Reizenstein, Univ. of Tennessee

The Attitudinal Implications of a New Brand's Name

George M. Zinkhan, Univ. of Michigan
Claude R. Martin, Jr., Univ. of Michigan

Influences of Brand Name and Packaging on Perceived Quality

Benny Rigaux-Bricmont, Univ. of Laval

DISCUSSANT: Ivan Ross, Univ. of Minnesota

RECEPTION - WEST BALLROOM

5:30 - 7:30 p.m.

Paper Session: REPRESENTATION OF INFORMATION IN MEMORY

Robert E. Lee Room

CHAIR: Joseph Alba, Univ. of Florida

A Script Theoretic Approach to Information Processing
Lorne Bozinoff, Bell Canada*Representation of Product Hazards in Consumer Memory*
Arno J. Rethans, Pennsylvania State Univ.
Manoj Hastak, Pennsylvania State Univ.*Familiarity and the Structure of Product Knowledge*
Jerry N. Conover, Univ. of Arizona

DISCUSSANT: Thomas K. Srull, Univ. of Illinois

Paper Session: CONSUMERISM ISSUES

Ulysses S. Grant Room

CHAIR: Alan R. Andreasen, Univ. of Illinois

An Investigation of Consumers' Attitudes Toward Complaining
Marsha L. Richins, Portland State Univ.*Perceptions of Consumer Concern by Businesses, Legislators and Services: A Multivariate Linear Model*
Thomas J. Stanley, Georgia State Univ.
Ray Howell, Georgia State Univ.
William R. Darden, Univ. of Arkansas*Correlates of Deficient Consumer Information Environments: The Case of the Elderly*
Rohit Deshpande, Univ. of Texas
S. Krishnan, Pennsylvania State Univ.

DISCUSSANT: Paul N. Bloom, Univ. of Maryland

Panel Session: CONSUMERS AND ENERGY:
DIRECTIONS FOR RESEARCH AND POLICY

Boulevard Room B

CHAIR: Dennis Anderson, Univ. of Manitoba,
John Claxton, Univ. of British Columbia

This session will review the results of current research on consumer energy consumption and will discuss future research needs. Policy implications and methods of program evaluation will also be discussed.

Panelists: Scott Geller, Virginia Polytechnic Inst.
Clive Seligman, Univ. of Western Ontario
Paul Stern, National Academy of Science
Eric Hirst, Oakridge National Laboratory
Thomas Heberlein, Univ. of Wisconsin, Madison
Dennis McNeil, Univ. of Denver
Bruce Hutton, Univ. of DenverSpecial Topic Session: PHYSIOLOGICAL APPROACHES TO
CONSUMER RESEARCH

Boulevard Room A

CHAIR: Harold Kassarian, Univ. of California,
Los Angeles

The purpose of this session is to discuss the use of psychophysiological measures in consumer research. Both methodological and conceptual problems in using these measures will be discussed.

*The Affective Polarization of One's Thoughts About an Attitude Issue is Reflected in Differential Hemispheric Alpha Abundance*John T. Cacioppo, Univ. of Iowa
Richard E. Petty, Univ. of Missouri, Columbia
Leo R. Quintinar, Univ. of Notre Dame*Using Psychophysiological Measures in Advertising Effects Research*Jerry C. Olson, Pennsylvania State Univ.
Thomas Reynolds, Univ. of Texas, Dallas
William J. Ray, Pennsylvania State Univ.*Brain Laterization Research*

Flemming Hansen, Institut for Afsaetningsokonom

Caveats Concerning Psychophysiological Measures in Consumer Research

Michael J. Ryan, Univ. of Michigan

DISCUSSANT: Harold Kassarian, Univ. of California,
Los Angeles

Paper Session: CONSUMPTION SYMBOLISM AND CONSUMER BEHAVIOR

Robert E. Lee Room

CHAIR: Rebecca H. Holman, Young & Rubicam, Inc.

The Eye of the Beholder: Individual Differences in Perceptions of Consumption Symbolism

Russell W. Belk, Univ. of Utah
Robert Mayer, Univ. of Utah
Kenneth Bahn, Univ. of Utah

A Rose of a Different Color: An Investigation of Flower Purchasing Behavior Across Situations

Debra L. Scammon, Univ. of Utah
Roy T. Shaw, Univ. of Utah
Gary Bamossy, Univ. of Utah

Symbolism and Technology as Sources for the Generation of Innovations

Elizabeth C. Hirschman, New York Univ.

DISCUSSANT: Sidney Levy, Northwestern Univ.

Paper Session: TESTING ALTERNATIVE MODELS OF CONSUMER DECISION MAKING

Ulysses S. Grant Room

CHAIR: Jack L. Swasy, Pennsylvania State Univ.

Number of Choice Alternatives and Number of Product Characteristics as Determinants of the Consumer's Choice of an Evaluation Process Strategy

Russell G. Wahlers, Univ. of Notre Dame

Measuring Perceived Risk: A Replication and an Application of Equity Theory

Richard H. Evans, Syracuse Univ.

Self-Image/Product-Image Congruence Models: Testing Selected Mathematical Models

M. Joseph Sirgy, Virginia Polytechnic Inst.
Jeffrey A. Danes, Virginia Polytechnic Inst.

DISCUSSANT: Donald R. Lehmann, Columbia Univ.

Special Topic Session: CONSUMER BEHAVIOR ASPECTS OF SERVICE MARKETING

Boulevard Room B

CHAIR: M. Venkatesan, Wright State Univ.

The purpose of this session is to examine the applicability of current models of consumer behavior to the service area and provide a "framework" that is more tailored to the service area. In addition, specific research issues and the difficulties of researching consumer behavior aspects of service marketing will be discussed.

Service Marketing and Consumer Behavior: Some Neglected Aspects

M. Venkatesan, Wright State Univ.

Research Applications of Non-Verbal Behavior for Service Marketing

Steven E. Permut, Yale Univ.

Consumer Use of Common Dimensions in the Appraisal of Services

Eric Langead, I.A.E. univ. of Aix-Marseille.
John Buteson, London School of Economics

DISCUSSANT: Christopher Lovelock, Harvard Univ.

Special Topic Session: THE ROLE OF MEMORY IN CONSUMER INFORMATION PROCESSING

Boulevard Room A

CHAIR: Philip A. Dover, Dartmouth College

In this session, the effect of domain specific knowledge on consumer information processing will be explored. Topics to be covered include the effect of knowledge on inferential belief formation, on the attributes selected for evaluating products, on visual imagery and on external information search.

Attribute Determinance -- A Function of Past Memory

Meryl P. Gardner, New York Univ.

Conceptual and Measurement Issues in Subjectively Evaluated and Objectively Assessed Familiarity

C.W. Park, Univ. of Pittsburgh

The Role of Memory in Understanding Advertising Media Effects.

Jolita Kisielius, Univ. of Michigan

Inferential Belief Formation: An Overlooked Concept in Information Processing Research

Philip A. Dover, Dartmouth College

REVIEWERS OF COMPETITIVE PAPERS

Aaker, David A. - University of California, Berkeley
 Alpert, Mark - University of Texas
 Andreasen, Alan - University of Illinois
 Bagozzi, Richard - Massachusetts Institute of Technology
 Baron, Penny - University of Iowa
 Batsell, Richard - Rice University
 Bearden, William - University of South Carolina
 Belk, Russell - University of Utah
 Bennett, Peter - Pennsylvania State University
 Best, Roger - University of Oregon
 Bettman, James - University of California, Los Angeles
 Biehal, Gabriel - University of Houston
 Blackwell, Roger - Ohio State University
 Bloom, Paul - University of Maryland
 Bonfield, E. H. - Temple University
 Bonoma, Thomas - Harvard University
 Bruno, Albert - University of Santa Clara
 Calder, Bobby - Northwestern University
 Capon, Noel - Columbia University
 Chakravarti, Dipankar - University of Florida
 Cohen, Joel - University of Florida
 Craig, C. Samuel - New York University
 Day, Ralph - Indiana University
 Dholakia, Ruby Roy - University of Rhode Island
 Dolich, Ira - University of Nebraska
 Dover, Philip - Dartmouth College
 Etzel, Michael - University of Notre Dame
 Farley, John - Columbia University
 Ferber, Robert - University of Illinois
 Gardner, David - University of Illinois
 Ginter, James - Ohio State University
 Goldberg, Marvin - McGill University
 Golden, Linda - University of Texas
 Gorn, Gerald - University of British Columbia
 Granbois, Donald - Indiana University
 Green, Paul - University of Pennsylvania
 Gutman, Jon - University of Southern California
 Hagerty, Mike - University of California, Berkeley
 Harris, Richard - Kansas State University
 Hirschman, Elizabeth - New York University
 Holbrook, Morris - Columbia University
 Holman, Rebecca - Young & Rubicam, Inc.
 Houston, Michael - University of Wisconsin
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STATISTICAL POWER AND EFFECT SIZE IN CONSUMER RESEARCH

Alan G. Sawyer, The Ohio State University

Abstract

Statistical power and effect size are not considered sufficiently by consumer researchers. Better attention to these two factors can improve the planning, execution, and reporting of consumer research. Suggestions are offered about how to increase effect size and improve statistical power.

Introduction

Researchers should be concerned with at least four types of research validity--internal, external, construct, and statistical conclusion validity (Cook and Campbell, 1979). Consumer researchers have long been properly concerned with internal validity (e.g., Banks, 1965) and external validity (e.g., Permut, Michel, and Joseph, 1976; Sawyer, Worthing, and Sendak, 1979). There has also been a recent increase in attention to construct validity (Churchill, 1978; Cohen, 1979; Heeler and Ray, 1972; Sawyer, 1975; Shocker and Zaltman, 1977). Statistical conclusion validity has not received much recent attention in the marketing literature. This void is probably due to the apparent elementary nature of statistical conclusion validity and the belief that most published marketing researchers are sufficiently competent in this area. Most written comment about statistical conclusion validity has involved the proper use and interpretation of advanced techniques or comment on specific research reports. This article addresses a very basic aspect of statistical conclusion validity -- statistical power.

Statistical power is the probability that a null hypothesis will be correctly rejected by a statistical test. In other words, statistical power is a measure of a research study's statistical sensitivity to detect an effect or relationship that actually exists. The implications of this basic concept for marketing and consumer research are very important. This article reviews the factors that determine statistical power and the important implications of both low and high power. Many examples of published consumer research are cited to illustrate the potential difficulties of failure to explicitly consider and report statistical power and the related concept of effect size. Finally suggestions are offered about how to improve statistical power.

Four major issues involving statistical power and effect size estimates are relevant to consumer research. First, a research design ought to have adequate power to detect an anticipated effect size. Second, the decision about whether to replicate a study that gives results directionally consistent with hypotheses but statistically insignificant should be based on the level of power and effect size in that study and whether either can be increased feasibly in the replication. Third, any credible decision to "accept the null hypothesis" of no effect must be accompanied by a highly powered research design that reveals only a very small effect size. Finally, because large sample sizes usually allow even very small effects to be statistically significant, it is especially important with highly powered research designs to measure and report effect sizes in addition to statistical significance.

¹For more details about the determinants of statistical power and some definitions of effect size estimates see Cohen (1977) and Sawyer and Ball (1981).

Low Statistical Power

The statistical power of a contemplated research design should be estimated before the data are gathered. If a design has unacceptably low power to detect the effect of interest, the design ought to be changed to improve the power. If limited resources preclude a satisfactory level of power and if statistical significance at a low Type I error rate is desired, the research is probably not worth the time, cost, and effort and should be abandoned. At the very least, a researcher who decides to conduct a study with low statistical power should be fully aware of the low power and anticipate that rejection of the null hypothesis at conventional Type I error rates is unlikely even if the null hypothesis is false. If the null hypothesis is not rejected by the selected statistical test in a research design with low power, it is very difficult to assess whether there is, in fact, no (a negligibly small) relationship in the population or the research was not sensitive enough to detect a relationship that is actually present in the population.

It seems fairer to criticize low power in basic theoretical research than in applied research for several reasons. As theory tests typically build on one another, estimates of effect size from prior research are more likely to be available. Also, much theory research is done in the lab where more flexible and more powerful research design is possible. The reduced emphasis on external validity often allows the use of less expensive subject populations. Finally, theoretical research is more likely than applied research to involve a need to test for the presence of even relatively small effects.

An example of underpowered theoretical consumer research is the study of Sternthal, Dholakia, and Leavitt (1978) which was designed to test cognitive response theory predictions about the persuasive effects of source credibility and initial opinion. Hypotheses about the effects on attitudes were mostly supported; however, statistical significance was not found for important predictions about cognitive and behavioral responses. The insignificant cognitive response results were especially disappointing because the predicted effects were crucial to the theoretical explanation of the attitudinal effects. Sternthal et al. suggested that the insignificant results may have been due to a low level of generated counterarguments. It also seems reasonable to place some blame on the very low statistical power. Only 37 subjects were used--17 who had a positive prior opinion and 20 who were initially negative. Each of these subjects was assigned to either a moderate or high source credibility condition. A critical theoretical test was the difference in the number of counterarguments generated by initially negative subjects exposed to high and moderate credibility sources. In fact, as predicted, the moderate source subjects generated more counterarguments (.5) than those in the high credibility source condition. Compared with the estimated common population standard deviation of 1.49, this difference in counterarguments amounted to an effect size of $d = .34$. However, the power of a t-test to detect an effect size of .34 with 10 subjects in each cell is only 19% with a one-tailed Type I error rate of 5%. Even for effect sizes defined as medium ($d = .50$) or large ($d = .80$) by Cohen (1977), power would have been only 29% and 53%, respectively.

Although predictions about behavior were less important to the cognitive response theory, Sternthal et al.'s results showed pronounced differences in predicted direc-

tions. For positive subjects the moderate source (56%) resulted in greater behavioral compliance, as predicted, than the high credibility source (25%); for negative subjects the predicted difference in the opposite direction was found (10% vs. 30%). Probably Sternthal et al. did not expect differences larger than these results; indeed, compared with the commonly low effects of credibility in past research (Sternthal, Phillips, and Dholakia, 1978), the observed differences ($w=.30$ for positive subjects and $w=.23$ for negative subjects) were remarkably high. With the low sample sizes, however, power to detect the behavioral compliance effect size that would be estimated from the data for positive subjects was only 23% for $N=17$. Certainly a greater sample size could have provided a more adequate test of the impressively developed theory. For example, given an effect size of $w=.30$, a sample of 87 subjects in each prior opinion condition would result in 80% power at a 5% Type I error rate for the chi square tests on behavioral compliance.

Other examples of underpowered statistical tests can be found in consumer research. Despite small effect sizes for attitudes and beliefs in prior corrective advertising research, Sawyer and Semenik (1978) randomly assigned only 142 subjects to 24 experimental conditions. An important ad appeal x order of measurement x time of delayed measurement interaction term had only a 42% chance of detecting a medium effect and only a 9% chance of detecting a small effect (which was quite likely given past research results). Either the design should have been simplified into fewer cells or greater cell sizes should have been used. Monroe and Gultinan (1974) studied relationships between lifestyles, planning and budgeting practices, attribute importance, and perceptions concerning alternative retail stores. Although no similar research efforts were available to get confident estimates of effect size, very high correlations among these variables were unlikely; hence, the likelihood of large differences between correlations was even lower. However, difference in cross-lagged correlations were tested in a total sample of 169 as well as subpopulations of 76, 50, and 30. A two-tailed test of the differences between two correlations of a small (medium) size has power of only 15% (79%) for the total sample and only 9% (44%), 8% (31%), and 7% (20%) for the smaller samples at a Type I error rate of 5%.

Replications and Power

If a study fails to reject a null hypothesis, classical statistics leaves any decision in "suspended judgment" (Hays, 1961, p. 263). *Post hoc* calculations of estimated power enable a researcher to estimate the likelihood that low power is to blame. If power is very low, the researcher (or someone else) might well decide to replicate the study albeit with greater power. Replicating an experiment enables a researcher to estimate more confidently the likely effect size and to provide power adequate to detect that size effect. However, Tversky and Kahneman (1971) conclude that researchers mistakenly tend to underpower attempted replications of results that, although statistically insignificant ought to be greater than that of the replicated research. Some marketing researchers may not have heeded this advice.

For example, Wheatley and Oshikawa (1970) attempted to replicate two studies which both gave nonsignificant directional evidence that moderate fear advertising appeals were more effective than positive appeals for a low anxiety audience. Despite the prior knowledge of, at best, very small effects in two previous studies, Wheatley and Oshikawa used a 2 (anxiety) x 2 (ad appeal) experimental design with 96 subjects that had only a 15% probability of detecting a small effect ($f=.10$) with a Type I error rate of 5%. Because of the past results and the very low power to detect the expected small effect, the fact that Wheatley and Oshikawa failed for a third time to find a

significant interaction effect of appeal and anxiety is not surprising.

McAlister (1979) properly chose to consider the statistical power of research which failed to reject the null hypothesis. She tested two models of choice of multiple items from a product class. The first model was supported by the empirical results. However, the second model which involved high school students' choices of colleges to which they would apply was not a statistically significant improvement over the null hypothesis of a random choice process. McAlister appropriately noted that, given the observed effect size, of 32 choices per subject provided insufficient power. Such information alerts the reader that a replication might successfully support the hypothesized "lottery" model if it were feasible to increase either sample size or effect size. A larger effect size might be achieved by a wider manipulation of the students' perceptions of the probability that they would be accepted by the colleges in question. If the effect size were doubled to .066, the sample size suggested by Srinivasan's (1977) analysis to reject the null hypothesis at a Type I error rate of about 10% would be 34--only two more choices per respondent than were used by McAlister. Alternatively, about 73 choices would be needed to reject the null hypothesis with the effect size of .033 attained in her study.

"Proving the Null Hypothesis"

If no statistically significant effect of an independent variable is found, a researcher must decide whether there is, in fact, no or a negligible effect or whether the insignificant result is due to some method deficit. A conclusion in favor of the null hypothesis is usually difficult to defend but should be acceptable in some instances. Such a conclusion requires evidence of a large and valid manipulation and reliable, valid measurement (see Carlsmith, Ellsworth, and Aronson, 1976; Cook and Campbell, 1979; Cook et al., 1978; Greenwald, 1975a). An additional requirement is high statistical power. High statistical power lends credibility to any results favoring the null hypothesis for that particular research design and method and allows attention to be focused properly on alternative plausible hypotheses involving internal or construct validity.

An example of research that concluded in favor of the null hypothesis despite very low power is Hawkins' (1970) empirical evaluation of the effects of subliminal advertising on choice behavior. Two tests, one involving 20 subjects and a followup replication with 10 subjects, found no statistically significant effect. In the latter test, six of the 10 subjects chose the subliminally advertised product. Although such a difference was not statistically significant, the low power of the sign test with only 10 subjects--10% for a small effect ($g=.05$) and only 25% for even a medium effect ($g=.15$) hardly provided sufficient evidence against the alternative hypothesis.

Since one can never truly "prove" a null hypothesis, a researcher who is unable to reject a null hypothesis is especially responsible to note the size of the obtained effect. For example, Bush, Hair, and Solomon (1979) concluded that, with one minor exception, there was no relationship between prejudice and reactions to print ads with models of different races. Only a few odd interactions were statistically significant. Consistent with the recommendation to also quantify effect size, Bush et al. calculated ω^2 (all lower than 2%) for the few significant effects and allowed the reader to judge the importance of the obtained effect size. The authors might have further enlightened the reader by presenting the power of their research (which was quite reasonable with 237 subjects) to detect a given effect size.

An example of how attention to effect size can help to identify cases in which statistically insignificant results ought not be ignored comes from the consumer information processing research of Jacoby and his colleagues. Jacoby, Speller, and Kohn (1974) manipulated the number of attributes per brand (2, 4, 6) and the number of brands (4, 8, 12) to study the effects of information load on brand choice. Seventeen subjects were assigned to each of the nine cells, but only the 50 subjects who chose the best brand (out of the total of 153) were analyzed. A chi square test of the relationship between the two variables was statistically significant ($\chi^2 = 15.294$; $p < .005$). Estimation of an effect size from the data would have revealed an association ($w = .55$) slightly greater than what Cohen (1977) defines as a large effect. The power to detect a large ($w = .50$) effect by a chi square test with $N = 50$, 4 d.f., and a Type I error rate of 5% equals 82%; power to detect a medium ($w = .30$) effect with that design equals 36%. A modified replication of this experiment (Jacoby, Speller, and Kohn 1974) used the same product but different levels of both number of attributes per brand (4, 8, 12, 16) and number of brands (4, 8, 12, 16). However, the sample per cell in this replication was decreased from 17 to 12. With a lower usable sample size ($n = 45$) and greater degrees of freedom (9 d.f.) than the first experiment, this second design had power of only 63% to detect the large effect that might have been anticipated from the previous study and power of only 23% to detect a medium effect size. Jacoby, Speller, and Kohn's results in the replication indicated no significant effect ($\chi^2 = 13.76$, 9 d.f., $p < .20$). Lack of significance was attributed to the different levels of the independent variables. However, regardless of any differences in design or other problems, the lack of statistical significance might have been due to the lower power. Moreover, an effect size measure would have revealed that the estimate of effect size in the second experiment was just as large as that in the first. Effect size as estimated by w equalled exactly .55 in both experiments. Even though w values cannot be compared exactly across research studies because w is not a measure of proportion of explained variance and can be expected to be larger for chi square analyses with greater degrees of freedom, the obtained effect size in the second experiment is reasonably large. Calculation of obtained effect size might have convinced Jacoby and his colleagues not to dismiss the effect in the second experiment as insignificant and unworthy of further attention.

The two research studies by Jacoby and his colleagues illustrate how the use of the appropriate statistical test can improve power and sometimes even alter the statistical conclusion. The chi square statistic was used to test the significance of the obtained results, but those data were analyzed in an unusual fashion. The chi square tables analyzed number of brands by number of attributes per brand matrices for only those subjects who chose the "best" brand. Thus only 50 of 153 total subjects were used in the statistical analysis in the first experiment and only 45 of 192 were used in the second. Any analysis that disregards some subjects is questionable--especially when the omitted subjects amount to more than two-thirds of the total. Such deletion obviously hinders statistical power. If instead of analyzing subjects who chose the best brand the authors had analyzed those who did not choose the best brand, statistical power would have been higher because of the greater number of subjects. However, such a decision would have been as arbitrary and incorrect as the other.

An analysis that is both more appropriate to the research question and higher in statistical power is a three-dimensional contingency table analysis (Winer, 1971, p. 855-9). Such an analysis can utilize all the subjects and can test for effects of number of brands by choice, number of attributes by choice, and brands by attributes by choice. Table 1 reveals that this reanalysis of Jacoby's first experiment finds statistically significant effects of brands by choice and brands by attributes by choice. The exact

hypotheses in these two exploratory studies were not stated. However, the implicit conclusion in the first experiment that chi square indicates that both the number of brands and the number of attributes are significantly related to best brand choice (p. 65) is misleading. Only the latter term is significant in the reanalysis of the data. Perhaps even more important is the fact that, contrary to Jacoby's less powerful statistical analysis, the reanalysis of the second experiment found statistically significant effects of both brands by choice and brands by attributes by choice along with large effect size than in the first experiment. From the previous discussion, remember that the statistical power of the published analysis of the second experiment is lower than the power of the first. This lower power may have misled the authors to conclude that there were no statistically significant effects. In the reanalysis in Table 1 the power to detect a medium ($w = .30$) effect is 76% for both experiments.

Table 1
THREE-DIMENSIONAL CONTINGENCY TABLE ANALYSES OF TWO INFORMATION LOAD EXPERIMENTS
By Jacoby et al.

Source	Jacoby, Speller, and Kohn (1940)			Jacoby, Speller, and Kohn (1974b)		
	d.f.	χ^2	w	d.f.	χ^2	w
Brands by choice	2	1.13	.086	3	23.08 ^a	.362
Attributes by choice	2	7.53 ^b	.222	3	5.20	.164
Brands by attributes by choice	4	6.89	.213	9	23.02 ^a	.346
Total	8	15.57 ^b	.319	15	51.30 ^a	.517
Number of subjects		153			192	

^a $p < .01$.
^b $p < .05$.

High Statistical Power and Effect Size

Very high power highlights the important limitations of any statistical test of nonzero effects (see Meehl, 1967). Statistical significance for a given Type I error rate and effect size is merely a function of the sample size. An effect of even a very small size will almost certainly be statistically significant with a sufficiently large sample, but a relatively large effect may not be judged statistically significant with a small sample. Although statistical significance tests are necessary to protect against Type I errors, attained significance levels should never be regarded as a measure of the magnitude of an effect (Bakan, 1966). Instead, additional descriptive statistics about the extent and form of an effect should be reported. Although several researchers (e.g., Green, 1973; Rosekrans, 1969) have advocated the use of proportion of explained variance measures, the reporting of such measures is still not common with statistics other than regression/correlation analysis. The aim of these advocates is to turn the focus of attention away from statistical significance to effect magnitude--which, unlike the former, is not determined by sample size.

As Cohen (1977, p. 78) states in advocating the use of effect size estimates to complement traditional statistical significance tests' descriptions of a research study's effects, "the only difficulty arising from the use of PV (proportion of explained variance) measures lies in the fact that in many, perhaps most, of the areas of behavioral science, they turn out to be so small!"²

²Discussion about the problems of effects size estimates can be found in Sechrest and Yeaton (1981a,b), Latour (1981), and Sawyer and Ball (1981).

Some researchers are appropriately using proportion of explained variance measures such as ω^2 in nonregression studies. For example, Belk (1974) and Lutz and Kakkar (1975) used very powerful within-subject analysis of variance designs to study situational effects. The former study analyzed 10,000 observations and the latter had 3150. Because power to detect even small main effects was no lower than 98%, statistical significance tests were of minor interest and the major focus was the size of the independent variables' proportion of explained variance as measured by ω^2 .

Golden's (1979) study of comparative advertising illustrates how a reliance on statistical significance and failure to report effect size might be misleading. An admirable improvement of her design over past studies of comparative advertising was the greater statistical power. The use of 594 subjects and an analysis of covariance which controlled for the effects of brand loyalty led to power much higher than that in most consumer research experiments. The power to detect even a small ($f=.10$) effect ranged from 40% to 67% (depending on the number of degrees of freedom in the numerator of the particular F-test). This high power undoubtedly helped Golden to find six of 75 tested effects significant at $p < .05$. The primary findings of Golden's research might have been that, given the high power, there were few statistically significant effects and--more important--that the few significant effects were so small. However, Golden did not report the size of statistically significant effects. Measurement and reporting of effect size would have enabled a reader to understand that the only significant analysis of variance term involving comparative advertising (the interactive effect of comparative ad by copy theme on purchase intention) explained only 0.7% of the total variance.

Many surveys systematically vary factors that may affect the response rate. Such research is usually quite high in power due to the high sample size typically employed in surveys. Given this high power, the multitude of potential factors to increase survey response rates and the need for some theory to conceptualize this research area (Houston and Ford 1976), research in this area ought not limit description of results to statistical significance but should also describe effect size. For example, Childers and Farrell (1979) varied both the page size and number of sheets of a mail questionnaire sent to 440 people and found that smaller page size resulted in a significantly ($p = .033$) greater response rate. Calculation of ω^2 would have shown that, despite the statistical significance, this variable explained only 0.8% of the total variance. Although point estimates of response rates may be a more informative way to describe effect size, proportion of explained variance measures will be an especially helpful expression of effect size when other indices of response quality (e.g., Hansen and Scott 1978) are examined.

It should be emphasized that highly powered research studies such as Golden or Childers and Farrell should be applauded. High power should certainly not be criticized; in fact, the high power is very commendable. Nor should it be inferred that small effect sizes are not important. The important point is that, because highly powered research is often able to detect small effect sizes as statistically significant, researchers ought to describe the sizes of obtained effects in addition to the statistical significance.

If the power of a contemplated research design appears to be very high, sample sizes might be reduced to save time and cost. If a very large effect size is anticipated, the researcher should consider whether the large effect is so obviously present that an alternative, less obviously true but more meaningful null hypothesis involving a smaller effect size ought to be tested. For example, rather than simply determining that a large effect is different from zero, one could more usefully determine whether the effect

is at least as large as some minimum value predicted by another model or theory (see Armstrong, 1979; Morrison and Henkel, 1970; Platt, 1964). For example, modelers of consumer behavior usually do not merely test whether a given model predicts better than random events. Instead, new models are compared with others that have shown previously to have good predictive ability (e.g., Givon and Horsky, 1979). In addition to leading to a more useful null hypothesis, comparing two or more imbedded models usually alleviates the problem of large sample size because the focus is on differences between the test statistics (such as χ^2) rather than the absolute levels of the test statistic. In addition, effect size estimates such as the contingency coefficient for chi square analyses should be reported to describe both the absolute and incremental fits on the tested models (e.g., Srinivasan and Kesavan, 1976).

Comparison of competing models is especially advised in analysis of linear structural equation models with latent variables (Bagozzi, 1977). If a proposed model is instead analyzed in isolation from alternative models using, for example, Jöreskog's LISREL, that model is "proved"--unlike with most statistical tests--by accepting the null hypothesis of no difference between the variance-covariance matrices implied by the proposed model and the sample data. Thus, large sample sizes are needed to provide properly conservative Type I error rates, yet with very large samples nearly all models will be rejected. This conflict can be considerably alleviated if recently developed measures of effect size (Bentler and Bonett, 1980; Fornell and Larcker, 1981) are used to augment the chi-square tests of significance. For example, Phillips and Bagozzi (1980) analyzed a structural equation model that was rejected by the chi-square statistical test. However, this statistical rejection was almost entirely due to the quite high sample size ($n = 1531$) since smaller subsamples did not statistically reject the model, the absolute residuals between the two variance-covariance matrices were small, and the Bentler and Bonett's goodness-of-fit index (calculated to be .967) indicated that there was only a trivial difference between the hypothesized model and the actual data.

How To Improve Statistical Power

Fortunately, there are many ways to increase statistical power in consumer research. The most obvious mode is to increase sample size. Although larger sample sizes will increase statistical power, the amount of the increase depends on the effect size in question. Even if resources for increased sample size are available, it is usually desirable to look first at alternative methods. Cohen (1973) argues that theoretical researchers ought to concentrate on effect size. After becoming aware of the (often very low) magnitude of effect size, a researcher often can most efficiently increase power by "developing insights which lead to research procedures and instruments which make effects measurably large enough to be detected by experiments of reasonable size.... (A researcher) must apply himself toward making (effect size) bigger rather than passively wanting to detect it regardless of how small the effect is and needlessly 'strive for significance'" (p. 228-9).

Methodological improvements in all areas can increase detectable effect size and, hence, power. Measurement and treatment reliability can have large effects on power. Boruch and Gomez (1977) demonstrate that a research design with perfect reliability and a treatment implemented with no errors had 92% statistical power, but the power was reduced to only 54% when reliability was reduced to .80 and the implemented treatment overlapped only 75% with the treatment as conceptualized. Measures less biased by uncontrollable differences can also add to power. For example, Eskin and Baron (1977) used the ratio of sales per store to the average sales per store to control for store size, and Chevalier (1975) employed sales per 1000 custom-

ers to control for weekly store traffic fluctuations.

Research design alterations can also improve power. Within-subject designs and analysis of covariance are very likely to reduce unexplained error (see Doyle and Fenwick, 1975; Greenwald, 1976). Another way to improve power is to increase the homogeneity of the sample by blocking or matching designs (Day and Heeler, 1971; Lodish and Pekelman, 1978). Overall and Dalal (1965) show how to choose among alternative designs if prior estimates of mean squares of different experimental treatments are available or can be estimated. For example, the decision among design alternatives of increases in either the number of test market territories, retail stores audited per test area, or repeated sales audits per store to increase measure reliability could be made by choosing the most powerful combination of these alternatives that does not exceed a given research budget.

Stronger and better controlled manipulations of independent variables also can improve power via increased effect size. In theoretical investigations, one ought to try initially to provide wide variations in the independent variables and, only after finding statistically significant effects with the large manipulations, try to assess the effects of more subtle differences. This practice is also advisable in applied field research because even treatments intended to have a large impact may not be fully implemented and thus may result in a much smaller than anticipated effect. Boruch and Gomex (1977) demonstrated the adverse effects of "structural imperfections" (p. 424) which was their term for poorly administered treatments. When combined with the reduced measurement and treatment reliability, described above, a 75% implementation of an experimental treatment further reduced statistical power from 54% to 38%.

Finally, statistical procedures can affect power. Advocates of Bayesian statistics might assert that replacing the classical inference approach would be an appropriate method of alleviating statistical power problems. Bayesian statistics do not force a reliance on a yes-no rejection of the null hypothesis and do not have to assume implicitly a high prior probability that the null hypothesis is true (see Phillips, 1973). Bayesian statistics is also much more flexible about statements about the probability that the null hypothesis is true.

Greenwald demonstrates the advantages of Bayesian hypothesis testing over the classical approach. In one study which concluded that there was no effect of an independent variable because of a statistically insignificant result, Greenwald (1975b) illustrated that a Bayesian reanalysis of the data estimated the odds in favor of the research hypothesis at nearly 5:1. A second paper presented two studies which both failed to reject the null hypothesis. Greenwald's (1975c) reanalysis used a flat prior probability distribution for the first experiment and the resulting posterior as the prior for the second experiment. The results indicated odds of more than 23:1 in favor of the null hypothesis of a minimum effect size for one independent variable and almost 8:1 for a second. A third example (Greenwald 1975a) calculated the odds in favor of the null hypothesis as high as 249:1.

More developments of statistical procedures that are either more amenable to low sample sizes or more powerful is needed (Winer and Ryan, 1979). Similarly, simulations of the power of statistics for which power distributions are not known (e.g., Blattberg and Sen, 1973), and of the relative power of alternative research strategies (e.g., Srinivasan, 1977) would be very helpful. In addition, as Latour's paper in this session demonstrates, improved measures of effect size need to be developed.

A final statistical method to increase power is to combine several studies in a type of "meta-analysis." Keppel

(1973) shows how analysis of several replications--each of which finds directional but insignificant support for a null hypothesis--results in a rejection of the null hypothesis when the replications are combined into a replication X effects ANOVA. Several alternative methods of combining replications are available (Rosenthal 1978). As with single studies, it is wise to examine effect size as well as statistical significance. Hyde's (1981) study demonstrates how "it is possible to have a moderately reliable psychological phenomenon (e.g., one that appears in 50% or more of published papers on the topic) that is nonetheless small" (p. 900). Effects cited as very consistent by reviewers were calculated by Hyde to account for only 1% of the variance.

Conclusion

Two basic aspects of statistical conclusion validity--statistical power and effect size--have not received sufficient attention in consumer decision research. The goal of this paper is to remind consumer researchers about the problems that may be encountered if statistical power and effect size are ignored. Greater attention to statistical power and effect size can only improve research in consumer behavior and the conclusions from that research.

Statistical power should be estimated before data collection, and the power to detect an effect of a given size should be included in any report of results. If the null hypothesis is not rejected, reports of the power to detect an effect of a given size would enable the reader to judge the adequacy of the research to support the alternate hypothesis. Perhaps the most direct outcome of a heightened concern for statistical power is a realization that increases in sample sizes may warrant the greater cost and effort. Benefits of increased sample size include a greater likelihood of correctly rejecting a false null hypothesis and more accurate estimation of effect size.

However, a more subtle and perhaps more important implication of a concern with statistical power is an intensified focus on effect size. Both prior and posterior estimation of effect size should become more prevalent in marketing research. Estimates of effect size are especially important in highly powered research studies where even small effects can be statistically significant. This practice should become the norm. Literature reviews might concentrate on determining factors that led to a given effect size range. Theoretical and methodological improvements to increase likely effect size are the ideal outgrowth of an increased concern with statistical power.

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CONSUMER BEHAVIOR THEORY: EXCESSES AND LIMITATIONS

Joan Zielinski, The Wharton School, University of Pennsylvania
 Thomas S. Robertson, The Wharton School, University of Pennsylvania

Abstract

Consumer behavior theory tends to be structured mainly from a psychological perspective, and all the major models of consumer behavior incorporate this perspective. This paper will adopt a sociological approach to consumer behavior, and will develop a typology of consumers' behaviors incorporating the concepts of norms, values, and social organizations.

A Sociological Perspective on Consumer Behavior

Despite the well recognized need for sociological approaches in explaining consumer behavior (Ferber, 1976; Nicosia and Mayer, 1976), there has been only limited application of sociological theories. It might be useful to position sociological research within the field of consumer behavior research in general. A perusal of the Journal of Consumer Research, for example, indicates that certain topics are fairly well developed, whereas others are largely neglected. To determine more precisely the major directions which the consumer behavior literature has followed, a content analysis of all previous JCR issues was conducted. Our intention was to develop a compact yet descriptive typology of researched topics.

Table 1 shows the data-based typology of major JCR research topics. By far the most prevalent category of articles is psychological theory (39.9%). And, dominant within the psychological perspective is cognitive theory--information search and processing. Attitude theory and research are also an important component, followed by research on children and advertising (which is mainly from a cognitive development perspective), then personality and psychographics, and attribution theory. Much of the psychologically-oriented research applies a particular psychological theory, which is never pursued in other research--single articles on such topics as learning, obesity, fear appeals, situational approaches, self-perception theory, and cognitive consistency theory.

The second most popular category of research revealed by the content analysis is methodology (21.3% of articles). Dominant within this is the stream of work on conjoint analysis. Also included are articles exploring modeling, and measurement and analysis issues. As in the psychological theory category, there are a number of articles exploring particular analytic applications (latent class, decision nets, etc.) which are never pursued in further research.

Sociological theory constitutes the third largest content area (12.8% of articles). Here, in declining order of representation, are articles on the family, diffusion theory, socialization, social influence, cross-cultural theory, and social class. Surprisingly, only two articles take a cross-cultural focus, and only one adopts a societal (social class) focus. Research on consumer behavior is largely conducted from an ethnocentric perspective; and as academics, we are as unaware as the U.S. business community of "foreign competition." We ignore the interesting work now underway by scholars in Europe and Japan.

Other categories of research are indicated in Table 1. The consumer behavior field still has a reasonably firm base in economics (7.4% of articles); consumerism and social policy

TABLE 1

Content Analysis of <u>Journal of Consumer Research</u>	
Theoretical Area	Frequency ^a /Percentage (n = 188)
PSYCHOLOGICAL THEORY	75 (39.9%)
.Information Processing	19
.Information Search	6
.Attitudes	14
.Children and Advertising ^b	9
.Personality and Psychographics	7
.Attribution	4
.Other Psychological Theory (e.g., learning, obesity, fear appeals, situational, self monitoring, compliance, self perception, cognitive consistency)	16
METHODOLOGY (including issues of modeling and measurement--e.g., conjoint with 8 articles, and techniques --e.g., latent class, decision net, etc.)	40 (21.3%)
SOCIOLOGICAL THEORY	24 (12.8%)
.Family	8
.Diffusion	6
.Socialization	4
.Social Influence	3
.Cross-Cultural	2
.Social Class	1
ECONOMIC THEORY AND EXPERIMENTS (including price and credit)	14 (7.4%)
CONSUMERISM/SOCIAL POLICY	13 (6.9%)
SPECIAL TOPICS/APPLICATIONS (e.g., energy, drugs, health care, body parts)	10 (5.3%)
DEMOGRAPHY	8 (4.3%)
GENERAL THEORY AND MODELS	4 (2.0%)

^aBased on a total of 188 articles classified from June 1974 to June 1980.

^bThe advertising and children literature is from a psychological perspective, including cognitive development and attribution theory. The sociological perspective--especially family mediation--is for the most part not represented.

have emerged as a significant research area (6.9%); and demography (4.3%) is also part of the literature. Of concern is that only 2.0% of the articles published in JCR have a focus on general theory or models of consumer behavior. Some 5.3% of the articles may be classified as special topics and generally involve consumer behavior analyses for such diverse applications as energy, drugs, health care, etc.

A number of conclusions about the structure of consumer behavior research emerge from the content analysis.

1. The prevalent conceptual and methodological base of consumer behavior research is psychological rather than sociological; cognitive/information processing theory dominates.
2. There is only limited attention to comprehensive theory or modeling and much of the research deals with limited hypothetical constructs.
3. Many topics which are central to the field of consumer behavior are not actively researched. These include motivation, learning, self-perception, social class, and cross-cultural effects.
4. There is a growing research stream on the application of behavioral concepts to social policy issues, such as deceptive advertising and product safety.
5. The literature is replete with concepts which are never pursued in subsequent work and research which is never replicated.
6. Despite general agreement that the study of purchasing should adopt a decision-process approach, the dominant stream of research involves the analysis of brand choice alone.
7. Despite general agreement that analysis of purchasing behavior--whether in the organization or in the household--should involve the buying center and the multiple roles played by participants, almost all research is limited to a single individual as the unit of analysis.

Thus, while there is commendable diversity in the field and while publications extend across a host of topics, there are also some major biases and limitations. The bias of most immediate concern to us is the relative lack of a sociological focus and all which that implies. Some behavior, such as a new fashion, is primarily social, and psychological theories--whether of information processing, attribution or whatever--are unable to explain the phenomenon in question. Much behavior has a social component and involves multiple decision-makers, necessitating again that the research explicitly consider sociological conceptions. The logical question is why sociological variables have had such limited impact on consumer behavior research. The most compelling reason may be the difficulty of conducting rigorous empirical research within a group setting or at the social category level. Also, the greatest methodological advances have been in the analysis of individual level responses, and nonparametric statistical analysis for research within small groups is rather inadequate. Further reasons relate to the psychologically-based training of consumer behavior researchers and the reputedly greater level of paradigm development within psychology versus sociology.

Given the psychological bias of consumer research, this paper will attempt to define the sociological perspective and its relevance to particular classes of consumer behavior, and to develop a sociologically based typology of consumers' behaviors.

Definition and Relevance of the Sociological Perspective

The most essential means of defining the sociological perspective is in terms of the unit of analysis. Research focuses on the social context, rather than the individual. The units of analysis are the group as well as broader social structure components, such as social classes, institutions, and subcultures. The center of concern is how the social environment and its institutional structure affect the behavior of individuals.

Sociology examines various levels of aggregation, from interpersonal relations to group behavior to social aggregates. Research on interpersonal relations frequently overlaps with social psychology, and research on social aggregates, especially at the societal or cross-societal level, intersects with the field of cultural anthropology. We intend to show the relevance and value of these multiple theoretical perspectives within sociology rather than to focus on any single perspective. Conversely, Nicosia and Mayer (1976), in their call for a sociological focus, are almost exclusively interested in the societal level. They utilize the concepts of cultural values and norms created by social institutions in order to develop a sociology of consumption which focuses on the buying, using, and disposing of goods at the societal level.

It is our thesis that to ignore sociological variables limits our ability to explain consumer behavior. A considerable proportion of consumption is social in nature or has a high component of social utility--from fashion to automobiles to soft drinks. Psychological theories--whether information-processing, attribution, or learning--are unable to account fully for the behavior under analysis. Similarly, much consumer decision-making involves a social component in the form of multiple decision-makers (whether family or purchasing organization), or in the form of the use of other people as information source to the extent that objective non-social information sources are not available (Festinger, 1954). This suggests the necessity of sociological conceptions in order to build our understanding of consumer actions in the marketplace.

A Sociological Categorization

The opportunities to utilize sociological theories in consumer behavior research can be identified and categorized based on Talcott Parsons' (1951) depiction of the "Human Action System"--a general conceptual rationale to be used in investigating society. The Human Action System is composed of four primary subsystems, each of which has a specific goal. The major concepts of the Human Action System are indicated below.

Human Action System	
SUBSYSTEM	FUNCTION/GOAL
Behavioral Organism	--- Adaptation
Personality System	--- Goal Attainment
Social System	--- Integration
Cultural System	--- Latency or Pattern Maintenance

At one extreme is the behavioral organism, which refers to the physical, genetically-determined human being. It is the biological component of the individual which is comparable across all people. Its function is adaptation to the physical, non-social environment. Adaptation is a learned process. Regarding consumer behavior, it is the behavioral organism which recognizes consumption needs, which expends energy to procure information, and which is the motivating factor behind need fulfillment.

At the other extreme of human action is the cultural system. Culture is symbolic, and is organized into patterns which have evolved over many generations. As individuals grow in the society, they are socialized into the system and learn to believe in and abide by the constant and largely static cultural patterns. The function of the cultural system, then, is to maintain the general patterns of cultural order:

this is termed pattern maintenance or latency. Through the cultural system, each consumer learns shared, culturally-approved ways of relating to the physical environment. Whereas the behavioral organism acts in the physical environment, the cultural system operates in the conceptual province. The cultural system exerts pressure to conform on the other sub-systems of the Human Action System. The role of the cultural system has not been widely investigated in consumer research.

Between the two extremes of the genetically-determined behavioral organism and the cultural system, consumers have the opportunity to develop their own distinctive behavioral systems. Each consumer's physical, social, and cultural environments are unique in some ways, and his or her manner of responding to these environments is known as the personality system. The function of the personality system is to fulfill the needs recognized by the behavioral organism. For example, while the behavioral organism recognizes information needs and is exposed to information in the physical environment, the personality system engages in the processes of brand choice, information processing, and insuring cognitive consistency.

Finally, Parsons' fourth system, the social system, refers to the process of social interaction among individuals. Its function is to integrate consumers' relationships in an ordered fashion. This is accomplished in large measure based on the institutional structure of the society--family, religion, industry, unions, etc. Consumer research on reference group influence (Stafford and Cocanougher, 1977) focuses on the influence of the social system and some research explicitly examines social integration as a variable affecting consumer behavior (Robertson, 1971). Market segmentation studies attempt to identify ordered subsystems, although the more prevalent focus is on demographic and psychographic, rather than sociographic variables--institutions, ethnic groups, and subcultures.

From our sociological Parsonian analysis, we conclude that the social system (integration) and the cultural system (pattern maintenance) are largely neglected areas of consumer research. According to Parsons, "action consists of the structures and processes by which human beings form meaningful intentions and, more or less successfully, implement them in concrete situations" (1951, p. 5). Although consumer researchers have studied the "structures and processes" of consumer choice, we have virtually ignored the social and symbolic ways in which "meaning" is assigned to the various choices.

A Sociological Typology of Consumer Behavior

Based on an understanding of the interrelationship between the individual (personality system) and society, we intend to develop a sociological typology of consumer behavior.

To this end, we first distinguish between cultural values and societal norms--a distinction which is critical to sociological analysis. Values are cultural goals; they are salient symbolic concepts representing the "good," the "moral," and the "worthwhile." For example, an important value of American society is the achievement ethic.

Norms, on the other hand, are societal rules or guidelines which define acceptable conduct for achieving values. Norms flow from the values they support, and simultaneously serve to reinforce these values by lending credence to them. Norms are created and administered by social institutions. In the Parsonian analysis, values are located in the cultural system and norms within the social system. Continuing with the example of the achievement value, a specific norm is the legal requirement that children attend school until the age of 16.

Robert Merton (1938, 1957) uses the concepts of values and

norms, and their interrelation in society, to propose a typology of human behavior. Merton suggests that an individual may either accept (+) or reject (-) the cultural goals of a society. Similarly, the institutional means (norms) for attaining those goals may be accepted and obeyed (+) or rejected and flaunted (-). Merton points out that there are four possible "adaptation modes" for the individual.

Conformity, the most common mode of adjustment, entails the individual's acceptance of both cultural goals and the institutionalized means to attain those goals. The implication here is that the individual achieves personal satisfaction from compliance. The least common mode of adjustment is retreatism. These individuals, says Merton, are "aliens in society." They are the drug addicts, chronic alcoholics, and outcasts who have rejected both societal values and norms. Retreatism occurs when individuals who originally internalized societal goals and institutionalized means find that they are unable to achieve these ends. Additionally they are unwilling to go against the system by adopting illegitimate means to achieve goals. Defeated, they reject both goals and means, thereby effectively "dropping out" of the system.

Innovation occurs when the individual has been inadequately socialized. Although the success or achievement value, for instance, is still sought, the individual adopts illegitimate means to attain the goal. Embezzlement and other forms of white collar crime are examples of "innovation." On the other hand, Merton's concept of ritualism occurs when the institutionalized means have been highly assimilated by the individual, but the goal is considered unreachable. The popular depiction of staunch adherence to the mores of Catholicism by members of organized crime syndicates typifies ritualism.

As his final step, Merton interrelates the societal orientation with the individual's mode of adaptation by suggesting that the existing social structure can influence individuals to adopt one adaptation mode in preference to others. As an example, Merton states that while American society posits wealth as an important value, as a goal to be sought by all citizens, it simultaneously limits certain ethnic and racial subgroups the access to legitimate means for wealth attainment. The society, then, stresses goals over means, and some individuals consequently adopt "innovative" (i.e. illegal) means to attain wealth.

We are now in a position to propose a sociological typology of consumer behavior from this institutional/structural perspective. We first borrow from Merton the concept that individuals may adopt various adaptation modes. Specifically, a consumer may exhibit conformity (Goals +, Means +) when he engages in consumption activities. This is the realm of traditional consumer behavior. Alternatively, the consumer may exhibit retreatism (Goals -, Means -) in consumption activities. Here, we have deviant consumer behavior (e.g., use of hard drugs, prostitution). But a consumer's behavior may also involve "innovation" (Goals +, Means -). For example, while in general accepting the cultural goal of modesty, a consumer may choose to adopt new fashions which violate traditional norms for modesty. The changing trends in women's fashion fall into such a category. Finally, a consumer may engage in ritualism (Goals -, Means +), as would be the case of, say, a public official who, while publicly denouncing drug usage, privately smokes marijuana.

For the purposes of consumer behavior, we will retain, intact, Merton's "conformity" and "retreatism" modes. But for ease of interpretation, we will label them traditional and deviant consumption. But, Merton's categories of "innovation" and "ritualism" will be combined into what we term potentially dynamic consumption activities (Table 2). This combination is carried out, because the distinction between (Goals +, Means -) and (Goals -, Means +) is not particularly

relevant to consumer behavior. What is critical, however, is that change in consumption activities occurs at the potentially dynamic level, as will be discussed below.

Table 2 lists the three relevant categories of consumers' adaptation modes along the vertical axis. The horizontal axis of the table draws from Parsons' analysis of the Human Action System, incorporating the personality, social, and cultural systems. This three-fold breakdown recognizes that consumers may act either as discrete individuals, or as members of a social institution (e.g. family or church) or as members of a crowd, where crowd consumption occurs among members of a cultural system who gather together, in a time-space relationship, for the sole purpose of sharing in the purchase or use of a consumer good or service not available on an individual basis. Parson's first subsystem, the behavioral organism, is not included in this typology, because it operates at the pre-information processing stage of consumer activity. As such, it is not explicitly relevant to this examination of consumers' actual behaviors. Table 2 also shows that cultural information flows downward, through the social system, to the individual's personality system. The effects of an individual's behavior, however, flow upward: they are absorbed largely by the social system, which fosters the long term stability (latency) of the cultural system.

Most consumer research has focused exclusively on traditional, individual choice. So although our working knowledge of the upper left hand cell of Table 2 is quite extensive, our understanding of the consumption activities in the other eight cells is limited. Nonetheless, we suggest that the information processing and individual choice models abun-

dant in the consumer behavior literature are applicable to the Potentially Dynamic and Deviant Individual (Personality System) cells. Differences in the purchase decision processes would probably be found in the nature of the search processes, more surreptitious information sources, and alternative methods of evaluation.

Crowd consumption (column 3) refers to the situation where a large number of consumers simultaneously utilize a product, e.g., attendance at sporting or entertainment events. An interesting feature of crowd consumption is that benefits are endemic to the crowd itself. The crowd at a football game is responsible for the provision of enthusiasm, camaradery, and an excited emotional state for the individual spectators. Furthermore, crowd consumption depends upon the crowd for its continuation. If a movie is under-attended, its distribution is withdrawn; if a football team repeatedly fails to draw a sufficient number of spectators, the franchise is moved.

We suggest that the purchase decision process (PDP) for consumers involved in crowd consumption is, once again, basically similar to the PDP involved in individual consumer choice. The individual consumer decides to engage in a crowd consumption. But, it is the post-purchase evaluation stage which differs for crowd activities. Evaluation of the "product" depends not only on product performance, but also on the behavior of other consumers for the product is mutually shared.

Finally, the middle column of the matrix represents subgroup consumption, typically conducted under the auspices of a social institution. We suggest that the dominant factor

TABLE 2
A Structural Classification of Consumer Behavior Forms
UNIT OF ANALYSIS

		UNIT OF ANALYSIS			SOCIETAL CONSENSUS
		INDIVIDUAL (Personality System)	SUBGROUP (Social System)	CROWD (Cultural System)	
TYPE OF CONSUMPTION	TRADITIONAL (Conformity)	. most consumer goods and services	. church rummage sales . joint family consumption	. airtravel . athletic events . movies	↑ high
	(Innovation) POTENTIALLY DYNAMIC	. birth control . marijuana	. fashion . fads	. social movements . "est"	mixed
	(Ritualism) DEVIANT (Retreatism)	. hard drugs . prostitution	. cults . crime subcultures	. pornographic movies	↓ low

← Information Flow ←

→ Effects of Behaviors →

affecting subgroup consumption is the necessity of achieving group consensus. Subgroup consumption is dependent upon agreement. A fruitful research stream would be the study of the various negotiation techniques utilized by the subgroup to achieve consensus.¹ In summary, we suggest that, the PDP varies across columns, but is basically similar for the cells within each column. The division of the matrix into three rows also serves a research oriented purpose. The top row represents traditional consumption, and the bottom row deviant consumption. We suggest that it is the middle row--potentially dynamic consumption--which is the key to social change, and hence changes in consumer behavior.

The occurrence of social change requires "mixed" social opinion. Social change can begin at either the crowd (information flow) or the individual (behavior) level; but regardless, subgroups of support for change must emerge. At the subgroup level also emerges roles and role relationships. As membership and momentum increase, the impetus for change becomes embodied in a social institution. Once the activity has been institutionalized, it can move either up to the traditional level (having gained high social consensus) or down to the deviant level (having created social animosity).

Summary and Conclusions

Consumer behavior is said to be an interdisciplinary field of study. Nevertheless, the dominant research orientation is psychological.

Underrepresentation of the sociological perspective is associated with incomplete conceptualizations of consumer behavior. Sociological variables may contribute incremental explanatory power when behavior is primarily at the individual consumer level. Sociological variables may be quite fundamental, however, when the behavior is primarily a group phenomenon, as in some family decision areas or organizational decision areas, or when the behavior is highly social in nature, as in the consumption of socially-visible products.

This paper has proposed a typology of consumer behavior which accounts for subgroup and crowd consumption as well as potentially dynamic and deviant consumption. As such, it suggests a mechanism whereby social change is initiated. Additionally the typology portrays the limited scope of our current understanding of consumer behavior. A psychological orientation defines and emphasizes only one of the many types of behaviors identified by a sociological approach.

Integration of these sociological perspectives holds the promise of further advancing the field of consumer behavior. The interdisciplinary nature of the field will be enhanced to the extent that it is characterized both by substantive contribution from various disciplines and the integration of these perspectives into a more general multitheoretical model of consumer behavior.

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¹One social institution which has been well researched is the family. In his thorough review of family studies, Davis (1976) discusses various hypotheses explaining family decision making. Such hypotheses (e.g., relative contribution) might be applied to other social institutions as well.

CONSUMER BEHAVIOR:
SURPLUSES & SHORTAGES

Jagdish N. Sheth, University of Illinois

Abstract

By focusing on individual decision-making framework, we have neglected many areas of consumer behavior. These include habit, hedonistic and epistemic determinants of brand/product choice; group behavior including household, organization, class and cross-national buyer behavior. We also need to generate our own constructs rather than blindly borrow from other disciplines, especially social psychology. Finally, we need more research and theory from a metatheory viewpoint in place of the managerial viewpoint.

Introduction

The purpose of this paper is to take an inventory of consumer behavior theory and research. There is no question that consumer behavior as a discipline has displayed a spectacular growth in borrowing concepts from the behavioral and quantitative sciences, in broadening its horizons from traditional marketing problems to social problems, and in generating a body of knowledge about consumers as buyers, users and decision-makers. (Ferber, 1977; Jacoby, 1976). It is simply a matter of time before consumer behavior will divorce itself from marketing and stand on its own as a distinct discipline relevant to many other constituents besides marketers and many other disciplines beside marketing. Thus, it appears to be an opportune time to take stock of consumer behavior theory and research and assess its surpluses and shortages.

A simple way to assess its surpluses and shortages is to focus on the following areas of consumer behavior:

1. What has been the focus of understanding in consumer behavior and what should be the future focus?
2. How have we researched the consumer behavior phenomenon in the past, and where should we go from here?
3. Why, in the past, did we choose to study consumer behavior and what should be the future motivation for our continued interest in the area?

Focus of Consumer Behavior

While consumer behavior theory and research may look very eclectic at first glance, two aspects stand out as the common underlying dimensions with which most research efforts have been undertaken. The first is the dominance of focus on the individual consumer in many of his roles such as shopper, buyer, decision-maker and the user. The second aspect is the dominance of decision-making process and the consequent implicit, if not explicit presumption that the buying behavior is a rational problem-solving process (Olshavsky and Granbois, 1979; Sheth, 1976). Accordingly, we seem to have abundance of research on individual consumers and abundance of theories of consumer behavior which are based on decision-making processes. This is particularly evident in the recent proliferation of multiattribute attitudes and information processing models (Wilkie and Pessier, 1973).

It is fairly obvious even to a naive observer that not all consumers or all consumer behavior phenomena can be fully explained or understood by a single perspective especially as elegant and rational as the decision-making perspective.

I believe that we need to bring at least three additional perspectives to fully comprehend the consumer behavior phenomenon. These are (1) habit; (2) hedonistic; and the (3) epistemic perspective (Sheth and Raju, 1973). Hopefully, the four mutually exclusive perspectives will be exhaustive enough to encompass the diversity of consumers and consumer behavior phenomena. It would be most fascinating to generate hard measures of consumer behavior realities with respect to the frequency and magnitude of prevalence of each perspective. My a priori hunch is that the decision-making perspective may account for a relatively smaller proportion of total consumer behavior phenomena.

Table 1 represents an attempt at summarizing the surpluses and shortages with respect to what we have versus what we should focus on in consumer behavior theory and research. What seems to be enough is the decision-making framework applied to explain and predict individual consumer behavior. Two classes of research in this combination are the multiattribute judgments and information processing models. My own view is what these models now need is more usage and applications by the marketing practitioners and policy makers rather than further theoretical development. Perhaps the applications in real world may provide us insights about the robustness of these models better than deductive reasoning given that the world of social science is more contingent and less absolute to be reduced to some invariant laws of social, economic or consumer behavior.

What we need most because too little consumer research or theory effort has been devoted so far is the opposite combination: understanding group behavior which is likely to be based on non-problem solving processes. Examples of such areas of focus for consumer research include crowd consumption, fads and fashions, social mores and taboos, and similar clinical mass motivations. This research should be directed at the macro (group) rather than at the micro (individual) level.

TABLE 1
Focus in Consumer Behavior:
Surpluses and Shortages

	Framework	
	Decision-Making	Non Decision-Making
Focus on	Surplus 1. Multiattribute Judgments 2. Information Processing Models	Need More 1. Habit & Conditioning 2. Hedonistic Behavior 3. Epistemic Behavior 4. Deviant Consumption
	Need More 1. Household Decision-Making Behavior 2. Organizational Buying Behavior 3. Sociology of Consumption 4. Cross-National Buying Behavior	Shortage 1. Crowd Consumption 2. Fads and Fashions 3. Social Mores and Taboos 4. Leisure Consumption

Of course, the above statements do not imply that there is no further need to study the individual consumers or that the decision-making framework has outlived its utility. As the Table indicates, we still need more research and theory about the individual consumer but in the non-decision-making domains of his epistemic behavior (impact of situation-

al effects on his choice behavior), formation, endurance and utilization of habits which may or may not have any underlying cognitive structure, and the whole area of hedonistic research which was disreputed prematurely in the early days of consumer behavior.

Similarly, there are many areas of group behavior which can be understood by the decision-making framework, and where more research and theory are clearly needed. These include the more traditional areas of household behavior, organizational buying behavior, and the newer areas of sociology of consumption and cross-national buying behavior. The important point to keep in mind is that we need to develop or borrow more macro decision-making frameworks rather than simply extend the micro decision-making frameworks used in understanding individual consumers. For example, recent literature on cultural aggregates, game theory, jury decision processes, and interorganizational conflict, power and coalitions may prove more relevant than the tenets of expectancy-value models.

Process of Consumer Behavior Theory and Research

The process of theorizing and researching consumer behavior can be evaluated on two dimensions. The first dimension reflects the heavy reliance on, and the consequent dominance of descriptive as opposed to normative process. This is understandable and seems to be due to two reasons. First, we are dealing with a very pervasive human or social issues in consumer behavior where it is difficult to impose a common set of normative value-laden judgments or perspectives without being criticized or at least questioned by others. In other words, the descriptive process of finding out how and why consumers behave the way they do and making policy or practice decisions based on these findings seems most reasonable, humanistic, less subject to criticism, and compatible with our belief in the democratic processes. Second, social behavior is too complex and contingent to reduce down to an exact science. It is, therefore, more difficult to generate normative or axiomatic propositions to which all agree and subscribe as they seem to do in biological and physical sciences. While these two factors explain why we might have leaned toward the descriptive processes in consumer behavior, they cannot justify it.

The second dimension related to how we have gone about researching and theorizing the consumer behavior area is the dominance of borrowed concepts and constructs as opposed to generating our own concepts and constructs unique to consumer behavior. The dominance of borrowed versus self-generated constructs can be attributed to several factors. First, the early pioneers in the discipline of consumer behavior made a fundamental presumption that consumer behavior is not unique but part of a larger syndrome of human and social behavior. It is interesting to note that economics did not make a similar presumption and consequently ended up developing its own constructs and axioms. Second, when a discipline begins to emerge without a formally defined boundary or at best an ill-defined boundary, it is easier to borrow constructs than create them. This seems very much true of consumer behavior; we still do not precisely know what to include and what to exclude from consumer behavior to make it a distinct discipline. Third, the pervasiveness of the phenomenon itself may have been a contributing factor. Multitudes of viewpoints and processes were simultaneously applied to understanding consumer behavior which resembled the proverbial blind men and elephant situation. While this was great for the discipline to get off the ground faster and mature quickly, it ended up in the dominance of using borrowed constructs at the expense of self generating constructs uniquely suited to the discipline.

Having identified the two process dimensions (descriptive vs. normative and borrowed vs. self generated constructs),

the task of taking inventory of how we have developed consumer behavior theory and research is made much easier: There is a clear surplus of borrowed constructs and a critical shortage of self-generated constructs in consumer behavior. Similarly, there is a surplus of descriptive constructs and a shortage of normative constructs. In Table 2, I have provided some examples of the types of research and theory processes in consumer behavior which we must discourage and other types which we must encourage to create a balance of processes of researching consumer behavior.

First of all, I think we have borrowed enough constructs from several descriptive disciplines. This includes social psychology, personality research and diffusion of innovations. On the other hand, we badly need to generate our own constructs related to several normative aspects of consumer behavior. These include developing normative theories of market segmentation, what should be the strategy mix to impact on the consumers without generating negative side effects, how should we protect the consumer and which types of consumers, designing anti-consuming policies for certain goods and services, and developing an audit system for measuring consumption indicators which go beyond the recently popular economic and social indicators. The most

TABLE 2
Process of Consumer Behavior:
Surpluses and Shortages

	Process	
	Descriptive	Normative
	<u>Surplus</u>	<u>Need More</u>
	<ol style="list-style-type: none"> 1. Social Psychology 2. Personality Research 3. Diffusion Theories 	<ol style="list-style-type: none"> 1. Planned Social Change 2. Game Theories 3. Mathematical Modeling 4. Axiomatic Modeling
Borrowed Constructs		
↑		
Constructs		
↓		
Self-Generated Constructs	<u>Need More</u>	<u>Shortage</u>
	<ol style="list-style-type: none"> 1. Typology of Consumption Needs 2. Consumption Styles 3. Consumption Life Cycle 4. Theory of Search Behavior 5. Stimulus-As-Coded 6. Product Life Cycle 	<ol style="list-style-type: none"> 1. Normative Market Segmentation 2. Strategy Mix Models 3. Consumerism and Consumer Welfare 4. Anti-Consuming 5. Consumption Indicators 6. Marketing Policy

radical of the proposed areas of future research is the development of marketing policy which would outline rights and obligations of the marketers.

Again, the above analysis does not mean that we should discard descriptive processes altogether or that we should totally stop borrowing constructs from other disciplines. As Table 2 indicates, there are a number of exciting areas of research and theory in consumer behavior which can and should rely upon the descriptive processes. These include self-generating a unique typology of consumption needs/wants, a typology of consumption life styles as opposed to general life styles, and consumption life cycle based on the time dependent covariances of preselected and representative goods and services. It also includes more research on self-generated constructs of brand/supplier loyalty, product life cycle theory, and consumer satisfaction/dissatisfaction research. Finally, we badly need self-generated constructs for the phenomena of information search and the process by which marketing stimuli get internalized in the consumer's mind both in the short and in the long-term memory functions. In this last category of research areas, I am more and more convinced that we need to generate our own constructs rather than borrow from cognitive, perceptual and/or neuropsychology. My conviction is based more on the strong differences in definition, size and character of information units between borrowed constructs

and what is relevant in consumer behavior.

Lastly, there are several normative disciplines from which we have neglected to borrow in the past, even though they appear to be useful to consumer behavior. These include the policy literature in sociology related to strategies of planned social change, game theory and normative decision theory, mathematical modeling such as queuing theory, inventory control theory and critical path analysis for educating and upgrading the household consumer so that he can better optimize his scarce resources of time, effort and money, and finally axiomatic disciplines such as metatheory, microeconomics, and logic.

Purpose of Consumer Behavior Theory and Research

Looking at the issue of why we have generated consumer behavior knowledge, it would appear that there are at least two underlying dimensions. The first is the dominance of satisfying the managerial as opposed to the disciplinary (meta theory) needs. The second is the dominance of acquiring empirical knowledge (facts and figures) about the consumer as opposed to the theoretical foundations of consumer behavior.

The dominance of managerially oriented research on consumer behavior is clearly due to the following factors. First and foremost, consumer behavior was, and to a large extent it still is, a part of marketing theory and practice. The earliest studies in consumer behavior were undertaken for the marketing managers who wanted to know more about the consumer before deciding on specific marketing strategies. Hence, market research has such a strong overlap with consumer research in content and methodology. Second, research funding by governmental agencies or foundations to study the consumer in a disciplinary mode has been practically nonexistent. Without such funding it has been necessary to rely on commercial or applied research, and consequently, the purpose has been more managerial and less disciplinary. Finally, as I mentioned earlier, in the early days of the discipline, most scholars were trained and possessed expertise in other disciplines. To them, consumer behavior was an interesting extension and application area of their pet theories and ideas. Many of them had no strong commitment or loyalty. In that regard, consumer behavior at that time looked like what international business looks like today. As might be expected, without such commitment and full time migration, it is difficult to produce disciplinary research.

Similarly, the dominance of acquiring empirical knowledge rather than theoretical elegance can be attributed to several factors. First, the inductive approach, by and large, dominates a discipline in its infancy and growth phases which results in generating more empirical observations (facts and figures). Interest is more on description and reporting of a specific event or behavior rather than on its explanation, and the method of inquiry is less experimental and more survey research. This tends to generate the bias in favor of the empirical as opposed to theoretical richness. Sadly, this bias is still prevalent as indicated by the hesitation of the scholarly journals to publish theoretical papers. Second, the managerial purpose underlying consumer research has also tended to intensify the bias. The manager has a pet theory of consumer behavior specific to his task and he is often looking toward research findings to support his own theory. It is, therefore, no wonder when he says "give me facts about the consumer and don't confuse me with your theories!" A third and related factor is the extreme difficulty to prove or disprove competing theories of consumer behavior. This is mostly due to the contingent nature of the phenomenon, and somewhat due to our inability to translate theories into testable hypotheses and to effectively cope with consequent operationalization and analysis problems.

What we have then is a surplus of managerial purpose and the empirical knowledge, and what we have as a shortage is the disciplinary (metatheory) purpose and the theoretical knowledge. Table 3 summarizes this point and offers several examples of surpluses and shortages in consumer behavior so far as the purpose of researching and theorizing the area are concerned.

TABLE 3
Purpose of Consumer Behavior:
Surpluses and Shortages

	For		
	Managerial Purpose		Disciplinary Purpose
	<u>Surplus</u>		<u>Need More</u>
↑ Empirical Knowledge	<ol style="list-style-type: none"> 1. Consumer Demographics & Other Statistics 2. Media & Shopping Habits 3. Surveys & Panels 4. Consumer & Store Audits 5. Life Styles & Psychographics 		<ol style="list-style-type: none"> 1. Consumer Satisfaction/Dissatisfaction 2. Problem Solving vs. Other Choice Rules 3. Cross-Cultural Consumer Behavior 4. Typology of Consumers
↓ Theoretical Foundations		<u>Need More</u>	<u>Shortage</u>
To Generate		<ol style="list-style-type: none"> 1. Theory of Product Class Choice 2. How Advertising Works 3. Price-Demand Relationship 4. Theory of New Product Failures 	<ol style="list-style-type: none"> 1. Laws of Consumer Behavior 2. Concept Formation 3. Theory of Symbolic Communication 4. Theory of Consumer Needs/Wants

It is obvious that empirical knowledge on an ongoing basis for managerial purposes is probably sufficient by now. In fact, some scholars have openly complained that both the government and the industry collects too much information by way of surveys and audits, consumer demographics, life styles and psychographics as well as media and shopping habits especially since the start of the age of electronic computers and other electronic devices. It would appear to me that the next progressive step is data analysis. For it is a sad commentary that probably eighty to ninety percent of the information about the consumer goes unanalyzed or at least underanalyzed. In short, data analysis and not data collection should be the further direction in the area of generating empirical knowledge for managerial purposes.

On the other side of the equation, what seems to be in most acute shortage are the theoretical foundations of the discipline itself. While we do have several nice and rich hypotheses (e.g., perceived risk, brand loyalty, and stochastic preferences) and some good comprehensive theories in consumer behavior, unfortunately most of them are developed for the managerial perspective. We need discipline-oriented theoretical foundation, especially in the areas of concept formation, symbolic communication and a good theory of consumer needs/wants. It would be superb if we can evolve toward some commonly agreed upon and scientifically validated laws of consumer behavior.

This analysis does not mean that we should ignore or even discard the managerial purpose in consumer behavior. However, what the manager needs much more critically are the theoretical foundations of how the marketing mix does or does not work. For example, it would be nice if scholars in consumer behavior can provide him with a single agreed upon explanation as to how advertising works; or provide rich theoretical foundations for the price-demand relationship; or offer a good theory of product failures.

Finally, the discipline itself needs further empirical knowledge on a number of substantive issues. These include the degree and character of consumer satisfaction/dissatisfaction; prevalence of problem solving versus other methods of making product, brand or store choices; and cross-cultural parallels and contrasts in magnitudes and types of products and services consumed on our planet.

Summary and Conclusions

This paper is an attempt to take an inventory of consumer behavior theory and research in order to identify surpluses and shortages of concepts, information and body of knowledge.

The inventory was taken with respect to the three areas of focus, process and purpose in generating the body of knowledge we call consumer behavior theory and research. The following conclusions were derived in the process:

1. We have focused too much on the individual consumer as opposed to group behavior and similarly too much on the rational models of problem solving (decision-making) as opposed to other non-problem solving models of choice behavior. The combination of these two focus factors has resulted in abundance of attitude models, multi-attribute judgments, and information processing models. What we need most is understanding of group phenomena such as crowd consumption, fads and fashions, deviant consumption behavior, and obsessive consumer behavior with the use of more macro and non-problem solving hypotheses and theories of choice behavior.
2. The process of theorizing and researching consumer behavior has been dominated by descriptive as opposed to normative constructs, and by constructs borrowed from other disciplines rather than self-generated constructs unique to consumer behavior. In the process, we seem to have surplus of social psychology, diffusion theory, and personality research. What we need now are more normative and self-generated hypotheses and theories related to market segmentation, strategy mix models, consumerism and consumer welfare theories, anti-consumption models and a normative marketing policy which defines the rights and obligations of the marketers.
3. Most of the consumer behavior research and theory has been for managerial purposes in contrast to the disciplinary (metatheory) purposes. Similarly, it has been more empirical rather than theoretical. This has resulted in generating lots of facts and figures about the consumer himself, how much does he buy, his media and shopping habits and his demographics, life styles and psychographics. In the process, market research and consumer research have become almost synonymous. What we need, however, are rich theoretical foundations of the discipline itself with respect to many areas such as concept formation, symbolic communication and a theory of consumer needs/wants.

It would be simply exhilarating if we can evolve some agreed upon and properly validated laws of consumer behavior. So far, it seems that we have discovered only two obvious laws of consumer behavior: those who don't need the product, consume it, and secondly those who need it, do not consume it! While these laws may go a long way in explaining the phenomena of imperfect competition and social welfare disequilibrium as compared to the traditional micro-economic theory of the firm, we can do much better if we decide to change our focus, process and purpose in understanding consumer behavior.

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CONSUMER DECISION PROCESSES: A FUTURISTIC VIEW

Franco M. Nicosia, University of California at Berkeley

[AUTHOR'S NOTE. For deriving maximum enjoyment from this paper, the following is recommended. First, this paper must be read aloud. To read it silently would activate only a very small part of the left hemisphere of the fore-brain and thus deprive the reader of the acoustic, melodious, and wholistic (wholesome) pleasures of the human voice as it activates the right hemisphere. Second, the reader should try to discern the two structures that underlie the paper's messages: (a) the popular cognitive algebra, and (b) the long-forgotten primitive nonalgebraic syntax of feelings, especially those feelings that ordinary people call ethics. Third, to experience the latter, one may imagine having received a request for all the raw data and documentation that produced the findings of the last famous publication, and then, try to remember: the questionnaire; the name of the company that did the interviewing, keypunching and coding; the faces of the people (from research assistants to programmers and machine operators) who produced the voluminous computer outputs (it was definitely an advanced computer system, though); the places where those outputs may or may not be (the original disks/tapes have been sold or recycled to satisfy the need to be ecologically rational); and whether it was Evelyn or Paul who very carefully proofread the galleys. Amen.]

Our chairperson knows that a system of differential equations models the dynamic properties of consumer behavior; accordingly, she has asked me to look at the "roots" of the behavior of our research on and about so-called consumer(s). Being one of the two living modelers of consumer dynamics (the other is B. L.), I was glad to accept her recognition of my unique but unknown skills. Thus, I reread everything I have written for two reasons: one, I have a very short memory for the irrelevant, and two, nobody else reads what I write.

The roots of the dynamic model I have developed for describing/explaining/predicting our future and that of our subjects point to behavior in imaginary spaces (Nicosia, 1978, circa and infra; note that Nicosia, 1966, treated only the real space case because the Dean told him that that was more than enough for promotion, even though B. L. had already raised the issue in 1965--but everyone knows that B. L. could afford it simply because at that time he was a practitioner). The model has generated two time-path characteristics: the first lists new opportunities, and the second, the potential of current opportunities. For those readers who do not trust differential equations or need the security blanket of statistical inference, I can report that the following list of X new and current opportunities has an error of $\pm (X-1)$, at the 95 percent level of hopeful confidence of being wrong.

1. Seriousness of Purpose

This is more than a prediction, it is a Kantian imperative: we must continue to take ourselves and the consumer seriously. Taking ourselves seriously is going to be increasingly necessary because, with the return of our society to its Judaic-Christian (especially Protestant) ethics, everyone will become a worker and it will be difficult for us to find consumers. As a consolation, however, I heard that U.S. funding agencies will allow purchase of a few Diogenes lanterns.

With the reappearance of old moralities and the appearance of new moralities as well, the acceptance for publication of our theoretical and empirical endeavors will decrease asymptotically. However, we are seriously preparing ourselves to think, and possibly, feel, that rejections of our papers will give us the opportunity to experience the experience of growth. I do recognize two minor deviant

market segments of feelings in this regard. Some people do not want to grow anymore, and, in fact, others even want to shrink and return to the womb. If the latter segment happens to believe that humans are the expression of stochastic processes, then it will be difficult to return to the womb because, at least in the context of Markov processes, it has been shown, without using the negative binomial, that Vokram processes are a logical/cognitive impossibility. (For a more complete prediction about what to do with time, see point 7 below, especially point 7.2.)

2. Reference Groups

Recalling that consumer behavior is multivariate, we will strengthen our sense of community by conceiving each paper with more than one reference group in mind. A balanced set (minestrone) of reference groups is: one part of our endeavors (from proposal writing to article submission) is addressed to the needs of the editors of the Journal of Mathematical Psychology, another part, to the editors of the Psychometrika, another, to the editors of the Journal of Personality and Social Psychology, and so on, including the needs of print, broadcast, and electronic media.

It will become absolutely necessary to our ego growth that we enter into the data bases of the future electronic media. Then, and only then, will we be able to read each other's manuscripts without the censorship of journals' editors, and as simply as turning on the video. Then, "I and Thou" will share a one-to-one communality, and so "I will be relevant to one 'real' person."

3. Relevance

The item of relevance has haunted us for decades, even though we all know that the ACR founding fathers, maybe by now grandfathers (sorry Jim, Bob, Bob Jr., and a couple of you others I now don't remember), really wanted us to be in basic research. Orthogonally, obliquely, or otherwise, the loading of the relevance item is always high, especially in its operational formulation "relevance to whom?" But this loading will decrease, and relevance will become irrelevant. This is confirmed by recent applications of spectral (ghost) analysis and free-from-polynomial multivariate time-series analysis.

Gone will be the need for relevance to the Dean, to colleagues to the Department of Psychology, the alumni, or the taxpayer. As for the IRS, we have become and will continue to be irrelevant (there are benefits in the avocation of research, oops, I meant teaching).

There are also unmistakable signs that we do not need to be relevant to the research project Director who, we all know, reports to the Director of Marketing Research, who reports to the V.P. in charge of Marketing Services, who is occasionally greeted by the Sales Manager in the elevator, who (the Sales Mgr.) is not sure who the Members of the Board are, but who has subliminally used specialty advertising on a secretary who told him that the Chair of the Board--rationally aware of the firm's oligopoly power (another ghost)--has decided to sell the U.S. car-making facilities to a co-op formed by Galbraith, Nader, and Choate, who have great experience in meeting payrolls at the end of each week and, thus, are not going to tell the Japanese to stop introducing new models every three months or so. (After all, only Detroit owns oligopoly power; that of the British car makers has been gradually consumed by what seemed to be TB but, in fact, is a "foreign Legionnaire" epidemiology.)

Nor will we need to be relevant to our students (except as needed for experiments), for we have control of subliminal

advertising in ice cubes and elsewhere--in the earphones when we jog or in the background of classical music while we read the funnies.

We shall master the art of the subliminal by agreeing that subliminal does not refer to the manner of administering a stimulus relative to the physical limit of sensory neurons or organs. Rather, let us continue to believe that subliminal refers to mental states inside the skin of humans, e.g., subconscious, unconscious, unaware, hypnotic, and so on. Since such states have never been measured, a new set of axioms produces a theory that reveals that such states must exist. Accordingly, by 1984, we believers in the subliminal force shall control not only the behavior of consumers but also that of the shrinking market segment called the student mind.

4. Behavior

The study of behavior no longer offers an opportunity, strategically and tactically. First, during the recently ended era of Fishbanization, we learned that we do not need to worry about behavior, for a verbally stated intention can do as well (especially because we all knew that we were dealing only with a definitional equation). Further, by focusing on information processing, we have recently learned beyond any statistical doubt that we can attribute behavior to any consumer. The only intellectual challenge left is to attribute behavior to information processes; to be interested in the act of purchase is to project a materialistic Weltanschauung which our society has long left behind.

Above all, we should assure that future archeologists will know that we knew that the act of behavior does not exist--that it is only an accounting convention and a legal construct. Behavior is a fugitive instant in our climb up the popularized version of the ladder of motives. In the interim, we should do our best to rely on those models of man that were not related at all to the original thoughts of D. K. in 1957 (yes, indeed, that far back in history).

By leaving behavior behind, we shall help consumers reach the blissful static-static satisfaction of ethical and aesthetic needs (this is an old prediction of mine coming true for nonscholarly reasons, see Nicosia, 1966, Ch. 1). Without doubt consumers will be satisfied when they reach various paradises or nirvanas. And I can foresee how we will help the private and public sectors to find ways to skip all those material steps that live consumers usually take to reach the complete satisfaction of the grave. (Our editor knows that this is printable, for the current administration has managed its first true budget-cutting victory by closing the U.S. Speech Safety Commission--the other federal commissions will close in 2,001--the year of the victory of subliminal advertising.)

And we shall succeed not only in ignoring behavior but also in ignoring my repeated invitations (since 1968) to study behaviors such as storing, maintenance, repair, and disposal. These behaviors are only relevant to current corporate managers and public policymakers in coping with the two-headed monsters of pollution and management of natural resources. All this is irrelevant because, by the logical law of internal consistency (especially that based on the empirical applications of structural "econometric" specifications), we shall, in a few years, agree with the Relevance item above, that is, our right to be relevant only to one video screen located somewhere on this Mother, oops Father Earth.

5. The Inside of the Consumer Skin

The preceding predictions have outlined two opportunities: (a) since the consumer's environment is all subliminal, the relevant states are those inside the skin, such as the subconscious, unconscious, unaware, hypnotic, and other states reflecting lack of social duties and responsibilities; and

(b) with the exception of the search for the complete satisfaction of all wants, dreams, aspirations, wishes, and other forces (whose unsatisfaction keeps consumers alive), everything else left alive consists of the processing of information in the attributive mode.

But I know of two other opportunities, one related to the skin and the other related to the inside of the skin. Our historical choice of which of the two opportunities should be exploited is being made right now.

The opportunity of studying what is inside the consumer's skin will not be followed up. We shall not inquire:

- whether the midbrain is the locus of feelings (and emotions and motivations) and that the forebrain is at best the warehouse of "thinking" rules learned from the environment (after all, Freud had already affirmed this by creating the mental state of the superego, right?),
- whether the morphology of the nervous system of the forebrain in males and females is different at the moment of birth,
- whether the physiology of the brain, i.e., its functioning, depends on the time rate of release of certain hormones rather than others, and
- whether all of this comes from such space science groups as the Psycho-Neuro-Endocrinological International Society and other such conspiracies.

The other opportunity has higher yields (which are nontaxable under the metaphysics of supply-side economics which has made the heroic assumption that consumers will work more).

This other opportunity will be exploited instead. First, it is eminently just and socially kind to ourselves. All there is to study inside the skin has already been discovered by Freud, information processes, and attribution.

In addition, the study of the skin is eminently practical for a number of reasons. First, this study has a long tradition of survival since Pavlov and Watson. Its main commandment is to study only the skin or the pupil or the air we exhale (which is as dirty as the air we inhale, for reasons that are the domain of the sociology of consumption--which by definition belongs to another departmental slicing of humans, and we shall respect such boundaries, for to do otherwise would violate the American principle of specialization which is curvilinearly associated--i.e., no causality implied--with the time rate and magnitude of American Productivity).

The practicality of studying the skin only is also demonstrated by centuries of medieval practice. By analogy, take the temperature of a human:

- If it is normal, send the guy back to work so that he can pay the bill (it is of course possible that the guy is dying of leprosis or some other bug that does not create body temperature above normal--but there are always exceptions in any professional practice). Or
- If the temperature is above normal, give the guy some castor oil. This has worked very well for doctors in countless wars: millions of soldiers went into battles on either side and managed to kill each other in spite of, or because of, castor oil. Here too there are exceptions: the guy may have a perforated appendix, but he would die anyway--and this proves (a) the behavioral intention of doctors to administer death peacefully, and (b) my intention to attribute to doctors such intention.

Now, if someone were to object that the above shows that "physical" measurements are at least asymmetrical and that

they are not measures of "physiological" processes, then I must note that doctors are dealing with sick people whereas we deal either with healthy, rational, normal consumers or with stochastic consumers (maybe Bass meant "as if," maybe).

By studying the skin, we can measure all sorts of physical events with very inexpensive instruments--that is practical, even for the Dean.

In addition, by documenting that we should address our messages also to the right hemisphere, we will be even more practical. Proof:

- Buy more TV sets; this means more income for Japanese workers; and that brings blissful satisfaction to the populace's inner guilt for having dropped the A bomb;
- By teaching via TV, we need only one preparation per lifetime; our lectures will always be organized; and the students and the Dean will be completely and eternally satisfied.

6. Studying the Outside of the Skin

Some of us may want to remain irrelevant by studying the outside of the consumer skin. To these diehards, we shall graciously point to the earlier prediction that by 1984 all of the environment will be subliminal. And we shall also point out a few examples of why the consumer environment is empty.

Example one: there are no cultural values. The diehards have not realized that marketing scholars have each read a different book by Faulkner, and, by a strict Gedanken sampling procedure, each has derived a different and colorful unordered set of words called cultural values. Yes, I have heard of the new cultural value "commitment." In this case, the survey did not observe what we are committed to, for we know that we are all committed to do our own thing.

Example two: social institutions are vanishing. Consider the school, and its once-upon-a-time task to prepare citizens. Today, the school's function is to help two other institutions: the working place and the family. As an aid for the working place, schools simply keep people off the employment and unemployment records at the Bureau of Labor Statistics. And they help the family by performing the baby-sitting function (in California, we first required kindergarten, and now a bill requires families to give up even the nursing years--Governments can be cruel indeed!) In conclusion, in our environment there are no schools left.

A second example of why the environment has become empty is the family--it does not exist. Over a few decades, the patriarchal family shrank into the nuclear family: two parents, and some children. By 1980, only 17 percent of all possible types of families are nuclear.

Etzioni has computed that, even if the rate of divorce were to stop increasing, by the turn of the century no such thing as the nuclear family will exist. But it does not matter anyway whether Etzioni's computations are wrong! We have all observed that the nuclear components of the nuclear family are the roof and the microwave oven; the human elements are a throughput flow, in and out, with different time-path characteristics.

In sum, we will not study the environment of the consumer for it is either empty or only relevant to private and public policymakers.

7. Of Methodology and Methodologies

Our future in studying consumer decision processes is clearly bright, as the above six predictions unequivocally demonstrate. But the past has proven that our real opportunities lie in the direction of methodology and

methodologies. This area is so pregnant with opportunities that I shall give only two predictions--the remaining I shall reserve for the second invitation to share my thoughts and feelings with the Association I helped to found.

7.1. The Dynamics of Consumer Behavior

Systems of differential equations were invented to describe, explain, and predict the dynamics of a physical phenomenon. But it has been categorically stated in print that when systems of differential equations are used to describe consumer behavior, such systems or models are static.

This is correct for a number of reasons. First of all, as proven by the preceding predictions, consumers are not physical phenomena. And if they are, then the achieving of satisfaction via the steps of the motives ladder will make them ethereal, anyway. Second, without cultural values and social institutions, there is no space (environment) for consumers to move through. Third, from the prediction that only the skin is worth studying, it follows that there is no need to observe the dynamics of what goes on inside the skin. The empirical proof is clear. Beginning with the Fishbanization era, none of the studies of information processes that I have seen differentiate any variable with respect to time. In addition, since there is no motivation for consumers to process information to begin with, time is only relevant for computing the cost of processing of information by the CPU and peripheral equipment.

7.2. Time

The only other opportunity I want to mention has already produced awesome results. Recall that the statistical method was born three hundred years after the scientific method. Statistical methodologies were constructed only as an aid, another tool to help scientific methodology.

Now, since differentiating with respect to time has been defined in print as static modeling, then we have virtually collapsed three hundred years of time (and history) and have eliminated the difference between scientific method and statistical methodologies. Accordingly, the only intellectual challenge left is to prove that statistical methodologies are the scientific method. This will call for a reconsideration of many scientific findings; for example, as for movements of celestial bodies, the work from Copernicus to Brache and Kepler will have to be considered the result of some Monte Carlo process, and, for the movement of earthly bodies, the work of Galileo may be the result of some nonlinear regression analysis--and the work that Newton did to unify the two series of findings will be shown for what it is--a static and fictitious mathematical abstraction, for the world is multivariate, full of unexplained R^2 , both in the short- and the long-term memory.

Post Scriptum. WARNING. To those sensitive to the primitive nonalgebraic syntax of feelings, the messages above may cause exhilarating feelings; it is thus recommended not to talk about such feelings to those who function only with rational, cognitive, algebraic sentences, for the latter are in command. A maximum recommended dosage is 2 pp. at bedtime. No explicit or implied warranty is intended with or without attribution. Nor is a money-back guarantee provided, unless the writer is caught engaged in subliminal work for the private or public sector.

THE DEVELOPMENT OF CONSUMER BEHAVIOR THEORY
Harold H. Kassarian, UCLA

Abstract

Theory in consumer behavior has developed from the grand formal approaches to middle range theories resulting in excessive fragmentation. Perhaps the time has come to turn back to a master theory that will help integrate the divergent pieces.

Introduction

To lament that the field of consumer behavior suffers from shortage of good theories has long become a popular claim within our discipline. And yet, we do not lack, and really have never lacked, good theories. For example, economic theory is essentially a model of consumer behavior given a simple set of assumptions. Veblen's ideas of conspicuous consumption have been around for eight decades (Ward & Robertson 1973). Learning theory emerging from psychological principles existed long before Kuehn's work on orange juice or the stochastic models that were to emerge in the 1960's.

By the post World War II era, theories based on the individual as a psychological entity became popular. The question of interest was "why," why does the consumer buy? The work of George Horsley Smith, Social Research, Inc., and the papers of Sid Levy were referenced often. What motivation research had done was to introduce into marketing one of the two most developed or grand theories of human behavior from psychology, the psychoanalytic views of Sigmund Freud and his followers.

In due course, a much more influential theory was introduced. The second master theory from psychology, Lewin's field theory that had emerged out of the work of the Gestalt psychologists in Berlin. It would be difficult to overestimate Lewin's contributions to social psychology and through psychology, his impact on consumer behavior. His influence permeated consumer behavior from studies on group dynamics to attribution theory, from cognitive organization to balance theories. But that theory did not have a dramatic debut, a grand entrance into the field with a specific event or publication that pin-pointed its place in history. Rather, it slowly seeped into the field coloring much of the thinking and conceptualizations that textbooks now define as the field of consumer behavior.

Consumer behavior had emerged out of a base of grand elegant theories; classical utility theory, psychoanalytic theory, learning theory and its mathematical off-shoots, field theory, etc. However, consumer behavior was not to be denied unified theories or models of behavior of its own. Often borrowing heavily from psychology, the grand models appeared: Nicosia in 1966, Engel, Kollat, and Blackwell in 1968, Howard and Sheth in 1969, and less comprehensive models such as Andreasen in 1965, the work of both Frank and Kuehn in 1962, Haines in 1969, and the inevitable deluge of computer flow chart types of models, each proposing to have modeled some aspect of consumer behavior. Testing of these models was sparse indeed. A study here, a paper there, a bit of empirical support with a small portion of the variance accounted for someplace else.

For some years, perhaps because of a dissatisfaction with the grand formal theories, Tom Robertson had been calling for the development of models on a less-grandiose level. He, along with Ward, felt that the greatest promise for

advancing consumer behavior resides in what Merton had called middle-range theories. These are the theoretical or conceptual frameworks which do not constitute full-blown theories in and of themselves, but neither are they merely isolated empirical findings. Rather, middle range theories suggest explanations and predictions concerning some relatively circumscribed areas of inquiry (Ward and Robertson 1973). Merton had defined a middle range theory as intermediate to the minor working hypotheses and the all inclusive speculations comprising a master conceptual scheme. Merton felt that the field of sociology was not ready for the grand theory, and that it was premature to look for it. Robertson's view paralleled that of Merton. Consumer behavior was not ready for the master or grand theory.

And the middle-range theories poured forth. Personality and life style, dissonance, risk, low involvement, attitude models, attribution theory, information processing, reference groups, diffusion and innovation, consumer socialization, social class, and on and on.

Developments in the Past Half-Decade¹

Let me now take a few minutes to summarize the middle range approaches that have been emerging within the past half-decade in consumer behavior research from three points of view.

The Molecular Level

Unfortunately, psychobiology is one of the least well understood areas in consumer psychology and has also been the most oversold and misused. The quality of research has ranged from over-touted black boxes such as the voice-pitch analyzer to highly sophisticated studies on eye movement and brain lateralization research.

One set of studies within the last few years have tended to focus on arousal and activation. Activation is provoked by stimulating a sub-cortical unit, the reticular activation system in the brain stem, which figuratively "alerts" other functional areas of the brain to take a "stand-by" position (autonomic nervous system activity). Simultaneously cerebral areas are aroused involving information processing, perception, thought and memory. Today, much of this work is emerging from the University of Saarland laboratory under the direction of Kroeber-Riel (1979). The belief is that cognitive and psychological processes originate from physiological ones and that there are biological limits on the person's deliberate and conscious control of his behavior. Further, verbal methods of measuring arousal or even cognitive activity such as information processing are either not sensitive enough or involve a needless detour (the measurement of the perception of responses in the nervous system) when the response itself can be measured directly.

A good deal of the physiological level of research has tended to revolve around the measurement of eye movement

¹Portions of this section have been summarized from H. Kassarian (1982).

as a surrogate or superior measure of information processing (e.g. van Raaij 1977, Russo 1978). Basically, this stream of research records eye movements while the subjects are presented with stimuli (e.g. advertisements, information on brands or products, etc.). By analyzing the patterns of fixations, choice strategies are hypothesized.

A second and perhaps more exciting trend in the past few years involves the differential activities of the right and left brain halves. Several ACR sessions and numerous papers have followed up the original work by Krugman buttressing the dozens of studies in psychology and physiology. These data indicate that among normal subjects, the left hemisphere is primarily responsible for traditional cognitive activities and the ability to report consciously. The right brain is more concerned with pictorial, geometric, timeless, and other non-verbal information (Hansen & Lundsgaard 1981). The left brain is causal, logical and argumentative in contrast with the right brain processes which are more diffuse, spatial, intuitive, and musical. Normally both hemispheres are active together interacting through the connecting corpus callosum, but according to Lundsgaard (Hansen 1981), some people tend to be left-brain dominated and others are right brain dominated.

If this turns out to be so, the potential of the concept in consumer behavior is great, moderating many of the present day findings. The problem is one of measuring hemisphere domination, if indeed it exists among normal subjects. At present, Hansen and his associates in Denmark are in the midst of developing a short paper-and-pencil instrument to measure lateral domination. If development of the scale is successful, and preliminary data is encouraging (Hansen & Lundsgaard 1981, but also see Hansen 1982), this would be a major contribution accelerating research and avoiding the difficulties of electro-encephalographic instrumentation.

The Cognitive Consumer

Turning away from the molecular level of analysis, we get to the cognitive consumer. Perhaps no topic in cognitive psychology has captured greater interest among consumer researchers that the field of attitude formation and attitude change. Interest eventually turned to the expectancy-value theories of Rosenberg and Fishbein. From just a few papers in mid-1970 the field exploded to literally hundreds by 1980. And just as rapidly as it emerged, interest began to decline. Interest shifted to Fishbein's extended attitude-behavior model and modifications of it. However, in consumer psychology, the newer approaches have not generated as much research as the earlier formulation. Perhaps it was getting too complicated for the simple middle range theories that consumer researchers were seeking, or more brutally, perhaps the fad had passed to other topics.

And, other topics were in the wings awaiting their turn, for example, cognitive response. The basic tenet of this theory is that cognitive responses or thoughts are evoked by persuasive communications and these are crucial mediators of attitude change (Petty 1977). The studies conducted to date seem rather impressive. Cognitive arguments do act as mediators between the stimulus and the attitude, and are related to a wide assortment of cognitive variables including beliefs, purchase intentions as well as attitude change. And it may even operate in cases of low involvement - a class where few earlier theories and studies seem generalizable (Olson, Toy & Dover 1978). In fact, indications are that research on attitudes, persuasion, information processing and several other areas are converging on cognitive response - where arguments come from, and how and under what conditions they are triggered.

Except for attitude research, probably it is the middle range approach of information processing that has led to more research in consumer behavior than any other topic. Its ascent has been meteoric in recent years and it is now enjoying its peak in popularity. The central focus of the information processing perspective is on viewing consumers as cognitively active problem solvers and understanding the strategies and plans used in decision making, typically product purchases and choice between brands (Mitchell 1978). Stimulated by a number of high quality papers and in particular Bettman's splendid monograph (1979), I would venture that more dissertations in consumer behavior are being written today on the topic of information processing than all other topics combined.

However, information processing does not exhaust the circumscribed theories of recent interest. For example, attribution theory has produced its share of empirical research. On overview, the evidence now seems to indicate that consumer experience and feedback mechanisms are neither as simple nor as automatic as early interpretations of attribution theory and self-perception theory had implied. But like so much else in consumer behavior, these mini-theories do explain some portion of the variance of the behavior of individuals in the marketplace.

Low Involvement

As might have been predicted, there has also been a reaction to the overdependence on cognitive psychology. The basic difficulty lies in the assumption of an involved information extracting individual seeking the correct decision or brand or product. Of course, in many cases and under many conditions the consumer does behave as a thinking, information processing individual. But under other conditions, particularly in low-involvement products, he simply could care less. Olshavsky and Granbois (1979) in fact present evidence that a substantial portion of purchases does not involve decision making at all, even on the first purchase. This distinction has not yet been incorporated into the research stream on cognitive processing.

The concept of low involvement effects many of the views of the cognitive consumer. Product selection, brand loyalty, advertising, hierarchy of effects, behavior modification and even the selection of political candidates (Robertson 1976) are areas where the concept of the uninformed, plodding, muddling consumer challenges our cherished views and threatens generalizations based on earlier middle range approaches.

A Molar Perspective

When one turns to a more molar or societal perspective, the applications of concepts and theories has not been as prolific as from the cognitive perspective. Numerous papers do exist on such topics as reference groups, societal influence and power, social class and the ever popular innovation and diffusion; and a few have taken true sociological perspective (Nicosia & Mayer 1976). However, the greatest recent ferment has been in family decision making and consumer socialization.

As Robertson and Zielinski (1981) suggest, it is becoming increasingly clear that the appropriate unit of analysis for much of consumer behavior should be the family unit and not the individual. However, little of the research in consumer behavior has explored how families make decisions or the process of family decision making. This stream of research on the family is still in a very early stage and much of it tends to be descriptive. Mini theories such as role bargaining, negotiations, exchange, and the interaction process have yet to be studied. Once one turns from individual decision making to group decision making, much

of the prevailing knowledge in consumer psychology simply may not apply.

The socialization of children as consumers, on the other hand, has generated considerable ferment in the field stimulated in large part by actions of regulatory bodies. What has not yet been examined is how this information merges with other studies on socialization, or how the decision making process among children or within the family unit can be reconciled with what we know of the cognitive consumer or the physiological consumer. Still other streams of research stemming from concerns about public policy such as corrective advertising, comparative advertising, and labeling, similarly suffer from a lack of integration with the rest of the knowledge that has been gleaned about the behavior of the consumer.

Conclusion

Although the term "interdisciplinary" or "multidisciplinary" has often been applied to the field of consumer behavior, it is in fact not all that interdisciplinary, and perhaps a better term would be "fragmented." For, we seem to have taken Robertson's word seriously that, "the greatest promise for advancing consumer behavior resides in the development of middle range theories." The typical pattern of activity has been to modify a middle range theory or concept and apply it to behavior in the marketplace. And in the near future this trend should continue for there are yet many significant topics to be explored: situational factors, motivation, humor, time, product dispossession... The list is almost limitless.

However, I wonder, if what the field really needs now is one more topic to apply to the consumer. Although the trend has been away from creating comprehensive theories, and I am not sure we are yet ready for a grand or master theory of consumer behavior, what is desperately needed at this point is integration of the various topics in the field.

For example, it seems obvious that cognitive processing, physiological arousal, left brain activity, and high levels of involvement are somehow interrelated. Low commitment behavior does not necessarily need a new set of theories but does somehow involve right brain activity, situational influences, learning, and perhaps behavior modification. In some manner the fragmented nature of the work needs to be tied together and individual researchers need to be alert to the implications of their work to researchers in other areas. It is quite clear that research on eye movement emanating out of information processing is directly relevant to the psychobiological work of the Kroeber-Riel laboratory. Family decision making is somehow related to learning and cognitive processing and exchange theory.

Although this field simply does not need another flow chart, it is perhaps time to somehow fit the various pieces together. The middle range theories obviously are interrelated and co-vary. In its present fragmented state, the interaction effect, the confounding of one model with another, is being ignored or relegated to the error term. Little wonder that reasonable colleagues turn away from a deterministic view of the consumer and claim that behavior is nothing but a gigantic stochastic process. Just perhaps, ready or not, it is time to turn back to a master theory that will help integrate the divergent pieces.

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PRODUCT SPECIFICITY IN PUBLIC POLICY TOWARD THE ELDERLY

Ganesan Visvabharathy, University of Minnesota

Abstract

This paper identifies three product/service areas where the elderly may be particularly disadvantaged and examines the public policy needs regarding the elderly in those areas. These are: health care, housing and social services. Important research issues in these areas are also identified.

Introduction

Bureau of the Census statistics show that there were 23.175 million elderly persons (defined here as those in the age group of 65-and-over) in the 1978 U.S. population. Although the average income of the six million households with a head 65 or over is only about three-fifths the national average, total household income is a respectable \$146 billion -- or 9.1% of the total income of the U.S. population. The elderly segment of the population has been growing both in size and average income (U.S. Bureau of the Census, 1978). The elderly are among the largest spenders in the country for such items as stocks, bonds, furs and jewelry, and expensive clothing (Allan 1981). Federal agencies spent over \$100 billion (in 1972, the latest year for which data are available) on programs directed largely toward the elderly. Thus, the elderly segment receives and spends a sizeable dollar amount.

Certain unique characteristics of this segment places a substantial proportion of the segment in a disadvantaged position when procuring goods and services (Nelson, 1978). For instance, reduced mobility caused by fear of crime and poor health may reduce access to information sources and increase reliance on home or mail order sales. Physical impairments or chronic illnesses may make them susceptible to quackery promising them a return to youthful vigor.

It is the intent of this paper to identify a few product and service areas where the elderly may be particularly disadvantaged and to examine the public policy needs regarding the elderly in those areas. In the process, important research issues will also be identified.

Who are "The Elderly?"

Because of differing rates of aging among different people, a person at age 65 may be more or less 'old' from a biological viewpoint. Researchers such as Vedder (1965) and Tibbets (1960) argue that the real turning point toward old age begins much earlier than 65 and hence a biological developmental approach to defining 'old' age must be adopted, as opposed to a chronological approach. Others such as Barak and Schiffman (1980) argue for a cognitive approach (such as 'feel' age or 'look' age). However, since these constructs may be equivocal regarding operationalization, most researchers use chronological age (Atchley 1972). Since most U.S. workers retire at 65 and since certain watershed events such as income loss, increased leisure and perhaps social disengagement are associated with retirement (which define being 'old' more than actual chronological age), the 65 year old cut-off point appears reasonable.

The Disadvantaged Consumer

Several situations concerning the elderly place them in a particularly disadvantaged position regarding consumption. For instance, the elderly's level of educational

attainment is substantially below that of the general population (Oberlander, 1978). Although there is no direct correlation between education and "wise" consumption decisions, protective disclosures such as truth-in-lending and nutritional labeling may have less impact on a less literate consumer. Reduced incomes may limit their access to information sources such as television, newspapers or buyers' guides. Additionally, the current method of determining adequate retirement income (such as social security), based on "poverty" standard of adequacy for all without regard to the pre-retirement standard of living, deprives many elderly of a reasonable standard of living (Schulz, 1970). Limited income, physical impairments and discrimination may restrict the elderly's mobility forcing them to shop in more expensive neighborhood stores, as opposed to the discount outlets located in distant areas. Poor health restricting their mobility, thereby curtailing their access to marketplace information regarding alternative sources of goods and services, and feelings of loneliness, can be played upon by salesmen (Nelson, 1978). Negative age stereotyping in the media result in the elderly's poor self-image, which makes them highly influencible. A review of several such product and service areas suggests that whereas the elderly are particularly disadvantaged in certain specific product and service areas, one is unable to generalize this across all product and service areas. (Visvabharathy, 1981). In other words, age-related effects have been found only in some product and service areas and public policy toward the elderly must be confined to these areas.

Age-related effects have been found and public policy implications appear especially in health care, housing, and Social Services. These three areas were chosen for discussion on the basis of (a) proportion of elderly's total income spent and (b) total national investment (both public and private). Even in the areas where age-related effects could be found, one has to be cognizant of the fact that in researching the elderly, there is always the difficult problem of isolating the variance explained by age from other confounding factors such as mobility or poverty.

a. Health Care

In 1975, 30% of the national health care dollar expenditures were spent on the elderly, who make up 10% of the population. Despite the vast health care expenditures in the elderly market, there appears to be a mismatch between the health needs of older persons and the organization of resources to meet these needs. For instance, present health care systems are mainly organized to deal with acute illness, but the illnesses of old age tend to be degenerative and chronic. Unlike some other nations like Denmark, in the U.S., there is no geriatric specialty in medicine. Even the available physician services are not equally accessible to all elderly: the rural elderly have far less of an access than the national average, due to inadequate provision of services and inadequate access facilities.

Another area of concern pertaining to the health care of the elderly is nursing homes. This is a \$12 billion "industry", housing over five percent of the elderly. One of the few areas where more regulation (in the form of licensing requirements) is called for in today's mood in Washington is the area of nursing homes. Representative Claude Pepper (Florida), chairman of the House Committee on Aging recently cited widespread abuses in nursing homes such as inadequate care, fraud and mismanagement. As an

alternative to such institutionalization, home health care services have emerged. While possessing the advantage of more cost-effectiveness (compared to institutionalization) if delivered judiciously, abuses such as overselling of services and deceptive advertising with regard to services rendered have been reported (Lavor, 1978).

Certain aspects of medical care expenses not covered by Medicare, Medicaid or most supplemental insurance plans, such as dental care and certain portion of the drug purchases pose special problems for the elderly. For instance, despite an increased need for dental care, the utilization rate of dental services by the elderly is far below that for the rest of the population. Anderson (1976) found that most elderly would shop for drugs, if prices were advertised. Given the current restriction on price advertising, this may be an area of public policy that needs re-examination. This, however, may only be a partial solution, since doctors may refuse to prescribe a generic drug to the elderly patient.

An additional problem has been in the area of packaging, particularly packaging for drugs. Directions for usage and drug interaction precautions may have to be described in bolder print and perhaps with the use of graphic symbols, which facilitate easier processing of information. To increase readability, dark background colors and highly reflective printing (e.g., white) may have to be used. The package's opening feature (e.g., tear strip) should be clearly identified by a contrasting color (Silvenis, 1979). Since the elderly may suffer from memory and comprehension difficulties, drugs should be packaged in unit doses to fit an uniform administration schedule and packages should be designed to remind the consumer of the proper administration schedule (e.g., seven pills on a card, one for each day of the week). In addition, there is a need for drug disclosures in languages such as Spanish -- this need being greater in some parts of the country than others. Pharmaceutical companies may be made to require to maintain a toll-free number for answering the elderly's drug-related questions, in view of the reading and comprehending difficulties faced by the elderly. These firms currently maintain such a service for answering physicians' questions only.

b. Housing

In spite of the fact that most elderly own their homes, increases in insurance, taxes and utility rates place considerable financial burden on them. This is because of the fact that even though most elderly are asset-rich, they are income-poor. The schemes devised by some of the cities, where some elderly are allowed to defer taxes until their death, at which time the city pays the taxes out of the equity on the sale of the property (before estate settlement) must be considered seriously by many other cities. Banks and other financial institutions in some areas (for instance, North Carolina) offer a scheme of 'reverse annuity rollover mortgages', whereby the elderly are allowed to stay in their homes which are bought by the financial institutions. The institutions make a certain monthly payment to the elderly and upon their death, make a settlement to the homeowner's estate (Weinrobe, 1981). There is a need for clear disclosures in such agreements with regard to the number of years the elderly will receive payments and clear specification of arrangements for periods beyond the specified years, should the homeowners happen to live beyond those years (Nelson, 1978). Similar needs exist in life care contracts.

Conversion of apartments into condominiums places special burden on the elderly because of their inability to make the downpayments. Consequently, many may have to leave the apartments, even if they had been longtime residents of the apartments. The elderly may have to be granted the right of refusal to buy in order protect their rights

as tenants. Although the inconvenience of condo conversion affects not just the elderly, but all those who are poor, significant numbers of those affected are elderly and hence the need for a policy in this area. Fraud in home repairs is another area of concern. Marlin (1978) reports instances of elderly unknowingly signing a contract deeding the home to the repair-person should the homeowner default on payment for the repair work. Again, although this could happen to any homeowner, not just the elderly, the elderly are particularly susceptible to high pressure selling. Clear and unambiguous disclosure of contract terms in non-legalistic language is needed.

There is also a need for greater investment in housing devoted to the elderly. Compared to some of the European countries, total investment in housing devoted to the elderly in the U.S. has been meager. For instance, over 15% of all new housing units in England and Wales were devoted to the elderly in 1972, compared with less than 2% in a period of ten years (1962-72) in the U.S. (Madge, 1960). The difference in figures is significant, after adjusting for the differential numbers of the elderly in the two countries. Even the small number of units built may not be in the most desirable locations, like close to shopping and other conveniences. Private investment in housing for the elderly by way of retirement communities has benefited only a minority of the elderly, since the elderly market is not very attractive to a profit-minded developer. Hence the need for greater public investment.

Some policy considerations in the architecture and design of houses for the elderly are also of interest. By retirement time, most elderly find themselves in oversized homes (due to the absence of children and reduced mobility) with attendant maintenance problems. An architectural solution has been suggested (Madge 1969). This is to include houses of various sizes in a planned community, so that the elderly can move to a smaller house in the same neighborhood, after retirement. Safety features in construction such as maximum use of fire-resistant materials, avoidance of fixed steps and changes in levels to reduce the effect of falls are also important. Special housing codes may be needed for persons with decreased mobility, which includes a large number of the elderly.

c. Social Services

A number of social services, particularly geared toward the elderly have emerged. These include meal services, friendly visitors, transportation services, senior centers, rehabilitative services, and information and referral services. The 1973 Comprehensive Services Amendments to the Older Americans Act provided funding for such services as meals on wheels and congregate dining. Friendly visitors provide company and 'listen' to the elderly's problems. Transportation services specially geared toward the elderly and the handicapped include specially designed vehicles and dial-a-buses. Senior centers, usually neighborhood-based, afford opportunities for socialization, communal dining and voluntary services. Rehabilitative services include physical as well as social and emotional rehabilitation. Information and referral services provide basic information and refer the elderly to requested and/or needed services and evaluate whether the elderly got the needed services and how useful they were.

Some common areas of concern for public policy can be identified with regard to these services. First of all, most of these services, in general, do not recognize the wide range of age, social, cultural and racial differences to be found within the elderly population of communities. Second, some of the services like rehabilitative services and services to the blind and hard of hearing are still biased toward the young and the potentially employable. Third, the personnel providing these services have not, for the most part, had special education and training in the

field of gerontology. This is due to the fact that most professional schools do not include materials on the elderly in their curricula and consequently do not prepare students for gerontological careers. Fourth, the limited nature of transportation services available restrict the elderly's access to these services. In this respect, the rural elderly are particularly disadvantaged. Fifth, one of the main barriers to effective provision of service is the lack of co-ordination among and organizational approaches to (bring together) medical, social, environmental, and, at times legal services (Beattie, 1976). Sixth, currently there is a lack of emphasis on preventive care for the elderly. Public health services should consider instituting geriatric well-clinics, similar to well-baby clinics to provide preventive services.

d. Other areas

Apart from the three areas discussed above, viz., health care, housing, and social services, a number of other areas deserve mention. These include, but are not limited to insurance, funerals and cemeteries, credit, automobile purchases and repairs, appliance repairs, and senior citizen discounts. Although several public policy questions need to be addressed in these areas, it is the belief of the author that attention should be devoted to these areas only after some progress has been made in the three more pressing areas of health care, housing, and social services.

Research Issues

A number of research issues can be identified in the area of elderly consumers and public policy needs regarding the elderly. First of all, given the fact that age-specific effects could be found only in some product/service areas and not others, it is necessary to develop a reasonable taxonomy of products/services where such age-related effects can be found. Public policy geared toward the elderly must be limited to those product/service areas. In studying age-related effects, the issue of the confounding effects of other variables such as mobility or reduced income must be addressed. A methodological issue in studying age-related effects is whether the 'age' variable should be categorical or continuous. Recent research evidence (Whearley, Chiu and Stevens, 1980) indicates that better results are obtained by using a categorical approach.

Second, what are the typical requirements of a health care system oriented toward degenerative and chronic illnesses? What type of supporting facilities such as equipment, or ambulatory care are required? Perhaps, one may find that long-term care of chronic illnesses demands more of physicians' (or perhaps, physicians' assistants') time, but do not require huge investments in equipment such as CAT scanner. Can the home health care system be expanded to at least partially serve the needs of long-term care? What special skills of the providers will be needed, in such a case?

Third, how are different segments of the elderly disadvantaged differently? In other words, how are the black and hispanic elderly disadvantaged, when compared with the white? What differences exist between men and women? Would protective disclosures in languages such as Spanish have any effect for example, in making the hispanic elderly better consumers? What are the best media for communicating with say oriental and hispanic elderly? What should be the message characteristics?

Fourth, what are the best ways of 'gerontologizing' business school curricula? A knowledge of the elderly as consumers, their special problems and needs is essential, if to-day's students are going to be to-morrow's policy-

makers or even business executives who are interested in marketing products tailored to the elderly segment of the population.

Fifth, among social services, information and referral services are an important component, since they serve the function of 'gatekeeper', allowing potential entrants into the system of comprehensive social services and in view of the huge public investment in these services (\$5 billion in 1972). Yet very little is known about its usage or effectiveness. Specifically, questions such as the following need attention (based on McCaslin, 1981):

What is the profile of a typical user of information and referral services? What proportion of the elderly are aware of their existence? How do different sub-groups of the elderly such as black or hispanic come to know about the existence of the services? What proportion of them are aware of the existence of the services?

What are the structural requirements of an "ideal" information and referral system? What skills should the personnel manning these services have?

What is the relative effectiveness of different methods of provision of information and referral services, such as telephone and face-to-face in a neighborhood center setting? Does the effectiveness vary across ethnic subsegments?

Conclusion

This paper identified three major areas, where public policy attention regarding the elderly needs to be focused. These are health care, housing and social services. Some policy needs in each of the areas were outlined. Finally, some important research issues regarding public policy toward the elderly were identified.

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ELDERLY SOLITARY SURVIVORS AND SOCIAL POLICY:
THE CASE FOR WIDOWS

Benny Barak, Baruch College - C.U.N.Y.

Abstract

This paper examines social programs of the aged, their social support system, as well as the particular characteristics and problems of the widowed as a special elderly subpopulation. The conclusion is that to aid aged widows new social policies, which require special research efforts, are to be developed outside the formal federal framework.

Introduction

The essence of present-day public policies towards the elderly can be summarized as follows: (1) the governmental focus on programs in behalf of the aged has risen dramatically over the last two decades, (2) the economic status of the aged population in general has improved significantly as a consequence of governmental old age policies, and (3) there are still many unmet needs among the elderly, especially among subpopulations such as widows.

Nearly one-quarter of the federal budget is devoted to the elderly and because of this federal effort large numbers of older individuals are better off than in the past; yet, a considerable percentage of the population remains in poverty and in poor health (Hudson, 1980).

With the Reagan administration's inclination to limit if not halt the growth of federal social programs directed towards the elderly, the former ground rules of old age policy are changing. Social policy makers are facing an environment in which public expenditures have become unpopular even for the aged. Public policy research indicates that policy makers are more inclined to support and help the aged than any other social welfare constituents (Hudson, 1980), yet a continuation of the growth of public spending for the aged is not to be expected.

The change in direction of old age policies demands an alternative approach towards assisting the elderly, an approach which will not rely so heavily upon federal economic aid. This change also implies a greater need for research on how to improve the present support systems for the aged, which at present stress a formal organizational approach rather than informal support. Another consequence which bears investigation is the effect policy changes might have on the present aging-oriented organizations which presently consist of relatively well-off elderly who function as special old-age interest and lobbying groups in Washington with their activities and orientations shaped to a great extent by their membership bases and professional associations (Hudson, 1980). What is of special interest here is how these aging-oriented organizations are to react to a shift in public policy from a "body count" approach to an approach which stresses the "targeting of limited resources." Such a shift implies that resources will be directed especially towards the vulnerable subpopulations of the elderly (e.g., poor widows), which at present are not well represented in the old-age interest groups (Posman, 1980).

Little is known about the subpopulation of aged widows; yet the widows form one of the largest, poorest and neediest segments of the elderly population. In order to assist proper targeting of the limited resources mentioned above it is necessary to know more about them, especially concerning their needs and wants.

This paper will endeavor to discuss: (1) the major social programs for the elderly, (2) social support systems and their relevance to the aged, (3) the elderly solitary survivor population with particular attention given to widows and their specific wants and needs, and (4) recommendations.

Formal Social Support Programs

The elderly enjoyed more policy legitimacy and more concern this century than did any other population group. They received support from political decision makers and the populace in the area of old age policy benefits. That these old age policy benefits show the concern of policy makers is exemplified in the whole range of public enactments ranging from basic Social Security benefits in the 1930's to the benefits provided in the sixties and seventies to the elderly (e.g., Medicare and Supplemental Security Income). These benefits were not only at the federal level but also at the state and local levels (e.g., property tax relief legislation and discount fares). The costs of Social Security programs alone is in excess of \$120 billion in fiscal 1981 (Time, 1981).

An important component of the present status of many of these programs (especially Social Security) is that unlike other entitlement programs (e.g., school lunches), the older population, and those in their late "middle age" years, view these programs as a basic and sacred right. The most important formal social support programs for the aged are at present:

1. Social Security, a program perceived as a form of retirement for the elderly. A major problem to the program is its cost (over \$120 billion), which causes much of all federal receipts to be for Social Security, and over half the American population pays more to Social Security than to the Federal income tax (Monk, 1980). In 1979 6.2 million solitary survivors received social security payments (Muller, 1980), and it is self evident that the support provided by Social Security is of crucial importance to a great many widows. This is also clear from data indicating that many poor widows make use of the special provisions which enable them to receive social security benefits before age 65, although those benefits are then permanently at a lower level (Rogers, 1981).
2. Supplemental Security Income (SSI) is a minimum guaranteed income to the poorest among aged Americans. It is a program which is funded from general revenues, and in 1979 there were over 990,000 solitary survivors who received SSI benefits (Muller, 1980). A special problem associated with the program is that it is a form of welfare with attendant qualifying checkups by agencies.
3. Medicare is a program started in 1965 to help pay medical bills for the aged (65+). The program, mainly because of the abuse by the bureaucracy associated with it, is likely to feel the ax of the federal budget cutter. This notwithstanding its importance to the elderly; one seventh of the aged consider themselves to be in poor health (Hudson, 1980). It is an important facet of the present Medicare program that it starts at age 65 regardless of employment, and is therefore not an incentive to either stop or continue work.
4. Aid to Families with Dependent Children is a federal program that has changed tremendously over time. At its

inception in 1935 it was intended for assistance to widows with children, yet today 80% of the beneficiaries are single parents whose mates have deserted them (Time, 1981). In 1936, 534 thousand people received a total of \$21.3 million in payments, while in fiscal 1981 the Federal Government will pay out \$7 billion to 11 million recipients (Time 1981). Widows in their fifties are among those who still benefit from this program, at least if they have dependent children.

The cost of the above discussed programs and the large percentage of the federal budget devoted to them have brought about strong pressures for change and constraint. In 1981 a large part of political effort has been spent on attempts to modify and streamline programs, especially since the most important of all federal programs (Social Security) is in serious financial trouble.

Social Support Systems

Before discussing how changes in social policy might affect the social support system of the elderly, and how a social support system can provide assistance to the aged, it is necessary to first examine the notion of social support systems and its function.

A social support system can be defined as: "A pattern of continuous or intermittent ties and interchanges of mutual assistance that plays a significant role in maintaining the psychological, social, and physical integrity of the individual over time" (Cantor, 1980, p. 133).

A social support system enables the aged to fulfill three social needs: (1) socialization, (2) carrying out the tasks of daily living, and (3) personal assistance during times of crisis (Cantor, 1980).

An older person interacts and has ties with a variety of subsystems in a social support system, this interaction (or interface) ranges from subsystems that are remote and peripheral (in terms of social distance) to those that are close to the daily life of an older individual; the most important subsystem from the point of view of the individual is the one closest to his/her daily life.

Cantor (1980) envisions social support subsystems to be perceived by the elderly according to the following hierarchy of importance:

- I. Formal Peripheral Organizations:
Political and economic entities which determine the basic entitlements available to all older people, these affect their well-being in income maintenance, health, housing, safety, etc.
- II. Formal Governmental and Voluntary Organizations:
Agencies that carry out the economic and social policies by providing the actual services mandated under laws such as Social Security and Medicare.
- III. Quasi-Formal Organizations:
These organizations (or their representatives) perform a helping function with respect to the elderly in roles such as: shopkeeper, postman, building superintendant, and friendship delegations from churches. They resemble the informal support system, yet originate in and belong to formal organizations.
- IV. Informal Support Systems:
The significant others who are closest to the daily life of an older individual such as kin, friends, and neighbors with whom the elderly have the most frequent interaction and who compose the broad basis of the social support system in the United States.

is the best in most circumstances of need, an older person will turn to this network first and most frequently, only when this support is not available, are formal organizations turned to (Cantor, 1980). The belief in and reliance upon the informal system in no way negates the acceptance of the role of government and other formal organizations in providing economic, health support and other help (Cantor, 1980). To the older individual it is the mixture of informal (family, friends and neighbors) and formal societal services (e.g., Social Security and foodstamps) that constitute the social support system. In a successful social support system both the formal and informal subsystems combine to help strengthen an older person's sense of mastery of self and the environment.

The Elderly Population

Every day 5,000 Americans celebrate their 65th birthday, and this while 3,400 persons aged 65+ die in the course of a day, creating a net population increase of the 65+ age group of 1,600 a day or 600 thousand per year (Brotman, 1981). In the case of women aged 55 and over this growth is exemplified by the population increase for the 1970 decade; on census day 1980 there were 6.4 million more women 55+ than in 1970, an increase of more than 30% (U.S. Bureau of the Census, 1981), in 1980 women 55+ formed 22.5% of the total resident female population of the United States, 12.2% in the case of women 65+ (U.S. Bureau of the Census, 1981).

The change in the aging population is not only a matter of numbers, it also involves a different type of person joining the ranks of the aged. Members of each additional cohort becoming elderly are of higher socio-economic status and education, and enjoyed better health care during their early and middle years; they tend to be better able to provide for their retirement years because of maturing pension schemes (Hudson, 1980).

Solitary Survivors

In the 1980's the term solitary survivors can more appropriately be used to indicate those who survived to an old age and live by themselves, rather than the elderly who survived their spouse. In this paper the term "solitary survivors" therefore refers to aged unrelated individuals.

It is only recently that much attention has been devoted to single-adult households (Kotler, 1980; Wortzel, 1976). These single-adult households are almost automatically assumed to be chronologically young. Yet a very large proportion of aged Americans (especially women) are not married and live by themselves (see Table I). The data as provided by the Bureau of the Census (1980) is striking; 53% of women aged 55 and over, and 61% of women aged 65 and older are not married.

Another facet of life of the aged which is relatively unknown is that so few elderly persons live in institutions. Probably because of the attention given by the media to institutions such as nursing homes whenever the subject of the elderly comes up, the stereotype of an aged citizen is that of a frail individual living in an institution. In reality, only one in twenty among those over 65 live in institutions (Allen, 1981; Shanas, 1980), and the institutionalized population is counted separately by the Census Bureau. So, when the census count showed that on April 1st, 1980 17.8 million householders lived by themselves, and that 7.1 million of these householders (i.e., 9% of all households in the U.S. and 40% of all single-adult households) were aged 65 years and older, this count did not include the institutionalized population (Bureau of the Census, 1981).

but to become totally dependent upon society.

TABLE I

MARITAL STATUS OF THE RESIDENT POPULATION OF THE U.S.
BY SEX AND SELECTED AGE GROUPINGS IN 1979
(in thousands of persons except as indicated)

	AGE GROUPINGS				
	18+	45-54	55-64	65-74	75+
MALES	(72,716) 100.0%	(11,036) 100.0%	(9,744) 100.0%	(6,385) 100.0%	(3,163) 100.0%
Singles	23.3%	6.9%	5.2%	5.6%	4.9%
Married	69.2%	85.6%	86.7%	81.3%	68.9%
Widowed	2.7%	1.8%	3.4%	9.3%	24.0%
Divorced	4.8%	5.7%	4.7%	3.9%	2.2%
FEMALES	(80,629) 100.0%	(11,790) 100.0%	(10,887) 100.0%	(8,382) 100.0%	(5,245) 100.0%
Singles	16.9%	4.4%	4.6%	6.0%	6.2%
Married	63.5%	79.7%	70.1%	48.8%	21.9%
Widowed	13.0%	7.6%	18.8%	41.2%	69.7%
Divorced	6.6%	8.2%	6.5%	4.0%	2.2%

Source: U.S. Bureau of the Census, 1980.

The Elderly Widows

A large proportion of the female solitary survivors are widows. In 1979 more than 9.2 million women 55+ were widowed, this implies that one out of three women over 54 years old had suffered the loss of her spouse, and in the case of women 65+ 7.1 million (or 52% of that population) were widowed (U.S. Bureau of the Census, 1980). Of this widow population aged 65 and over 5.8 million lived as householders (head of a household), with 4.7 million (67% of all widows 65+) living alone by themselves; the rest of the aged (65+) widows numbering 1.3 million were living with their families as non-householders (U.S. Bureau of the Census, 1980).

Since women in the United States customarily marry men older than themselves (Matthews, 1979), and women tend to outlive men, there are many more widows than widowers; the ratio between widows and widowers aged 65+ is more than five to one, to be exact there were in 1979 526 widows per 100 widowers (U.S. Bureau of the Census, 1980).

Living Arrangements of Aged Widows

Two out of three widows 65+ elect to live by themselves, an option that became feasible as the result of rising levels of Social Security benefits and other pension programs, as well as the rise in incomes in general (Matthews, 1979). Most old people prefer to live near, but not with their offspring; they want to be close enough to see their family often (especially their grandchildren), but they also want to maintain their own households as long as possible and to do so the majority of the elderly live within ten minutes distance from their children (Shanas, 1980). Moreover aged parents (65+) who live alone are as likely to see their children (or at least one of them) during a typical week as are the aged who live in large households (Shanas, 1980). These data indicate that elderly widows living alone are not necessarily totally isolated from society. Such isolation might be more likely in the case of poor aged widows without children and fewer choice options in the selection of their domicile, yet even in those circumstances strong community support is often to be found (Cantor, 1980).

Nonetheless social isolation is likely to become a problem that will occur with greater frequency in the 1980's as a consequence of rising inflation which might force aging widows to seek help with housing from their relatives, and if their family is poor, they would have no other option

Economic Status of Aged Widows

Specific information about the economic status of widows can be found in a study conducted by Rogers (1981) for the Social Security Administration. Widows, unless they are disabled or still care for dependent children, are not eligible for benefits under the old-age, survivors, and disability insurance (OASDI) program until they reach age 60. Once they are 60 they are eligible for aged surviving spouse benefits on the basis of the earnings record of their deceased spouse. At age 62, if they have sufficient credits under their own earnings record, they also become eligible for retired worker benefits. If they decide to receive these benefits at such an early age, they can expect a reduction of 28.5% at age 60, and a reduction of 20% at age 62 (Rogers, 1981). In Rogers' study many aged widows elected to do so, and 41% of the widows in her sample decided to receive their (OASDI) benefits at ages 60 or 61, 31% of the sample elected to receive benefits early at age 62-64. All those doing so, with the exception of recipients (7%) of disabled worker benefits, incurred a permanent reduction in the benefits they would have received at age 65. At least 61% of the widows who had decided to receive social security payments before age 65 felt that their economic status had improved relative to the period prior to their receipt of benefits, this notwithstanding the reduced benefit penalty (Rogers, 1981). The majority of the non-employed widows in her sample elected to collect benefits early. To put the discussion of OASDI benefits in perspective it is worth noting that in May 1981 the average monthly benefit awarded to the widowed was a monthly payment of slightly over three hundred and two dollars (Social Security Bulletin, 1981).

Overall the economic status of aged widows (65+) is worse than that of other solitary individuals at that age range; in 1975 over 62% of unrelated persons living below poverty levels were widows (Muller, 1980).

Because the plight of the poor elderly such as widows has come to the attention of policy makers (Hudson, 1980), it is to be expected that they will be among the "targets of limited resources" in the new social policies that are likely to be developed in the 1980's.

Aged Widows and Their Problems

In order to investigate the wants and needs of widows relative to their social support systems, Lopata (1979) conducted extensive survey research in the early 1970's among the widow population of Metropolitan Chicago. She summarized her conclusions concerning these wants and needs in the form of a list of the problems they face as a consequence of widowhood. The sequence of these problems as listed below is Lopata's (1979):

- A. Problems Common to Widows of All Ages:
 1. Lack of opportunity to grieve.
 2. The need for a return to traditional rituals (or the need for the development of new rituals) surrounding the death.
 3. Lack of emotional supports after the official mourning period.
 4. Bad advice from people who do not understand the widow's situation and who force decisions on her which she later regrets. The need is for action on the part of significant others which builds the widow's self-feelings (e.g., competence, self-confidence, importance).
 5. Lack of supports for the children, whose need for knowledge and for grief is largely unrecognized.
 6. Lack of companionship, alleviation of loneliness, lack of escorts.
 7. Lack of self-help groups concerned with the solution of some of the above-mentioned problems.

8. Lack of job training resulting in poorly paying jobs.
9. Financial problems early in widowhood resulting in some long-range dysfunctional decisions.

B. Problems Peculiar to Older Widows:

1. Inability to earn an income and high probability of poverty.
2. Inadequate information about part-time jobs.
3. Agism, or stereotyping of people by age.
4. Inadequate facilities in many communities for social contact with peers.
5. Fear of rejection, which causes less utilization of existing resources.
6. Sexual imbalance, making male companionship very rare.
7. Inadequate, often dangerous, housing - a barrier to social contact.
8. Lack of contact to prevent or handle emergencies.
9. If house-bound, lack of social contact, as well as lack of medical and dental care; and lack of adequate nutrition.

In addition to the above problems, of course, different lifestyles and circumstances (e.g., living in poverty) bring different needs and wants. The main problem is that many widows do not have sufficient contact with people who will listen to them, and try to help solve their needs as they define them and not as an observer defines these needs (Lopata, 1979).

Conclusions and Recommendations

Social policies towards the elderly are likely to change in the 1980's, these changes are likely to mean an end to the growth of federal economic aid to the aged. Probably the greatest potential for changes and growth can be expected in the informal and quasi-formal subsystems of the social support system of the elderly.

To enable social policy makers to succeed it is necessary to gain more knowledge and understanding about the interface of the aged with these social support subsystems. Special research attention needs to be given to widows, since so little is known about their problems beyond the works of Lopata (1979) and Matthews (1979).

An example of research of this nature would be the investigation of how to streamline the helping functions of quasi-formal support organizations. Here marketers could be of special assistance through the direction of research and development of products and services which could help widows to feel less isolated from their community and society. Research that also deals with social support systems, but which is more oriented towards the informal component, would be concerned with the development of services to help widows address specific problems such as the lack of self-help groups. Some services of this nature have already been developed; for example, the Widowed Persons Service (sponsored by three different organizations of the aged) provides a widow-to-widow program which arranges for a widow to contact another widowed person to provide empathy in the period following the husband's death. Another example of a new service would be the "reverse mortgage" program, which enables aged widows to be less economically dependent on Social Security and which allows these aged widows to utilize the value of their homes (of course only if they own their homes) to achieve economic independence and a sense of self-worth in the last years of their lives.

In concluding, it should be stressed that lack of attention to the special needs of aged subpopulations such as widows is the greatest stumbling block to efforts expended in aiding this population.

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INFORMATION PROCESSING AND THE OLDER CONSUMER:
MARKETING AND PUBLIC POLICY IMPLICATIONS

Ivan Ross, University of Minnesota

Abstract

The paper summarizes selected psychological literature describing information acquisition, storage, and retrieval research as it helps to explain consumer information processing characteristics of older consumers. Recent survey data describing media and shopping habits and attitudes are discussed.

Introduction

The last several years have seen an explosion in books, articles, and journals devoted to physiological, psychological, economic, and socio-cultural factors associated with aging. Primary journals are the Journal of Gerontology and The Gerontologist, published by the Gerontological Society. Recent books of particular note on the general issues are by Aiken (1978), Johnson and Williamson (1980), Ward (1979), Spratt (1980), Schwartz and Peterson (1979), Botwinick (1978), Oyer and Oyer (1976), and Birren and Schaie (1977), but only one compilation of research on older consumers per se exists (Waddell, 1976).

The "older" American is becoming more numerous, both in absolute and relative terms. The 1980 census counted approximately 59 million Americans as age 50 or older, more than 26% of the population, and about 25.5 million as 65 or over, about 11.3% of the population (Robey, 1981). Their presence has become more important to both the private and public sectors as their numbers have grown. Literally hundreds of federal programs, agencies, and councils have been created, mostly within the past 15 years, to address special needs of older Americans. Indeed, there is now an "Aging Enterprise" (Estes, 1979), although some have questioned whether these various policies were enacted to serve the interests of older persons or, rather, the various interest groups who profit from serving this segment of society.

The American Association of Retired Persons (AARP) now numbers about 9 million members, and publishes the magazine, Modern Maturity. The National Retired Federal Employees, and the National Council of Senior Citizens, are other "older American" organizations whose numbers are increasing dramatically. Magazines such as Dynamic Maturity, 50 Plus, and Prime Time, and television programs such as "Getting On", and "Over Easy", reflect the growing recognition of the older American as a distinct market segment.

Several recently published papers have focused on information processing characteristics of older consumers (e.g., Meadow, et. al., 1981, and Phillips and Sternthal, 1977), and this paper will not be duplicative of the substantial literature reviews and interpretations contained therein. Rather, the author will briefly review some of the psychological literature describing information acquisition, storage, and retrieval research as it helps to explain consumer information processing characteristics of older consumers. Then, recent survey data describing media and shopping habits and attitudes will be discussed.

Information Acquisition, Storage, and Retrieval

The logical starting place in reviewing information processing issues is to focus on sensory research among older persons as it impacts their ability to acquire, store, and retrieve information. Only a cursory review is possible

within the limitations of this paper, but the interested reader will find more detail in the references cited in the introduction.

Intelligence/Learning/Memory

That most human abilities show progressive decline after age 25 or so is typically asserted in every psychology textbook. In his reviews of extant literature Botwinick (1977, 1978) concludes that intellectual abilities do show general declines but moreso in tests of intellectual functioning which measure psychomotor skills (especially when speeded or when involving perceptual-manipulative intergration) than in measures which stress stored information and verbal ability. Schaie (1980) in his review of both cross-sectional and longitudinal data concurs and concludes that decrement is not universal on all intelligence components and for all people until the late 80's and that decrement is mostly on abilities which require speeded responses. There are clearly wide individual differences and for many people there is apparently very little, if any, decline.

In studies of human learning, most are conducted with manipulation of both information acquisition time and of response (performance) time. It is important to distinguish between the two when addressing learning differences with age. There is evidence that both acquisition time and response (performance) time is slower with age, but when acquisition and response can be self-paced, there is less (but still significant) difference in learning quality with age (Botwinick, 1978, p. 277-278).

In their review of the "pacing" literature, Phillips and Sternthal (1977) conclude that whatever diminution in processing speed exists among older persons, if they are given sufficient time needed or wanted to process information, there ought be little, if any, impact on resultant learning.

With advancing age both search and retrieval of more recently learned memories as compared with older memories is impaired (Botwinick, 1978, p. 360). However, some researchers find little or no age declines in memory span or storage. For example, Kriauciunas (1968) found memory declines with age only for subject matter presented with competing stimuli, which he argues could be attributed to diminished motivation/energy and speed of performance.

Vision

Substantial visual changes occur with age, and since most consumer behavior-relevant information is presented visually (newspaper, magazine, direct mail, television, instruction brochures, product labeling, etc.), this sensory modality has the most impact on the subject addressed in this paper.

Visual perceptual functioning changes with age are mediated by two classes or stages. First, between the ages of 35-45, the transmissiveness and accommodative capabilities of the eye, affecting distance vision, glare and color sensitivity, and binocular depth perception, begin to deteriorate. Second, between 55-65, changes occur in the retina and nervous system which influence the size of the visual field and sensitivity to low quantities of light and to flicker (Fozard et. al., 1977, p. 497).

Botwinick (1978) states that by age 70, without correction,

poor vision of one sort or another is the rule (p. 142). Presbyopia (farsightedness -- loss in ability to focus on near objects due to loss of elasticity of the eye lenses), and cataracts (causing glare problems) are common after age 70.

TABLE 1
Legibility and Quality of Printed Information

Relative Legibility	Quality of Information	
	Poor	Rich
Low	Commodity contents and ingredients Labels on food packages Labels on prescription and non-prescription drugs	Instructions for use of various commodities Newspapers Publications of U.S. Government Printing Office Publications of major nursing home chains
High	Billboards Brand names or commodities Traffic signs	Social Security Administration Publications Magazines for older readers

Source: Bader, 1979, p. 11

A survey reported by Eger (1976) undertaken by the American Optometric Association among 3000 "senior citizens" found that:

"Nearly one-third of those surveyed feel their inability to see well prevents them from performing different activities such as household chores, recreation, business, etc...nearly 30% have difficulty watching television, and among those surveyed who drive, 8% have some trouble driving during daylight hours, while 45% have some trouble or can't drive at night...only about 15% of those surveyed categorized their vision as excellent" (p. 166).

Bader (1979) has classified the relative legibility as well as the "quality" of information (as an aid to decision making) of various printed materials (see Table 1). Note that in the upper left cell, special problems are suggested in the ability that older consumers may have to read label information. Indeed, Silvenis (1979) notes that a person wearing bifocals cannot clearly focus a print image at a distance of 15 inches. With federal regulations requiring more information on product labels, the resultant small print size is apt to pose difficulties. That such difficulty occurs is shown in surveys conducted by Mason and Bearden (1979) and Lambert (1979) and may help to account for the fact that older consumers show substantially lower levels of familiarity than younger with nutritional labeling, open-dating, and unit pricing (Bearden and Mason, 1979).

Silvenis (1979) and Bader (1979) make several suggestions regarding implications of visual acuity difficulties older consumers may face:

1. Increase levels of illumination. Generally, after age 45, 100% more illumination is needed every 13 years.
2. Use non-glare paper stock and absorptive background colors with highly reflective printing but avoid glossy surfaces or florescent colors. Even though reds and yellows are easier to distinguish than greens and blues, Silvenis (1979) notes that many companies have chosen green and blue as dominant packaging colors.
3. If small printing is necessary, use black on flat white, light tan, or light grey backgrounds. Avoid script type or other stylish forms of print. Bader (1979) recommends Bookman, Century School book, or Helvetica typeface and type size of at least 11 point.
4. Use underlining, boxing, or other forms of emphasis

on labeling or instructions. Contrast the ingredients, net weight, directions for use and product cautions, and include the same information in a large print insert where packaging is involved.

In many cases it may be impractical for companies to adapt their visual information systems (e.g. package color and print size) or lighting environments (e.g. retail store illumination levels) to accommodate special needs of older consumers, and on the other hand, there may be few instances where older consumers compose a sufficiently large segment of the market for a particular product or service, or, across products and services, within a specific store trade area, that special information strategies suggested above may be useful. Exceptions would be products and services primarily intended for older consumers and stores located in "older consumer" communities. However, for example, when pharmacists encounter an older consumer who may appear to have vision problems, it would obviously be wise to determine if the patient is able to read the instructions. It may well be true that if such a person has vision difficulty, there may be no other person in his/her household to assist, given the disproportionately larger number of older persons who live alone.

Hearing

Advancing age typically results in presbycusis, that is, a progressive bilateral loss of hearing for high frequency tones (Corso, 1977). Other physiological changes in the auditory system affect thresholds for pure tones and speech and differential thresholds for pitch discrimination, speech discrimination, and information processing as in dichotic listening (where different stimulus material is presented to each ear). Generally, in the presence of background noise or when others are speaking rapidly, the older listener has difficulty. Rapid speech declines in intelligibility because of the longer persistence of auditory traces for one word or sound which interferes with processing the next word. Thus, there is an "earlier fusing" of words or sounds among older as compared with younger people which makes for greater unintelligibility (Botwinick, 1978, p. 165). Bettinghaus and Bettinghaus (1976) note that hearing impairments which come later in life pose more problems than if at a younger age since for the latter, programs exist to teach sign language in school whereas no such programs generally exist for persons whose impairment comes later in life.

Thomas Dupont, senior vice-president of Oxtoby-Smith, suggests that changes in hearing (as well as in vision and memory) among older people causes them to process information differently which directly impacts rules which ought be followed in packaging and television advertising:

"Avoid cluttering ads or packages with too much visual information. Use action in commercials if it's relevant and isn't distracting. Avoid "talking heads", fast-speaking characters or those who don't enunciate clearly. Present a clear, bright and sharp picture. Keep the language and message simple, with the focus on one or two selling points. Relate new information to something with which the audience is familiar" (Dupont, 1981).

Olfaction, Touch and Pain

Smell and taste sensitivity have been subject to less research than visual and auditory acuity. There is some albeit mixed evidence that with advancing age there is a decrease in taste sensitivity and a change in test preferences (e.g. bitter shows increasing aversion with age), but little or no measurable change in smell discrimination or preference (Engen, 1977).

Most somesthetic thresholds (e.g. two-point touch, vibratory, thermal, tactile) show increased values (i.e. lower sensi-

vity/discrimination) with age (Kenshalo, 1977), but subjective perceptions of pain may be very common among older persons (Botwinick, 1978).

Problem Solving

In their review of the psychological literature, Arenberg and Robertson-Tchabo (1980) and Botwinick (1978) conclude that problem solving skills show consistent decline with age, particularly for those in their seventies. Further, older people clearly prefer and perform better with tasks or problems which are structured in concrete rather than in abstract terms, although educational attainment may account for some of this tendency (Botwinick, 1978, p. 241). Older people are also less able to ignore irrelevant information in problem solving tasks and, therefore, redundancy may interfere with both speed and accuracy of problem solving (Botwinick, 1978, p. 257). Inflexibility of thought or rigidity has also been related to aging. Although the evidence is mixed, it appears that older people may be at a special disadvantage when information is presented which contains both positive and negative instances of the same problem, but when the specifically relevant information is left unspecified (Botwinick, 1978, p. 257). Similarly cautiousness in problem solving/decision making is often observed among older people which may stem from general discomfort with the uncertain and/or with the expectation and fear of failure. This accounts for the frequent finding that older people value accuracy over speed and will often avoid responding altogether if there is a chance of making a mistake. In general, older people do not tend to risk being wrong for the sake of being right or fast (Botwinick, 1978, p. 125).

This propensity toward cautiousness has been variously explained. For example, Oyer (1976) concludes that:

"The rate of socialization or the rate at which people absorb information from their environment decreases in the older years, so that younger people tend to absorb more from present stimuli than do older ones. By comparison, younger people have more of a tabula rasa, or "blank sheet", that, like a blotter, is ready to absorb the new. But older people possess an experience base that usually permits them to evaluate in a more cautious manner the surrounding events" (p. 45).

And, Botwinick (1978) speculates:

"Why do the elderly behave in a way suggesting that greater certainty and structure is desirable? First, there is decline in certain functions in which older people have shown inclinations toward cautiousness. Second, the social order values youth, not old age. Society meets man's aging with rejection and expectation of failure. It is to be expected, then, that aging man would withdraw, desire certainty, and inhibit his response to avoid mistakes. Third, other personality variables may relate to cautiousness. Anxiety, for example, thought to stem from feelings of inadequacy, may make for general withdrawal and cautious response" (p. 126).

Media and Shopping Attitudes and Behaviors

Schutz, Baird and Hawker (1979) conducted an intensive study of 309 non-institutionalized adults aged 45 and over residing in the San Francisco/Oakland SMSA. They found that personal judgment and experience were reported as the most frequently relied-on sources of consumer information, followed by advice of family and friends and then, printed information (magazines, newspapers, Yellow Pages, labels, etc.). There was no apparent relationship between age (within this age range) and store choice nor for a variety of most other shopping behaviors. However, Bernhardt and

Kinnear (1975) found that those over 65 were more likely to shop at traditional department stores and showed willingness to travel to downtown shopping districts and to pay higher prices for department store merchandise. A similar preference for favoring "downtown" stores for shopping consumer durables was reported by Mason and Smith (1974).

A number of surveys and reviews of the literature show that information (and entertainment) carried on television and in the newspaper is disproportionately more time-consuming and important to older than to younger people (Atkin, 1976, Bernhardt and Kinnear, 1975, French and Crask, 1977, Stephens, 1981, and Schramm, 1969).

An update on general media and shopping attitudes and behaviours of Americans is provided by a major advertising agency (Needham, Harper and Steers, 1981) as part of its annual "Life Style Study" survey of approximately 4000 U.S. adults conducted through Market Facts' Consumer Mail Panel. This sample closely represents 1980 U.S. Census statistics on age (among other parameters), but may not faithfully represent data on the "65 and over" segment since almost 98 percent of males and 99 percent of females in this sample reported living with a spouse, a much higher percentage, of course, than actually in the population. Also, the fact that this was a mail survey may especially influence the atypical nature of older respondents on dimensions related to information processing.

Nevertheless, Table 2 contains readership data on four daily newspaper sections. Generally, age is positively associated with newspaper readership for both sexes. Older respondents (65 and over) were more apt than younger to be readers of the news, food, and comics section. And although readership of the business section peaks in the 45-54 segments, it is almost as high (for males) in the two older age segments (55-64 and 65 and over). Thus, whether for "information" (news, business, food) or "entertainment" (comics), readership frequency increases with age.

Table 3 reports results for television and radio. Older Americans are heavier than average viewers of television and listeners to AM radio (both weekdays and weekends), although few differences appear after age 35. FM radio, however, shows a reverse pattern, with those people under age 35 spending more hours with this medium.

Several issues reflected in the Needham, Harper, Steers survey bear on the general question of information processing. One set of questions, for example, dealt with shopping styles and general information gathering activity. Table 4 shows these results.

The first three behaviors might be said to describe "wise purchasing propensity" or an "economy orientation"; used a "price-off" coupon, bought a generic product, and shopped at a discount store. Overall, of course, females are more apt than males to have done all of these things because they still are apt to do disproportionately more of the shopping for the household, but note that in the "65 and over" category there is much less sex difference...in fact, men are more apt than women, in this age category, to have bought a generic product in the past 12 months. This pattern of similarity may well suggest that there are fewer shopping style distinctions among older than younger consumers, although, again, this may be due to social and economic forces rather than to age, per se.

Aside from the fact that older people are more similar in these three behaviors than younger, it is also true that in the first two behaviors..."price-off coupons" and "bought a generic product", there is not much difference across ages, holding sex constant, except for a sudden jump in men using price-off coupons as they cross age 65. "Shopping at a discount store", however, is different. After age 45, and especially after age 65, there is a drop in discount store usage. This may have to do with mobility...older

TABLE 2
Readership in Last Ten Weekdays of Various Sections of Daily Newspaper, By Age and Sex

Section:	Age: <25		25-34		35-44		45-54		55-64		65>		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
News														
% readers*	61	71	77	80	87	89	91	96	94	94	94	96	86	88
Mean days	3.36	4.35	5.52	5.53	6.54	6.62	7.20	7.90	7.65	7.61	7.66	7.32	6.58	6.65
Comics														
% readers	42	58	55	51	56	59	69	67	73	62	70	67	62	60
Mean days	2.70	3.69	3.49	3.22	3.92	4.19	5.19	5.30	5.31	4.72	5.70	4.82	4.47	4.26
Business														
% readers	39	44	59	49	68	63	81	72	79	66	77	59	70	60
Mean days	1.97	1.98	3.56	2.66	4.57	3.73	5.46	4.82	5.79	4.18	5.51	3.71	4.68	3.60
Food														
% readers	25	70	43	74	52	84	56	92	64	93	71	94	54	84
Mean days	1.23	3.44	1.83	4.20	2.41	5.12	2.89	6.44	3.61	6.48	4.42	6.49	2.78	5.38
N (weighted, approximate)	91	116	345	434	295	367	276	308	246	268	212	174	1465	1667

Source: 1981, Needham, Harper and Steers Advertising, Inc.
*Read one or more days in last ten week days.

TABLE 3
Television Viewership and Radio Listenership* by Age

	Age: <25		25-34		35-44		45-54		55-64		65>		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weekday Television (%)	93	93	92	92	92	90	94	95	94	91	97	94	93	93
Weekend Television (%)	90	89	93	93	92	90	96	94	92	89	94	94	93	92
Weekday AM Radio (%)	52	44	62	59	70	68	68	70	74	69	68	65	67	64
Weekday FM Radio (%)	87	75	77	76	69	77	67	77	72	71	65	70	71	75
Weekend AM Radio (%)	48	43	49	48	55	58	59	56	63	59	57	57	56	54
Weekend FM Radio (%)	85	71	70	69	64	70	64	67	65	64	56	60	65	67

Source: 1981 Needham, Harper and Steers Advertising, Inc. See Table 2 for approximate sample sizes.
*Watch/listen at least one hour per day.

TABLE 4
Selected Shopping and Information Acquisition Behaviors as a Function of Age

Average number of times in last 12 months...	Age: <25		25-34		35-44		45-54		55-64		65>		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
...used a "price-off" coupon at a grocery store...	13	29	15	35	13	33	16	34	19	33	25	31	17	33
...bought a generic product...	16	18	14	18	16	17	14	16	13	13	15	12	15	16
...shopped at a discount store...	20	21	17	20	14	20	14	19	14	17	12	13	15	19
...purchased from a mail order catalog...	4	4	4	6	3	6	3	6	3	7	3	5	3	6
...used a toll-free number to get information about a product or service...	2	3	3	3	3	3	3	3	3	2	2	2	3	3
...went to a library...	6	5	5	9	5	10	4	9	4	7	5	6	5	8
...returned an unsatisfactory product														
... one or more times (%)	69	74	78	84	77	85	71	79	63	67	57	57	70	77
... one to four times (%)	45	50	53	55	58	49	56	57	50	55	45	47	52	53

Source: 1981, Needham, Harper and Steers Advertising, Inc. See Table 2 for approximate sample sizes.

persons having less automobile access may be less apt to easily avail themselves of discount stores, still disproportionately located in the suburbs, where, of course, older persons are less apt to be than the population as a whole.

Toll-free number usage to get product/service information is least frequently used by the 65 and older group as compared with younger age groups. Logically, this would seem to be an extremely flexible and inexpensive way to obtain information, especially for older persons who may have physical mobility limitations. Is the reason for lower usage here that the products and services with 800 toll-free numbers are less fitting with older consumer's usage? Or do older persons have less ability to dial numbers and/or to read/remember toll-free numbers when advertised or when printed on packages, labeling, or inserts?

Table 5 describes shopping attitudes. It is apparent that older persons report they are 1) more apt to pay cash for what they buy, 2) more apt to save and redeem savings stamps, 3) more apt to shop for specials (among males only), 4) less apt to use credit cards for extended payment purposes, 5) less apt to buy on impulse, 6) more apt to make up a list before shopping, and 7) more apt to check prices. Table 6 indicates that older consumers are more reliant upon and trusting of advertising than younger, and that they are more "name brand" oriented than younger consumers.

Table 7 shows how over 65's identify their ages psychologically rather than chronologically, utilizing a scale developed by Barak and Schiffman (1980). Naturally, since we do not know exactly how old these over 65 year old respondents are we can't exactly relate their self-concept ages, so to speak, to their chronological ages. But, clearly, a large number of older people feel, look, do, and have interests of younger persons.

Roughly half say they feel to be in their 50's or younger, more than a third believe they look 50 or less, half of the men and 60 percent of the women perceive that they do most things as though they were in their 50's or younger, and about 60 percent believe their interests are of 50 year olds or younger people.

Although one cannot move from such data directly to managerial or policy implications, we might well see in these data some basis for assuming that many over 65 would prefer to be dealt with as if they were younger in terms of looks, interests, and activities. This conclusion is also consistent with at least some Madison Avenue thinking on how older people are best appealed to (Gage, 1980; Kaplan, 1980; and Fisher, 1980).

The "security" or "cautiousness" propensity of older persons, previously referred to, is supported by data in Table 8. "Routine" is clearly more important to older consumers, life is more orderly ("one thing at a time"), and "everything is changing too fast today", is a widely endorsed belief. Females show high self-confidence relative to other ages, but males, less.

TABLE 5
Shopping Attitudes and Behaviors by Age and Sex

	Age: <25		25-34		35-44		45-54		55-64		65+		TOTAL	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
I like to pay cash for everything I buy.	78	76	73	76	74	74	72	78	75	78	82	81	75	77
I like to save and redeem savings stamps.	35	65	33	53	35	61	41	68	50	77	62	82	42	66
I shop a lot for specials.	62	81	59	83	57	86	49	77	53	80	63	75	56	81
I use credit cards because I can pay the bill off slowly.	37	32	26	31	28	30	26	22	15	15	17	9	24	24
Shopping is not fun anymore.	54	34	53	45	56	52	51	57	60	55	60	53	56	50
I am an impulse buyer.	60	39	48	40	38	36	40	36	37	34	32	27	41	36
Before going shopping, I sit down and make out a complete shopping list.	45	73	51	77	54	70	50	72	57	77	69	79	55	74
I always check prices even on small items.	71	89	71	88	68	86	67	87	71	83	78	87	71	87
I consult Consumer Reports or similar publications before making a major purchase.	42	48	48	54	54	52	53	62	50	63	51	59	50	57
When I get a free sample of a product I usually buy that product later.	47	63	47	56	40	57	41	58	49	64	46	61	45	59

Source: 1981, Needham, Harper and Steers Advertising, Inc. Entries are % agree on six point scale anchored definitely agree -- definitely disagree.

TABLE 6
Media Attitudes, Consumer Information, and Product Beliefs by Sex and Age

	Age: <25		25-34		35-44		45-54		55-64		65>		TOTAL	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Magazines are more interesting than television.	53	53	52	56	60	61	56	56	64	60	63	50	58	57
Television is my primary form of entertainment.	48	48	55	44	51	40	51	44	56	46	61	45	54	44
Advertising insults my intelligence.	50	--	59	--	70	--	69	--	69	--	59	--	64	--
I change channels on the television during the commercials.	37	23	46	23	39	26	38	25	33	26	41	24	40	24
TV commercials place too much emphasis on sex.	50	74	65	79	74	83	71	90	78	87	84	91	72	84
Information from advertising helps me make better buying decisions.	63	71	63	66	64	66	62	72	68	76	72	74	65	70
A store's own brand is usually a better buy than a nationally advertised brand.	58	64	63	61	58	65	62	63	68	60	57	66	62	63
I try to stick to well-known brand names.	52	53	63	49	62	55	61	60	70	66	73	75	65	58
A nationally advertised brand is usually a better buy than a generic brand.	28	30	22	22	22	21	22	23	27	24	27	34	24	24
A well-known brand name is a guarantee of high quality.	23	27	27	27	22	21	28	27	28	23	42	38	28	27
I don't believe a company's ad when it claims test results show its product to be better than competitive products.	75	69	69	71	71	78	75	79	79	84	82	89	75	78
You can usually tell the quality of a product from the quality of its advertising.	22	20	17	16	16	15	17	14	22	18	28	20	19	16
My friends and neighbors often come to me for advice about products and brands.	35	29	40	30	34	29	37	31	38	29	34	23	37	29
I often seek out the advice of my friends regarding brands and products.	38	47	44	48	41	39	42	41	35	41	36	42	40	43
I often use recipes from magazine ads.	15	57	20	66	25	68	23	77	26	79	38	81	25	72
I try to buy a company's products if they support educational TV.	37	36	34	41	35	40	40	45	45	54	51	53	40	45
I wish I had more information on how to save energy (fuel, electricity, etc.).	77	75	77	77	75	73	68	73	75	70	71	70	74	73
Ralph Nader and others like him do a great deal to protect the American consumer.	67	79	70	79	64	78	61	73	63	78	71	73	66	77

Source: 1981, Needham, Harper, Steers Advertising, Inc. Entries are % agree on six point scale anchored definitely agree -- definitely disagree.

TABLE 7
Self-Concept Ages of Persons Aged 65 and Older

	Teens		20's		30's		40's		50's		60's		70's	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
I <u>feel</u> as though I am in my...	0	0	0	0	3	3	8	10	34	35	38	40	18	12
I <u>look</u> as though I am in my...	0	0	0	0	0	0	4	2	32	38	52	51	12	8
I <u>do</u> most things as though I were in my...	0	0	0	1	2	2	13	17	34	40	36	34	14	6
My <u>interests</u> are those of a person in his/her...	0	0	1	0	2	3	13	19	41	42	33	31	10	5

Source: 1981, Needham, Harper and Steers Advertising, Inc. N males 65+ = approximately 212; N females 65+ = approximately 174. Entries are %.

TABLE 8
Self-Concept by Age and Sex

	Age: <25		25-34		35-44		45-54		55-64		65>		TOTAL	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
I have more self-confidence than most of my friends.	81	62	78	65	79	65	79	64	77	65	71	67	77	65
Sometime I forget to "look before I leap".	67	74	59	65	51	58	47	58	54	61	55	65	54	62
My days seem to follow a definite routine -- eating meals at the same time each day, etc.	57	60	58	59	62	56	67	66	67	70	79	78	65	64
Changes in routine disturb me.	33	42	30	35	39	37	43	42	50	48	63	62	43	42
Everything is changing too fast today.	70	71	55	62	56	59	58	63	57	65	67	77	59	64
I don't like to take chances.	50	62	49	64	59	69	57	72	68	70	74	80	60	69
I don't like situations that are uncertain.	73	80	75	81	76	83	76	78	83	84	78	83	77	82
I very seldom make detailed plans.	57	32	47	35	41	37	43	39	44	40	48	38	45	37
When I have a problem, I like to work it out alone.	85	54	66	56	71	59	75	71	74	66	72	77	72	63
I like to take care of things one at a time.	82	86	86	86	85	84	88	86	90	87	96	93	88	86

Source: 1981, Needham, Harper and Steers Advertising, Inc. Entries are % agree on six point scale anchored definitely agree -- definitely disagree.

Concluding Comments

Most of the research on older persons is based upon cross-sectional designs which can only yield information about age differences, not about changes with age. For the latter, we must have longitudinal designs, or, arguably, independent samples from the same birth cohort measured at different times. And depending upon the design employed, different results obtain. For the example, cross-sectional designs result in the appearance of greater age differences, and longitudinal designs, the least. That this is true tells us that there are many fewer reliably identified changes with age than there are differences between ages of people measured cross-sectionally.

As marketing managers or as public policy makers, it is probably true that we are as or more concerned with current age differences, even if these differences are not caused by age per se, since these differences are the "here and now" and are not apt to be so transitory that actions/policies tailored for them would be inappropriate in the near-term future. Presbyopia or other infirmities associated with aging may not be immutable given new medical marvels. But it is a condition very common among older consumers today, and it (and other age-related conditions) will interfere with the acquisition of information.

However important these differences or changes are, it is important to keep the matter in perspective. Deterioration in motor skills (locomotion, speech, manual dexterity, etc.) is apt to be far more impactful on consumer behaviors than are the result of diminished sensory processes, and other research points to the clear conclusion that social/life-style/health factors, e.g. household composition, income/general financial situation, physical health, social integration/interaction, many of which are involuntarily assumed with advancing age, are probably even more pertinent to the question of how older people may behave in the marketplace and/or be benefited by public policy.

When we think of consumer information processing implications for marketing management or public policy, we typically think about the issue in the context of how information could be improved for making "better" or more

satisfactory consumption decisions, and hence we focus on advertising, labeling, and so on, as these relate to the individual consumer's purchase or consumption of an end-product or service. But when we focus on older consumers not only do we have this traditional framework to consider, we have what is undoubtedly an even more complex situation created by the fact that for many older persons, their ability to acquire and process information is crucial to their success in dealing with the multitude of policies (and attendant bureaucratic structures) only through which a variety of end-consumatory experiences can occur. For example, Social Security provides various reimbursements for health and housing. Not only must the older consumer covered by Social Security process information about ultimate health/housing decisions, he/she must also be able to understand and deal with Social Security information which describes/delimits which expenses are covered. Table 1 suggests that such information may not be very "consumable." Thus, a major task for older consumers (or younger, if put into the same policy maze) is to learn how to access the "system" which moderates the provision of needed products and services. How do older people communicate their needs to this system, especially when the language of the system and that of the prospective user may not be the same (Mauldin, 1976, 119-120)?

The consumer behavior of the older person remains a fruitful, albeit difficult, area for future research.

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VALIDITY CONCEPTS IN RESEARCH: AN INTEGRATIVE APPROACH

David Brinberg, University of Maryland

Abstract

The research process is described as the interrelationships of conceptual, methodological, and substantive domains. The conceptual domain is seen as concepts and ideas in abstract form; the methodological domain as the designs, strategies, measuring devices, and analytic techniques used to study a phenomenon or theory; and the substantive domain as the events/processes studied. The specification of each domain and their interrelations will be discussed. Traditional forms of validity will be presented within the proposed framework and new forms of validity researchers need to consider will also be derived from this framework.

Introduction

As the reader is aware, the concept of validity has taken many forms and meanings to describe different components of the research process. Traditionally, the research process has been divided into four basic components: (1) the specification, measurement and/or manipulation of a theoretical variable(s), (2) the selection of a particular type of research design, (3) the analysis of the data obtained from the study and (4) the interpretation and robustness of the findings. Associated with each component of the research process are one or more forms and/or meanings of validity to assess the "adequacy" of the particular research component. For instance, construct validity, convergent, and discriminant validity for theoretical variables; internal validity for research design; statistical conclusion validity for data analysis; and external validity for the robustness of research findings.

Give the current state of the art concerning the various forms and meanings of validity issues, several options seem available to researchers. One option would involve further refinement and specification of current validity concepts. By selecting this option, researchers would assume that the basic formulations of the validity issues are acceptable and that research is needed to further articulate the validity concepts. A second option is to invent new forms of validity to deal with methodological and theoretical developments. Researchers selecting this option would assume current forms of validity are inadequate to deal with new developments. Thus, new forms of validity would be needed. A third option would be: (a) to develop a conceptual scheme that explicitly describes the components of the research process and their interrelationships, and (b) to use this scheme to "locate" or derive traditional forms of validity (e.g., construct validity, external validity) and identify new validity issues that researchers need to consider. A researcher selecting this option would assume that a conceptual scheme would help clarify the research process, the various roles of validity in research as well as the relationships among the validity concepts. Finally, a fourth option is to accept the current state of the art and conduct no further research.

The option to be selected and expanded on in this paper is the development of a conceptual scheme: (1) that describes the research process and (2) is used to derive and locate various forms and meanings of validity.

The Research Process

Research involves drawing upon elements and relations from three basic domains: (a) a conceptual domain, which includes concepts and relations considered in abstract

form, (b) a methodological domain, which includes instruments and techniques for obtaining observations and for relating sets of observations; and (c) a substantive domain, which includes events, processes, and phenomenon in the "real" world.

Any research project must contain elements and relations from each of these domains. Thus, it is not possible to conduct research, without some method, some concept (or set of concepts), and some event or process. Elements and relations from each of these domains are not all combined simultaneously. Research generally proceeds by combining two of the domains, to form some structure, and subsequently incorporating (i.e., integrating) the third domain with the developed structure. With three domains, there are at least three patterns for combining the domains. Those three ways represent three distinct research paths; and they pose different advantages and limitations for the investigator.

First, one can combine elements and relations from the conceptual domain with techniques for obtaining observations and relating these observations--without yet bringing in events and processes from the third (substantive) domain. This structure is a plan for doing research, that is, a research design but is not a completed research project until it has been integrated with the substantive domain. This structure will yield a set of intended measures and a plan for relating (or comparing) these measures. For instance, a researcher may measure an attitude (i.e., an element from the conceptual domain) by using a semantic differential scale. In addition, a researcher may be interested in examining the relations among a set of concepts (e.g., attitudes, norms, and intention) by selecting a particular type of design structure (e.g., within subject factorial design). It is important to note the combination of these two domains is not a completed research study until it has been integrated with a particular event or process (i.e., elements and relations from the substantive domain).

Alternatively, a researcher may combine elements and relations from the conceptual domain with events and processes from the substantive domain. The outcome of this structuring process may reasonably be called a theory. The mapping of an element (i.e., single concept) from the conceptual domain with an event from the substantive domain may be termed a theoretical construct. The mapping of a set of constructs with a process or phenomenon may be termed a hypothesis. For instance, a researcher may combine the concept of salience with information retrieval (which is the particular substantive event) in order to form a theoretical construct. If a researcher is interested in a particular process, for instance, a person's decision to purchase generic prescription drugs, the mapping of the concepts of norms, attitudes, and self-concept to predict this process may be termed a hypothesis. This theory is not yet a completed research study until it is integrated with techniques and strategies from the methodological domain.

A third pattern is to combine elements and relations from the methodological domain with events and processes from the substantive domain. Such activity involves mapping methods for making observations onto observable events, and mapping methods for relating (segregating, aggregating, contrasting) sets of observations or events. We can designate such method-substance mapping as constructing a body of data. For instance, a researcher may use concurrent protocol techniques to observe an individual's decision process. However, this body of empirical information is not a completed research study until it has been

connected, that is, construed in terms of, elements and relations from the conceptual domain.

To summarize, given the three domains, three research structures may be developed--a design formed by the combination of the conceptual and methodological domains; a theory formed by the combination of the conceptual and substantive domains; and a body of data formed by the methodological and substantive domains. Each of these research structures are not a completed study until they have incorporated the third domain.

One path a researcher may follow is to connect events and/or processes from the substantive domain with a particular design structure. This path (labelled as Path A in Figure 1) is an implementation process. For instance, a researcher may use a Thurstone scale to measure attitude but to implement this scale, it is necessary to select a particular event (e.g., attitudes toward generic drugs). Another researcher may be interested in examining the relations among attitude, norms and intention and use a within subject factorial design. Implementing this design would require the researcher to connect it with events and/or processes from the substantive domain, (e.g., the purchase of generic drugs; the use of birth control pills).

An alternative research path is to build a theory (i.e., develop a set of constructs and some hypothesis) and test this theory by selecting a particular method. This path (labelled as Path B in Figure 1) may be seen as testing a theory. For instance, a researcher may use a theoretical construct of salience and use reaction time technology to test this construct. Another researcher may have a hypothesis concerning a particular process (e.g., information overload) and select a method (e.g., behavioral process technology) to test this hypothesis.

A third path a researcher may take is to construct a body of data and subsequently select concepts to explain these data. This path (labelled as Path C in Figure 1) may be seen as an interpretation or explanation process. For instance, a researcher may have collected a body of data using concurrent protocol techniques and then attempt to interpret the data by selecting concepts to categorize various components of the data.

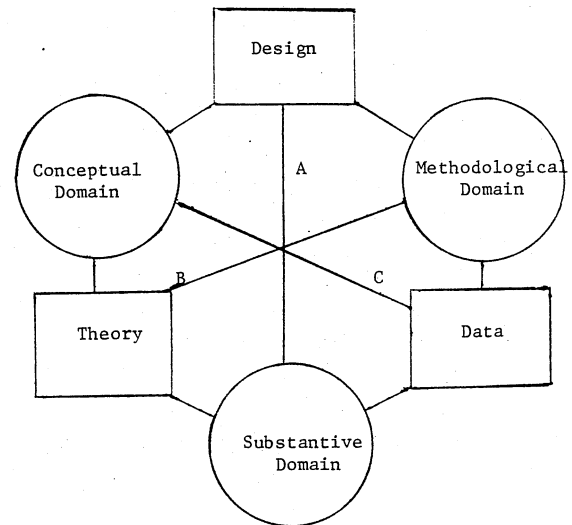
To summarize, there are three paths a researcher may follow: implementing a research design; testing a theory; explaining a body of data. In one sense, these paths are all the same in that they involve elements and relations from each of the three domains. In another sense, they are arrived at by a different sequence of steps and will reflect the orientation (style) of a particular researcher or an area of research. Adhering to any single path will have certain advantages---but will also have certain limitations---as with any mono-strategy approach. Figure 1 summarizes the relations among the domains, structures, and research paths.

In addition to these two steps of structuring and integrating the three domains, there are activities that occur prior to as well as subsequent to the conduct of the research study that are important to the research process. These two stages will be referred to as pre-study and post-study activities respectively.

Pre-study activities

Using the scheme presented in Figure 1, the structuring and integrating steps of the research process presuppose a selection (sampling) of elements and relations from the three domains. Elements and relations from the conceptual domain consists of concepts and patterns (conceptual relations) among such concepts. In the substantive domain, elements are observable events and relations are sets of events or processes. Finally, in the methodological

Figure 1



domain, elements are methods/strategies for making observations and relations are techniques for making comparisons among a set of observed events or concepts.

However, such selection (sampling) from the domains implies that there has been some prior exploration/analysis/understanding of those domains and the kinds of elements and relations that can be drawn from them. Such explorations are necessary preconditions for conducting a research project but are generally not considered part of the research process. For instance, in the methodological domain, this prestudy activity leads to the development and use of specific tools for making observations (e.g., behavioral process technology) and for comparing the relations among concepts or events (e.g., three mode factor analysis). Similar activities are conducted in both the conceptual and methodological domains.

Post-study research activities

After completion of one of the research paths previously presented, there are several crucial activities before a study can become "useful knowledge." These post-study activities are different for the three different research paths.

For research path A, the researcher combines the conceptual and methodological domains to form a research design and subsequently combines this structure with the substantive domain. When the researcher has completed this process, they are still faced with a key problem: the extent to which the findings will generalize to or across other substantive events. This is the problem of the robustness of findings within the substantive domain.

For research path B, the researcher combines the conceptual and substantive domains to form a theory and subsequently tests this theory by selecting a particular method. Upon completion of this process, the researcher is still faced with a key problem: the extent to which the findings will generalize across other methods. This is the problem of robustness within the methodological domain.

For research path C, the researcher combines the methodological and substantive domains to form a body of data and subsequently attempts to explain these data by selecting a set of concepts. Upon completion of this process, the researcher is still faced with a key problem: the extent

to which the findings will stand up when compared with other elements and relations from the conceptual domain. This is the problem of the robustness of the concepts used to explain the body of data.

All three post-research activities deal with the adequacy of the elements and relations sampled from the three domains--and all three are variations of the general concept of external validity. These various forms of external validity will be discussed in more detail subsequently.

Various Meanings of Validity

What I hope to establish here is a systematic ordering of different forms and meanings of validity, in relation to one another and in relation to parts of the research process, so that the full power of those concepts, and the relations among them may be more clearly seen. Associated with each stage of the research process is a different fundamental meaning of validity. In Stage 1, validity takes on the meaning of value. By this, we mean the importance/relevance/truth of the concepts, methods, and substance selected for study. A second meaning --- validity as correspondence --- is associated with Stage 2 of the research process. Many of the traditional forms of validity hinge on the correspondence between two "entities." For instance, construct validity deals with the correspondence between a theoretical concept and a particular event; convergent validity with the correspondence of a concept with two or more methods to measure the concept. The different forms of validity, internal to the research study, are organized in terms of two categories: (1) validities associated with the structures formed from the combination of elements and relations from two of the domains and (2) validities associated with the integration of the structure with elements and relations from the third domain. A third meaning --- validity as robustness, generalizability, dependability --- is associated with Stage 3 of the research process. The primary focus with this meaning of validity is determining the scope of a set of findings. As will be discussed, the particular scope a researcher is concerned with varies as a function of the research path selected in Stage 2.

Stage 1: Validity as Value

Several researchers (e.g., Kaplan, 1964; Gergen, 1973; Kuhn, 1962) have discussed the influence of values on research. These values guide the selection of standards to be used in a particular research area. This meaning of validity --- as value --- is used to identify the concepts to study; the methods to use; and the events/processes to examine. Generally, the values used in the selection process are determined by the prevailing paradigm. As Kuhn (1962) has noted, when paradigms change, values will also change. Given the conceptual scheme presented earlier, "paradigm shifts" may be regarded as changes in the values involved in selecting elements and relations from each of the three domains.

There are many values associated with each domain. For instance, values generally used in the conceptual domain are: testable, quantifiable, robust, internally consistent; in the methodological domain: significance testing, accuracy, repeatable, quantifiable; in the substantive domain: observable, what is "real."

The concepts, methods, and events selected for study have changed over time --- in response to the changing values. For instance, in the earlier 1900's, introspection was an acceptable technique for the study of human learning (decision making). When Watsonian behaviorism developed, the technique of introspection was discarded because it would not yield "valid" (i.e., valuable) data. Note that a shift in what was considered valuable resulted in the elimination of a particular method. Recently, concurrent

protocol analysis has been developed as a technique for studying decision making and many aspects of this technique are similar to introspection. Again, a shift in values has resulted in the use of an "acceptable" technique to yield "valid" data. A similar effect of values may be found in the conceptual and substantive domains. For instance, early in this century, an instinct was a valid concept to select. However, given the development of the logical positivist philosophy, concepts were considered of value if they were quantifiable. Since no quantifiable index of instinct was developed, this concept was no longer considered valid. Finally, in the substantive domain, events considered "real" will also change as values change. Prior to the Freudian revolution, unconscious forces were not considered valid (i.e., real). For research within a Freudian perspective, unconscious forces are "real" and valid events. However, within much of the traditional information processing literature, unconscious forces are not considered "real" (i.e., they are not valid events). Table 1 contains an example of a concept, method, and event considered acceptable (and unacceptable) within the information processing area. The reader should note that in other areas (e.g., astrological science), the concept, method, and event listed may be seen as valid (i.e., valuable).

Table 1

Stage I. Prior Validities

Validities as Value

Rules of Evidence and Standards for Sampling from the Conceptual, Methodological and Substantive Domains

<u>Conceptual Domain</u>	<u>Acceptable</u>	<u>Unacceptable</u>
Value = Quantifiable	Attitude	Psychic Energy
<u>Methodological Domain</u>	<u>Acceptable</u>	<u>Unacceptable</u>
Value = Accurate	Thurstone Scale	Astrological Prediction
<u>Substantive Domain</u>	<u>Acceptable</u>	<u>Unacceptable</u>
Value = "What is Real"	Conscious Decision	Sub-Conscious Decision

Stage 2: Validity as Correspondence

The second stage of the research process consists of three alternative paths, each with two major steps. As mentioned earlier, the first step involves combining the three domains pairwise to form a structure --- design, theory, body of data. Since elements and relations are selected for each structure, there are six different forms of validity to consider. This set of six validities may reasonably be called "logical validities" since the threats to these forms of validity occur independent of the completion of the research study (i.e., integration of the structure with the third domain). These validity issues can be evaluated prior to conduct of the research study. The second set of forms of validity are associated with the integration step in Stage 2. Since elements and relations from the third domain will be integrated with the structure formed in step 1, six different forms of validity need to be considered. The potential threats to these forms of validity occur during the actual conduct of the research study. All 12 of these forms of validity might reasonably be called "internal validities" since

they are internal to the ongoing research process within a study. Table 2 contains a list of the various forms of validity associated with each structure as well as with each integration step. Some of the traditional forms of validity will be presented to highlight the association between the validity issues and the components of the research process. Space limitations preclude a detailed description of each form of validity and the associated validity threats. A more detailed discussion of these issues may be found in Brinberg and McGrath (in press).

Table 2

Stage II. Internal Validities
Validities as Correspondence

A. Logical Validities	B. Integration Validities
<u>Design</u>	<u>Implement</u>
Element - Instrument Validity	Instrument use Validity
Relation- Comparison Validity	Execution Validity
<u>Theory</u>	<u>Test</u>
Element - Construct Validity	Operational Validity
Relation- Hypothesis Validity	Predictive Validity
<u>Data</u>	<u>Explain</u>
Element - Reliability	Inferential Reliability
Relation- Descriptive Statistical Validity	Inferential Statistical Validity

The matching of concepts and methods at the elements level (i.e., a design structure) yield a set of intended measures. The correspondence between the methods and concepts may simply be termed instrument validity, that is, the extent to which a measure can correspond with a concept or set of concepts. One major threat to the validity of the instrument is the potential confounding of instrument and concept. Campbell and Fiske (1959) describe a multitrait-multimethod approach that attempts to identify the degree to which there is instrument-concept confounding.

Combining concepts and methods at the relations level deals with the correspondence between the design structure selected and the relations among the concepts. Traditionally, this form of validity has been called internal validity (Campbell and Stanley, 1966). However, since we have used the term internal validity to refer to all the forms of validity internal to the research process, the term comparison validity has been developed to replace the traditional term of internal validity. The central notion with this form of validity deals with the extent to which planned comparisons within the study will permit clear inferences about the relations among the concepts. The threats to comparison validity include: history, maturation, testing, as well as misspecification of the research design (e.g., Judd and Kenny, in press).

The other forms of validity within the "logical validities" all deal with correspondence between an element/relation from one domain with an element/relation from the second domain. Where appropriate, traditional forms of validity have been included within this conceptual scheme. However, the definition of the form of validity is derived from the meaning of validity within this step and stage of the research process, that is, the degree of correspondence between elements and relations selected from two of the three domains.

The second step of each of the three paths involves connecting elements and relations from the third domain with the structure formed in the first step. These "integration" validities involve the correspondence between

elements and relations selected from the third domain with the structure formed in step 1. For path A, when a design structure is connected with processes from the substantive domain, the correspondence deals with the execution of the study. This form of validity may reasonably be called execution validity. Cook and Campbell (1979) discuss threats to this form of validity that deal with imperfections in conducting (i.e., executing) the study. For example, demand characteristics and experimenter biases i.e., cues the subject attends to that are incidental to the main emphasis of the research, will influence the correspondence between the design and the process selected from the substantive domain. This "artifact" might potentially threaten the validity of the execution of the design.

In addition, the orientation the subject takes to a particular instrument (e.g., response sets) may influence the validity of the instrument's use. This form of validity may reasonably be called instrument use validity. It differs from instrument validity since the potential threats to the use of the instrument only occur when the instrument is used.

The other forms of validity within the integration step of Stage 2 also deal with the correspondence between the structure formed in step 1 and the third domain. The reader should note that the validities associated with the integration step of the research process deal with issues that arise during the conduct of the study --- not prior to the study. A more detailed discussion of these forms of validity may be found in Brinberg and McGrath (in press).

Stage 3: Validity as Robustness

Given the completion of the structuring and integration steps in Stage 2, there is still a need to assess the robustness (i.e., scope) of the findings. Traditionally, the robustness of research findings deal with the external validity of the research conclusions. Since three different paths may be pursued in Stage 2, three different external validity issues may arise. If a researcher develops a design, and subsequently implements this design by selecting substantive events and processes, they are concerned with the extent to which the findings will generalize across other substantive events. This form of validity may reasonably be termed ecological validity. For instance, a researcher may use a particular design (e.g., within subject factorial design) to study the relations among intention, attitude, and norms) and select an event (e.g., purchasing clothes) to implement this design. Generally, the researcher is concerned with the extent to which their findings will be robust (i.e., invariant) across other events selected from the substantive domain (e.g., other behaviors, respondents, settings).

If a researcher first forms a theory and subsequently selects a method to test this theory, they are generally concerned with the robustness of their findings across different methods. This form of external validity may reasonably be called methodological validity. For instance, a researcher may select different methods --- behavioral process technology and reaction time technology --- to test a theory of information overload. The concern with this form of validity is the extent to which the findings can be reproduced given two or more different methods. As with the ecological validity, this form of validity involves repeated sampling from the domain of interest -- in this case, the methodological domain.

Finally, a researcher may collect a body of data and attempt to explain this structure by selecting a set of concepts. The extent to which a set of concepts is adequate to explain the body of data deals with the third form of external validity -- explanatory validity. For instance, a researcher may use concurrent protocol

techniques to construct a body of data. The robustness involved in attempting to explain this body of data deals with the extent to which the category system (i.e., set of concepts) selected from the conceptual domain is adequate to explain the body of data. To assess the generalizability of a particular category system, a researcher is likely to develop other category systems, that is, repeatedly sample from the conceptual domain, to determine which set of concepts provides the most accurate explanation of the body of data. Table 3 summarizes the three different forms of external validity.

Table 3

Stage III. External Validities

Validities as Robustness

Research Path A: Ecological Validity: Repeated Sampling of Substantive Domain

Research Path B: Methodological Validity: Repeated Sampling of Methodological Domain

Research Path C: Explanatory Validity: Repeated Sampling of Conceptual Domain

Implications

Historically, the validity concepts described in this paper seemed to have been developed ad hoc (i.e., without a theoretical foundation) to assess the adequacy of a new component of the research process that had recently been "discovered" (e.g., the recent development of statistical conclusion validity to deal with the adequacy of inferences from various data analytic techniques). A serious limitation of the cumulative work concerning the research process and the associated forms of validity has been the absence of a theoretical/conceptual organization and explanation of the interrelations among the components of the research process and with the various validity concepts.

One potentially useful feature of the scheme presented in this paper is that the components of the research enterprise are explicitly specified and interrelated. This may help researchers come to a better understanding of the advantages and limitations of certain research "patterns." This conceptual scheme was also used to explicitly associate the forms and meanings of validity with specific components of research process. Rather than add new validities to describe the research process, the forms and meanings of validity were derived from the general scheme. This approach has the advantage of providing a theoretical basis for the different validity concepts. A third issue addressed was the use of this scheme to highlight similarities and distinctions among the validity concepts as well as identify new forms of validity researchers need to consider. This conceptual scheme was also used to further differentiate some forms of validity into several components (e.g., divide external validity into several components). Finally, I suggest that this framework can help in planning any given study by highlighting the specific validity issues most germane to and most problematic for that study. It can also help, I believe, in efforts to integrate and assess the work in a given research area, by pointing up which aspects of the overall validity question represent the most serious limitations of the cumulative work in that area.

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MODELS OF MEMORY:
IMPLICATIONS FOR MEASURING KNOWLEDGE STRUCTURES¹

Andrew A. Mitchell, Carnegie-Mellon University

Abstract

Although there is considerable research interest in understanding how knowledge affects information processing activities, we must first develop valid measures of knowledge. It is argued that a set of different hypothetical constructs will be required to measure knowledge within a domain and that different sets of hypothetical constructs may be required to explain different information processing activities. Finally, different methodological approaches and procedures for measure knowledge structures and the relationship between these structures and information processing activities are discussed.

Introduction

It is generally acknowledged that consumers' knowledge about a product category will affect their purchase behavior; however, it is only recently that we have attempted to measure consumers' knowledge structures (e.g., Olson and Muderrisoglu, 1980) and examine how differences in knowledge affect information processing activities (e.g., Edell and Mitchell, 1978; Johnson and Russo, 1981; Bettman and Park, 1980). One major reason for the increase in interest in these areas in consumer behavior has been the rapid advances made in cognitive psychology in both theory and methodology in the study of memory.

Initial indications are that research on consumers knowledge structures for product related information will become an important area of research in consumer behavior. There are a number of critical issues that still need to be examined that have both theoretical and applied importance. For instance, "How do consumers organize information about products and brands in long term memory?" "How does knowledge affect information search strategies?" "How does product class knowledge affect the evaluation of new products from that product class?" and "How does product class and brand knowledge affect the processing of information from advertisements?" There is a great danger, however, that we may never learn the answer to these questions if we are not careful about the validity of our procedures and measures of knowledge structures.

Currently a number of different studies have used the hypothetical construct "product familiarity," as a measure of a consumer's knowledge about a product category (e.g., Bettman and Park, 1980; Johnson and Russo, 1981). At least three different measures of this construct have appeared in the literature. These include the number of purchases within the product category (e.g., Park, 1978), self-report measure of familiarity (e.g., Bettman and Park, 1980), and self-report measures of relative familiarity (e.g., Johnson and Russo, 1981). Little attempt, however, has been made to validate these measures or to even determine if the different measures are even measuring the same construct. Conceptually, these may be poor measures of a consumer's knowledge about a product category. For instance, some consumers may purchase an item numerous times without knowing very much about the product, while other consumers may know a lot about a product without ever purchasing it. Some consumers, for instance, may know less today about automobiles after owning a number of them than a teenager that has yet to purchase his first automobile. Also, consumers may not be able to accurately access their knowledge about a product category. Some consumers may think that they know a lot about stereos, but next to an electrical engineer they probably know very little.

The issue, then, is how to develop valid measures of knowledge structures. It will be argued that in order to develop valid measures, you must first have a theory of memory (e.g., how knowledge within the domain of interest is organized and the retrieval mechanism operating on this knowledge) and a conceptual definition of the hypothetical construct you are attempting to measure. This argument is, of course, circular because in order to have a theory of memory you need valid measures to test this theory; however, without a theory you cannot have valid measures. To get around this problem, we will argue for the use of a number of different procedures and measures in hopes that although each will be flawed, in unison that will all point in a similar direction.

A second point that will be made in this paper is that since product class knowledge includes a diverse set of information, a single construct, such as product familiarity, probably will not provide an adequate representation of this knowledge. For instance, one consumer may have knowledge about many different brands in a product category but may know little about the technical aspects of the product. The opposite may be true for another consumer. By using only a single measure of knowledge these subtle differences, which may have a major effect on some information processing activities, will be lost. Therefore, we will need to develop a number of different hypothetical constructs to adequately represent this knowledge. Examples of different sets of hypothetical constructs are those proposed by Kanwar, Olson and Sims (1981) and Brucks and Mitchell (1981).

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A third, and related point, is that the hypothetical constructs that are developed should depend on the purpose of the research. For instance, although a self-report measure of knowledge may be a poor measure of the actual knowledge that a consumer has relative to other consumers, it may be a better predictor of information search behavior than a measure of actual product knowledge.

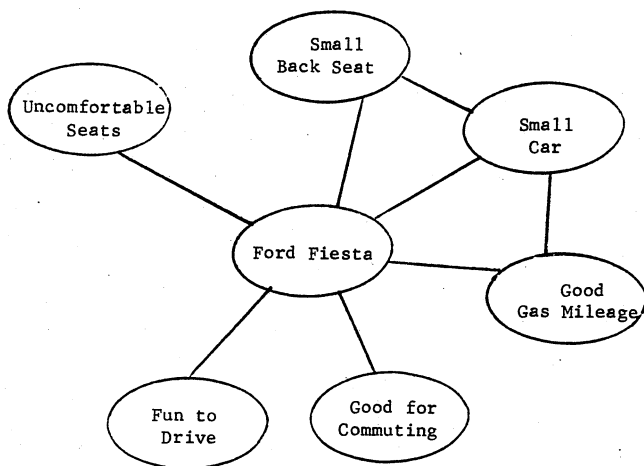
In general, then, what is required is the development of a number of hypothetical constructs that will provide measures of a consumer's knowledge structure and procedures for measuring these hypothetical constructs. As mentioned above, the development of these constructs should depend on the type of information processing activities that are to be explained. In other words, in developing these hypothetical constructs, some thought should be directed at how these measures of knowledge will effect information processing activities. After measurement procedures for the sets of hypothetical constructs have been developed and validated, the next step is to examine the linkages between the measures and various information processing activities.

The purpose of this paper is to discuss alternative procedures for measuring knowledge structures and for examining the relationship between knowledge and different information processing activities. In the next section, theories of memory are discussed. Then alternative methodological procedures for examining the relationship between knowledge and different information processing activities are reviewed. Finally, alternative procedures for measuring knowledge structures are discussed.

Theory

The most commonly accepted model of memory is an associative network model (e.g., Wickelgren, 1981). Within this model, the nodes of the network represent concepts while the arcs are linkages between concepts. The arcs may vary in strength, so that some concepts are more strongly associated. In propositional models, the arcs also define the relationship between concepts (Figure 1).

FIGURE 1
Network Model of Memory



It is currently believed that our knowledge is organized into packets of information. A number of different types of information packets have been hypothesized to exist in memory. These include schemata (e.g., Rumelhart and Ortony, 1977), scripts (Schank and Abelson, 1977; Abelson, 1981), frames (Minsky, 1975), prototypes and exemplars (Rosch, 1977), and MOP's (memory organizational packets), and TOP's (thematic organization points) (Schank, 1980, 1981).

Schemas are packets of information centered around concepts. Consumers, for instance, probably have schemas for specific brands such as Chevrolet automobiles. These schemas contain organized information about Chevrolets; however, they may not contain all the information that the individual has about Chevrolets. Scripts contain our generalized knowledge about specific events such as visiting an automobile dealer or fixing a flat tire. Within these scripts the temporal sequence of actions which occur within an event are stored. Frames are structures about classes of objects such as automobiles. Within a particular frame are "slots" which are used in understanding specific instances of a particular class of objects. For instance, an automobile frame may contain "slots" for the general shape and the appearance of the front seats of particular automobile.

A prototype is an abstraction of a particular class of objects while an exemplar is a specific instance that is considered representative of a set of objects. For instance, an individual may have generalized information about a particular class of automobiles such as small fuel-efficient automobiles or that individual may consider the Volkswagen Rabbit to be the best representation of that class of objects. Finally, MOP's are similar to scripts in that they contain generalized knowledge about specific events; however, they also contain linkages to specific events. For instance, we may have an eating at a restaurant MOP that may contain links to specific events that occurred while eating at restaurants—events such as an especially good meal, an especially poor meal or the time you forgot your wallet. According to Schank, specific events become linked to MOP's when the events do not meet the expectations formed from the MOP. For instance, the poor meal may have been linked to the MOP because the restaurant may have been expensive and you had expected a very good meal. Thematic Organization Points (TOP's) represent a higher order organization of events. For instance, individuals may have higher order structures for certain types of plots in plays (e.g., boy meets girl, boy loses girl, boy wins back girl) and these structures are used to identify instances of a general theme.

These different packets of information guide our interpretation and processing of information from the environment. Consequently, individuals with different packets of information may interpret new information differently. For instance, someone with a packet of information about microwave ovens will interpret information about a new microwave oven differently than someone that doesn't have this packet of information.

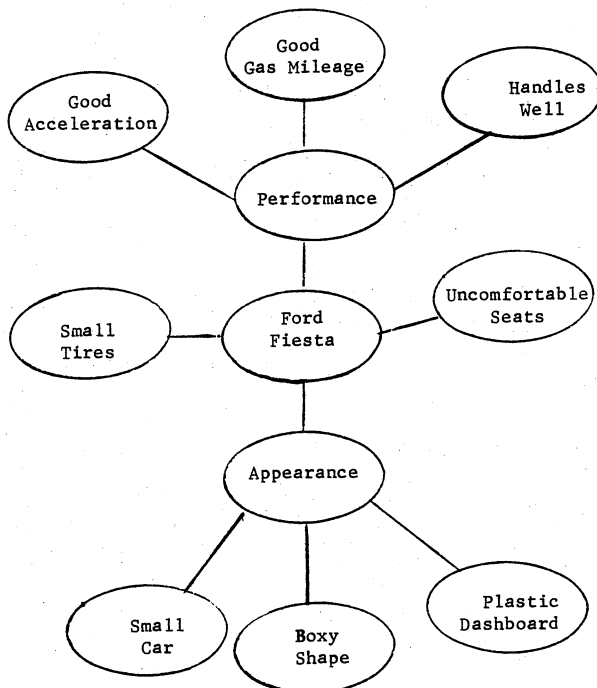
These ideas also suggest that the distinction between episodic and semantic memory by Tulving (1972) may not be as useful as it once was thought. Originally, this distinction was made to differentiate the results of simple verbal learning experiments from research examining generalized knowledge structures. Although this distinction is probably still important we should not necessarily think of episodic and semantic memory as two different systems. In general, I believe that Schank's notion that specific episodes are linked to generalized knowledge is correct. For instance, we may have a generalized knowledge structure for beach parties, and linked to this structure there will be information about

specific beach parties. At the same time, I believe that we probably have a memory for specific events that is recorded temporally. For instance, I may not be able to directly retrieve what I had for lunch yesterday; however, by reconstructing the events that happened yesterday in temporal sequence, I may be able to retrieve that information.

It is currently believed that the retrieval of information involves an activation process (Collins and Loftus, 1976). Within a network model, specific nodes of the network are activated and the activation then spreads to linked nodes. If the amount of activation that spreads to a particular node exceeds some threshold level, then the node will become activated. Which nodes become activated depends on the strength of the association between the activated node and the linked nodes. Those nodes that are the most strongly associated are the most likely to be activated. For instance, in the ACT model developed by Anderson (1976), the probability of a particular linked node becoming activated is given by the strength of that association divided by the sum of all the strengths of the links to the activated node. In addition, recent research has indicated that information may be structured by topic and individuals can limit the spread of activation to a particular topic (Smith, 1981). For instance, a consumer may have knowledge about the appearance and performance of a particular automobile. These two types of information may be subdivided in the knowledge structure for this particular automobile (Figure 2). When this structure is activated, the individual has control over whether the appearance or the performance portion of the structure is activated.

FIGURE 2

Subdivided Memory Structure



This conceptualization of memory may be used to interpret the results of the Olson and Muddergsolu (1980) study. In this study, memory probes were used for different product categories (e.g., toothpaste) and brands within the product category. The same probes were used on two occasions one week apart. After the subjects were given the probe, they were asked to repeat whatever came to mind. According to the theory of memory outlined above, each probe activated a node in memory (e.g., the toothpaste node) and activation then spread to connected nodes. This spreading activation directed attention to the connected nodes and the subject then gave the experimenter the contents of these activated nodes.

The results of the study indicated that, on average, six concepts were elicited per memory probe and the reliability of the concepts elicited on the two occasions was around .5. The number of concepts elicited with each probe is consistent with the results of studies in psychology where subjects are asked to give as many instances of a particular category (e.g., Graesser and Mandler, 1978). For this task, subjects typically give up to six instances per probe. Graesser and Mandler (1978) suggest that this may be due to short-term memory limitations at either encoding or retrieval.

The reliability of concepts elicited on each occasion may be given a number of different interpretations. First, it might be taken as an indication that the subjects did not have tightly-knit organized structures of knowledge. If they did, there would be a strong association between concepts in the structure which would result in the same probe eliciting the same concepts at the two points in time. Note that this interpretation would also imply that only six concepts would be linked to any given knowledge structure. An alternative explanation is that a large number of concepts may be linked together in a knowledge structure and retrieval at any given time is simply a probabilistic process. Therefore, different concepts would be elicited at two different points in time. Under this latter interpretation, when the same memory probe is used a number of different times, the frequency with which a particular concept is elicited might be used as a measure of the strength of the association between the probe and the concept (e.g., Chi and Koeske, 1981).

Finally, it should be realized that much of our current thinking about memory is based on a computer metaphor (Roediger, 1980). The use of this metaphor leads us to think of long-term memory as a giant filing cabinet. Within this cabinet, information is stored at different locations, related information is stored together, and information retrieval essentially involves searching different locations. An alternative metaphor is the tuning fork metaphor. With this metaphor, information on a particular topic may be distributed at different locations in memory and retrieval essentially involves a parallel search through memory. A probe is sent out (e.g., a particular note) and all the portions of memory that respond to that probe are activated. In other words, different parts of memory behave like a tuning fork which becomes activated by a particular probe. According to Anderson and Hinton (1981), this type of model corresponds more closely to what we know about the physiology of the brain. The different portions of memory may be thought of as different neurons that fire given a certain type of probe. Although this metaphor provides an interesting alternative to the computer metaphor, it is not clear at this point how our procedures for measuring knowledge structures would differ if this metaphor was more appropriate.

Characteristics of Memory

Two different characteristics of memory need to be taken into account in measuring knowledge structures. First, most cognitive models suggest that the organization of information in memory is primarily the result of active control processes (e.g., Hastie, 1980; Srull, 1981). Two individuals, for instance, may experience roughly the same events, yet organize the resulting information from these experiences very differently. One individual may do considerable thinking about these experiences and consequently have a number of generalizations from these experiences stored in memory. Another individual may do little active thinking about these experiences and consequently will have little generalized knowledge. We are currently developing a model based on these ideas (Smith, Mitchell, and Meyer, 1982). Consequently, if the researcher is interested in obtaining the measures of what experiences are stored in memory, care will need to be taken to insure that the measurement procedure will tap this information.

Second, context seems to have a strong effect on information retrieval. These context effects are illustrated in experiments by Thompson and Tulving (1973), Anderson and Prichard (1972), and Bower (1981). In the Thompson and Tulving experiments, it was found that the probability of recognizing whether a particular word was learned depended on the similarity of the semantic context in the learning and recognition task. The learning of the word "bank" in the context of "cash" affected the recognition of "bank" in the context of "river." Anderson and Prichard (1978) found that different recall probes caused subjects to recall different information about a passage that they had read. Finally, in the Bower experiments, it was shown that if the subjects were in the same mood (e.g., happy) during learning and retrieval, they could recall more information than if they were in different moods. Mood also affected the type of information recalled. Subjects in a happy mood tended to recall primarily happy experiences while subjects in a sad mood tended to recall sad experiences. These types of context effects can be explained with a network model by assuming that the different contexts activate different nodes. For instance, an individual's node for a particular automobile may be activated at the repair shop and at a cocktail party. In each case the schema for the particular automobile is activated, but the two contexts also activated different nodes. This may result in different portions of memory becoming activated and the recall of different information about the automobile. Consequently, if the researcher is interested in examining the relationship between knowledge and information processing activities, he or she will need to insure that the context for the measurement procedure and the information processing task are as similar as possible.

Methodology

In this section, we will discuss general research strategies for examining the structure of consumers memory for product information and the affect of knowledge on consumer decision strategies. In addition, we will discuss specific procedures for measuring memory.

General Research Strategies

There are six general strategies that may be used to examine the research issues discussed here. The first approach involves identifying individuals that differ in knowledge within a particular domain and then examining how their performance differs on specific tasks. This has been the general approach used in consumer behavior (e.g., Beltman and Pack, 1980; Johnson and Russo (1981) and cognitive and social psychology (e.g., Markus, 1977). For instance, in a series of studies by Splich, Vesonder, Chiesi and Voss (1979), subjects with differing levels of knowledge about baseball were given a description of a baseball game to read and then asked to recall as much as they could about the specific game. The results indicated that subjects in the high knowledge condition could recall more information, organized it in larger chunks and made more elaborations. Although this procedure allows for the examination of the effect of knowledge on information processing activities, it does not provide an understanding of how specific aspects of this knowledge affect these activities. In order to determine this, it would be necessary to obtain measures of the different hypothetical constructs. The subjects would then be given one or more tasks and statistical techniques would be used to examine the relationship between the measures of knowledge structure and their behavior in the task. This is the second approach. With this approach, it is necessary to use a heterogeneous set of subjects with respect to the knowledge measures to create enough variance on the independent measures and to use tasks where product class knowledge would be the primary determinant of the behavior in the task. The problem with this approach is that the resulting measures of knowledge may be somewhat highly correlated so it may be difficult to disentangle the effects of the different types of knowledge.

A third approach is to create different types of knowledge structures in the laboratory. Here subjects with little knowledge about the product category would be given different types of knowledge. This procedure allows for the development of knowledge structures that are reasonable orthogonal in terms of the measures to be used. This was the approach used by Edell and Mitchell (1978). Here, one group of subjects was given information about silver polish, and their performance in processing information about different brands of silver polish was compared to a group that had little knowledge about silver polish. The danger with this procedure is that the resulting knowledge structures built up in the laboratory may be quite different from those that develop naturally. These differences may then be reflected in the subjects' performance on a task.

Fourth, subjects might be given a task involving new brands within a product class (e.g., learning information about the brands or selecting a particular brand to purchase) and then recall measures might be used to measure what information is recalled and how it is organized (e.g., Biehal and Chakravarti, 1981). Here the results obtained are likely to be highly dependent on the task used. Individuals generally use different information processing strategies in different tasks and what is recalled and how it is recalled may be highly dependent on the information processing strategy used. Consequently, different tasks will probably cause differences in the organization and structure of information in memory, and we may not be able

to generalize across tasks. Also, it is not clear that the resulting structure from a single artificial task will be similar to the memory structures that occur naturally from information acquisition from many different sources (e.g., advertising, neighbor, etc.).

A fifth procedure that might be used is an interference paradigm. Here, subjects might be given information about two types of automobiles (e.g., small compact car and a four wheel drive station wagon) and then a recall task. If subjects tended to recall information about one type of automobile when given a memory probe about the second, this might be an indication that the information about the two automobiles is stored in similar locations. A similar procedure was used by Gunter, Clifford and Berry (1980) to examine whether individuals stored information about different types of television news programs in similar locations.

The final approach is to examine how subjects execute a series of different tasks (e.g., evaluate new products from advertisements) and then try to infer what types of knowledge they need to have in order to execute the task. This procedure has been quite successful in building models of language comprehension. Here researchers examine conversations and determine what type of knowledge is required in order to understand a conversation. This particular approach has suggested the different types of information packets that were discussed earlier.

Measurement Procedures

There are number of different measurement procedures that may be used for measuring knowledge structures. The first procedure is an elicitation procedure (e.g., Olson and Muderrisoglu, 1980). Here the researcher uses a memory probe (e.g., Coca Cola) and the subject mentions everything that comes to mind. This approach is based on the associative network model of memory. By giving a specific probe, the researcher activates a particular node in memory and the subject then gives you all the concepts that are linked to that node.

If the researcher is interested only in what information is stored in memory, he or she must be careful that the subject provides only the information that is activated from the memory probe and does not attempt to construct new information. In order to insure that this occurs, the subject should be kept in a passive state so they are not actively constructing information. In general, if stored information is elicited, the information will probably be retrieved in chunks with around five chunks of information elicited with each probe. For instance, as discussed earlier, Graesser and Mandler (1978) found that subjects would elicit three to five members of a category (e.g., animal) at a time and Olson and Muderrisoglu (1980) found that subjects elicited around five or six concepts with product category or brand probes. If the subject starts speaking in complete sentences, then they may be constructing information instead of giving stored information. The major problem with this approach is that we do not really know exactly what probes to use in order to determine a subject's knowledge in a particular domain. If we knew how subjects organized product information, then we would know which probes to use. Unfortunately, we don't.

²In some situations, when the information is well rehearsed, it may be stored in complete sentences. In these situations, this criteria is not applicable.

A second procedure is to give subjects a particular task that requires retrieval of information from long-term memory (e.g., Russo and Johnson, 1980). These might range from a simple "tell me everything you know about coffeemakers" to "what would you tell someone who just moved into your community about the different supermarkets in your neighborhood?" This type of task will produce mostly constructive processes as opposed to tapping actual stored information. Different tasks, and the subject's interpretation of the task, may produce different information. In addition, probably no single task will yield all of a subject's knowledge within a specific domain.

The third procedure is to use a questionnaire to obtain measures of memory. Scott (1980), for instance, has developed a series of questions to obtain different measures of knowledge structures within a particular domain. Examples of these questions are categorizing objects within a domain and listing the attributes of objects within that domain. Responses to these questions are then used to provide measures of the organization of the information within the domain.

Finally, response times may be used to measure knowledge structures. The problem here is that most response time measures require a theory of memory in order to be interpretable (Gardner, Mitchell and Russo, 1977, Johnson and Russo, 1977). Currently, our understanding of how individuals store information within a domain does not appear to be complete enough to use this approach. We may, however, be able to be used it in a more basic way to understand what information individuals have associated with a particular concept. For instance, a particular node in memory might be primed first and then the subject would be asked a question. If the information required to answer the question was linked to the primed node, subjects should be able to respond quicker than if the information was not linked. This procedure is similar to the procedure used by McKoon and Ratcliff (1980) to examine knowledge structures created in text comprehension.

Summary

In this paper, I have discussed current theories of memory and discussed alternative procedures for measuring knowledge structures and for examining the relationship between knowledge and different information processing activities. It was argued that a number different hypothetical constructs will be required to obtain measures of knowledge within a domain and an understanding of how these hypothetical constructs may affect information processing activities. In addition, it is argued that the measures that are developed should depend on the type of information processing activity that we want to explain. For instance, one set of measures of knowledge might be more appropriate for explaining the generation of counterarguments and support arguments during exposure to an advertisement and another set of explaining information search.

Finally, it was argued that all the procedures for measuring knowledge structures depend on a theory of memory. For instance, elicitation procedures require an understanding of what schemata exist within a particular domain. Unfortunately, we do not currently know this, so if elicitation procedures are used to tap knowledge within a particular domain, only subsets of this knowledge may be tapped if particular schemata are not probed. It is hoped that different procedures may provide converging evidence as to how consumers organize knowledge about products and services and how this knowledge affects different information processing activities.

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FOCUS GROUPS:
THEORY AND METHOD

Martin R. Lautman, ARBOR, Inc.

Abstract

Theoretical issues and practical considerations in the conduct and analysis of focus groups are presented and discussed. Exploratory qualitative analysis information requirements are derived from an expectancy value model of attitudes. Exemplar questions illustrating how these information requirements can be incorporated into a moderator's focus group outline for a specific topic are also presented.

Introduction

Probably no market research methodology is employed as regularly by practitioners with as little understanding as focus groups. Like putty, the technique seems to be readily adaptable to whatever research problem is extant. It just seems so easy. Get a few people together and listen to them talk about whatever. However, when we take a closer look at focus groups we come up with some nagging questions.

Today I am going to address those questions and try to infuse some method into the madness in which focus groups currently operate. I'm going to divide my presentation into three main sections. In the first section I will discuss some of the philosophical questions and issues which underlie the use of focus groups.

In the second section I will address six methodological and analytic issues on which focus group theoreticians and practitioners seem to disagree. In each case I will offer a practical resolution of each controversy which seems to have worked well for me. I will conclude this section with a brief discussion of four additional issues which, in my opinion, have not received sufficient attention from either theoreticians or practitioners.

Finally, in the third section I will conclude with a brief presentation of a focus group outline structure which we at ARBOR have used in guiding our exploratory qualitative work. This structure for a moderator's guide represents the synthesis of ARBOR's efforts to bring a systematic approach to one key aspect of groups -- the focus group outline generation process. We have found that the discipline introduced by this formalized outline structure has tended to reduce some of the reliability problems inherent in focus groups, such as those caused by different moderators not covering the same content areas in comparable ways.

Do Focus Groups Work?

I would like to start off our session today by asking the fundamental question, "Do focus groups work?" Reasonable arguments which dictate against the usefulness of focus groups have been made. For example, Yoell (1974) has written that he considers the whole focus group business a "grand charade." Among his many arguments is the highly compelling one that "group reactions may have no counterpart in the behavior of individuals." Lending empirical support to his contention, he reported a study where panelists were debriefed after a group session. The panelists admitted to saying things during the group session which were diametrically opposite to their (reported) actual behavior. While one might question

whether respondents are more likely to tell the truth in a focus group or in individual debriefing sessions, the presence of contradictory reports is disquieting. The dynamic group process that we are so fond of citing as a reason for using focus groups as opposed to other methods of qualitative data collection may yield results that bear little resemblance to the individual decisions and behavior which they are oftentimes conducted to reveal.

A second problem pertaining to the question of whether focus groups work is that a description of behavior, in terms of attitudes and emotional states, in an environment different from that in which it took place can be expected to produce different results (Kanfer and Phillips, 1970). Although it is not a problem exclusive to focus groups, the fact that reported attitudes, emotional states and behaviors may not accurately reflect those which existed at the time of the activity may be exacerbated by the "foreign" focus group environment.

Numerous studies have noted the limited credibility one should place in verbal reports of behavior rather than the observation of behavior itself (for example, Azrin, Holz and Goldiamond, 1961). Conversely, one must rely on verbal reports to identify private thoughts and feelings which enter into a person's decisions and/or behavior since these cannot be observed. This would seem to suggest that greater insight into the determinants of a decision or action requires more than just outsider observation. Whether this insight can better be provided by the group environment of a focus session or in the relative privacy of an individual interview, however, is problematical. In any case, we would expect greater accuracy in self-reports which pertain to phenomenological experiences (those effects directly determined by a stimulus) than for cognitive experiences (those involving verbal inferences about experienced effects).

Kanfer and Phillips (1970), following in the Skinnerian tradition as discussed by Bem (1967), attempted to resolve the verbal report versus outsider observation controversy by suggesting that the same laws apply both to private and to observable behavior, stating that "... there is no reason to assume ... that private behaviors are essentially different from publicly observable behaviors or that their relationships to each other and to external events follow different laws." However, whether this hypothesis can be considered to apply equally well to a markedly different and new environment from that in which the activity originally occurred remains to be determined.

Why Do Focus Groups Seem to Work?

If one accepts the concept that focus groups do work, a reasonable question is "why?" I think there are at least three relevant theoretical threads which can help to suggest some of the mechanisms underlying the dynamics of focus groups. One is reinforcement theory. From the time of the introduction and warm-up, the moderator reinforces behaviors such as participation, openness, and speaking up. Panelists who exhibit these behaviors are positively reinforced. Those who don't are called upon and encouraged. Methods of administering the reinforcement can include body language, facial expressions, respondent selection and non-selection and verbal conditioning (through the systematic application of

generalized or specific verbal reinforcers). A skilled moderator will recognize that these reinforcement contingencies may not only help to foster the group process but can also have the effect of subtly supporting his own biases (Rosenthal, 1961).

A second thread is related to an "assembly effect" where the presence of others creates a state of psychophysiological arousal that intensifies attention, participation, competition, emotions and self-evaluations leading panelists to become highly involved in their task. As described by Zajonc (1965), this state tends to encourage and enhance "well-practiced" responses and suppress new or "weakly-practiced" responses. This might suggest that the focus group environment may necessitate additional effort on the part of a moderator to elicit new and creative responses from the group participants.

Finally, the diffusion of responsibility literature, as it relates to anonymity and non-individual accountability, would seem to provide a third theoretical thread. The nature of the relationships between "safety in numbers", the pressure to conform, tendencies toward risk (Wallach, Kogan and Burt, 1967) and other related issues as they pertain to focus groups, however, has attracted little empirical interest.

Are Focus Groups any Good?

Are focus groups any good? It would seem to me that the first step one must take to answer that question is to develop a criterion for success. This criterion can be expected to vary depending on the type of focus group one is conducting. For example, in the case of what Calder (1977) calls a phenomenological focus group, defined as one designed to acquaint researchers with the nuances and vocabulary of consumer language, one could say the criterion for success is simply getting a transcript of the focus group session. Since this is the type of group run for new brand managers or copy writers, I would say that a group such as this can be considered a success as long as these individuals can now identify the (potential) importance of one heretofore unrecognized word or concept which will help them in communicating to the consumer.

However, in an absolute sense, is what was learned in the focus group correct or incorrect? Oftentimes, this can be determined only when that information is actually used in communicating back to the consumer. Therefore, a determination of the ultimate success of the group frequently must await a retranslation and communication process whose fidelity, in and of itself, requires confirmation.

Methodological and Procedural Issues

Should Focus Groups be Dull or Exciting?

Should a moderator strive to make groups exciting for the participants? Bernstein (1978) says no, noting that "dull focus groups may reflect reality." On the other hand, Axelrod (1975) says they should be exciting, since one has to "keep up the enthusiasm of respondents so they don't say 'why bother?'" Langer (1978) talks about animating the group. The advantage of this excitement and enthusiasm would seem to be the encouragement of top-of-mind thinking and avoidance of rationalizations.

My resolution of this controversy is to recognize, like Bernstein, that some topics are not going to lead to particularly animated and excited respondents. One has to expect that a discussion of socks is not going to elicit much in the way of exciting psychosexual content. Even of greater importance is the recognition that there is a danger of trying to keep the group (and the

moderator) from becoming bored. Dull groups often are informative groups and trying to make dull groups more exciting may "force" less truthful answers.

Should Clients Observe the Groups?

The range of opinions on this question covers the entire spectrum of possibilities. Langer (1978) states that she wants clients watching since it gets "her adrenalin going" and adds "... to the intensity of the experience." Deuterman (1977), on the other hand, emphatically notes that he wants "no young brand managers watching" his groups. Following in the experimenter bias (Rosenthal, 1963; 1966) and demand effects research traditions (Orne, 1962), Kennedy (1976) worries that with clients observing there may be more of a tendency (conscious or unconscious) to manipulate the discussion to support the clients' prejudices and preconceptions.

From a methodological perspective, both Checkman (1980) and Quiriconi (1976) report modifying their moderating techniques to be sure observers understood a point which they had already recognized. May (1978) notes that when those behind the mirror are "creatives", in contrast to the respondents, they tend to be "young and trendy;" and, he tries to do some things to help keep these clients interested and awake (see discussion above). Relatedly, there is an increase in the pressure on the moderator to find out something new and exciting (Kennedy, 1976).

My own feeling is that there is a definite tendency for a moderator to "play to" the observers. This tends to be especially prevalent among inexperienced moderators and/or when there are others besides highly experienced observer researchers behind the one-way mirror. This situation tends to foster a carnival atmosphere to the group session making the moderator feel that to do well he has to be a graduate of the Stanislavsky School of Moderating.

However, having said all that, if I was the client, I would want to observe the groups; and, that is the crux of the problem. Recognizing that it is politically necessary in most cases to have observers, in lieu of a resolution I offer the following. Both the moderator and the observers should recognize that the bias exists. Furthermore, it must be explicitly stated that a moderator must be allowed to do his job without having to make sure everyone behind the mirror gets all of the key points. Similarly, it must be recognized that some groups will flop and/or be uninteresting and, in neither case, is the moderator necessarily at fault. This attitude should help reduce the on-stage anxiety problem.

Finally, since no one would hire a moderator who is anything less than an expert, a client should defer to the moderator's preference regarding the presence of observers. This decision implies recognizing that if the moderator chooses not to have observers, this may reflect his judgment that better findings will emerge without the increased pressure of the bright stage lights of client observation -- not that he is afraid of being watched.

How Many Respondents Should There be in a Group?

Once the decision has been made to conduct a focus group, the inevitable second question (The first question is "what will it cost?") is "how many respondents should be present at the session?" Client recommendations will typically include every possible number up to the account-ant model of the more the better at a given price. In practice, due to the inevitability of no-shows, the actual number of respondents often is less than the number invited; and, the moderator is put into the unenviable position of convincing the client that one can do an adequate job with less than the promised number of panelists.

In recommending the number of participants, one should recognize that there are about 80 useful minutes in a focus group session and about 25 percent of that time is usurped by the moderator. With ten participants, this leaves an average of only about six minutes per individual.

Payne (1975) recommends up to eight respondents in a group. Levy (undated) says there should be eight. Wells' (1974) recommendation brackets those of Payne and Levy suggesting that there should be six to ten.

I feel that there is no single correct size for a group with at least five issues relevant to the preferred number of respondents. There are the (1) topic, (2) type of respondents, (3) length of the agenda, (4) the number of groups in the study, and (5) type of group. With respect to the topic, the more interesting and/or the more technical the subject matter, the fewer the respondents needed. Similarly, the more articulate and the more professional the respondents and/or the shorter the agenda, the fewer that are required. With everything else equal, the more groups which are authorized the fewer the number of respondents needed. Lastly, the purpose of the group will affect the number recruited. Following Calder's (1977) terminology, more respondents should be recruited for a phenomenological group than for a clinical group.

In the way of some absolute guidelines which I would recommend, I tend to recruit four to eight respondents for clinical and professional groups and eight to eleven for consumer and phenomenological groups.

Should One Use a Conference Table or Living Room Layout?

Since consumers tend to have living rooms and not conference tables in their homes, Axelrod (1975) recommends using a living room arrangement to "keep the consumer in a consumer role." Quiriconi (1976) cautions against using a couch in a living room set-up since people who sit on the couch, especially the person in the middle, can't face anyone directly and seems to "sink in and get lost." Payne (1975) prefers a conference table.

I see this as probably a non-issue with consumers (home-makers) and, in practice, is simply a matter of moderator preference. With professionals and men, however, I tend to prefer a conference table format since it seems to give the respondents both the physical support and psychological distance which helps the flow of the conversation.

Should A Focus Group Report Include Respondent Quotes?

Hussey (1975) recommends completely deleting quotes. Calder (1977) suggests that they are appropriate only in phenomenological groups where one wants actual consumer language.

I disagree. The reporting of verbatims seems to me as much a question of methodology as the audience for whom the report is being written. As a practical matter, focus group reports are read by clients with all types of backgrounds; and, the immediate goal of the research is to get the findings read. Many creative types in particular make a religion out of proclaiming that they don't understand numbers but they will read and recall quotes. Furthermore, I think that visual imagery and memory research would tend to support the notion that those points concretely illustrated and supported by quotes would tend to be recalled better. Therefore, my recommendation is, whenever possible include verbatims and make them work in the report to support analytic observations and conclusions.

Should A Moderator Provide Instant Analysis?

After a particularly thought-provoking group, few clients want to grab their coats and briefcases and dash out. Almost everyone wants to sit around and discuss the implications of what was heard. And, inevitably, the moderator is asked for his opinion "as an expert who has done many of these sessions."

Langer (1978) considers a moderator debriefing an "absolute necessity." Kennedy (1976) is totally opposed to it. I am somewhat ambivalent and feel that the decision depends on the experience of both the moderator and the observers.

The arguments against such a debriefing include (1) biasing future analysis on the part of the moderator, (2) "hip-shooting commentary" without leaving time for reflecting on what transpired, (3) recency, selective recall and other factors associated with limited memory capabilities, and (4) not being able to hear all that was said in a less than highly involved and anxious state.

Arguments for employing instant analysis include (1) hearing the observations of several highly intelligent and informed individuals on how the groups sounded and appeared from the outside, (2) getting an initial hearing of and reaction to the moderator's top-of-mind perceptions, and (3) using the heightened awareness and excitement of the moment to generate new ideas and implications in a brain-storming type of environment.

My own preference has been to engage in "instant analysis" when clients are experienced focus group observers and are familiar with the tenuousness of "instant marketing strategy." In any case, whether instant analysis is or is not employed, the moderator should always explicitly reserve the right to change his opinion after reviewing the tapes.

I'd like to complete this section of my presentation by mentioning four additional issues related to focus groups which have not attracted a significant amount of critical comment in the marketing literature and, for reasons of time, will only be briefly discussed here. These include (1) group composition, (2) timing of moderator interventions, (3) quantitative training for qualitative researchers and (4) moderator skills overload.

Group Composition

There has not been much discussion as to the type of personalities and/or backgrounds (homogeneous or heterogeneous) of panelists which tend to produce the best focus group results. In the case of synectic groups, an attempt is made to bring in a wide diversity of backgrounds. In the case of focus groups, the guideline I use is to recruit a relatively homogeneous group of respondents but with a sufficient diversity of experience to completely cover the range of the topic area. An unambiguous definition of homogeneity, however, is sometimes difficult to come by.

Timing of Interventions

During a focus group a moderator can be expected to make dozens of interventions, including deciding when to cut someone off, whom to call on and when to change topics. When making these interventions, the moderator is continually making intuitive judgments about the relative merits of continuing on as opposed to changing direction. Yet, there is no way of knowing whether each intervention will lead to more/better information than continuing on uninterrupted.

No simple resolution of this issue is readily apparent, but second-guessing the timing of an intervention by a

skilled moderator rarely appears to be justifiable.

One further related issue can be raised. The introduction of these interventions can justly be claimed to provide the flexibility which is the strength of the focus group technique. However, it precludes application to the analysis of the extensive literature on group problem solving and the types of interaction processes which would be expected (for example, Bales and Strodtbeck, 1951) in groups without formal leadership of the type provided by a moderator.

Quantitative Training

In practice, the distinction between qualitative and quantitative research has been a sharp one. We talk about qualitative research as an art and quantitative research as a science. Moreover, practitioners of one are rarely practitioners of the other. In market research suppliers, advertising agencies and companies alike, qualitative researchers and quantitative researchers have tended to lock into their selected roles and define the research process as sequential, with quantitative research (and one group of researchers) taking over after qualitative research (and a second group of researchers) is finished.

In my opinion, this distinction is at best artifactual and at worst counterproductive. Quantitative research requires qualitative explanations; and, should subsequent quantification be required, one cannot adequately conduct qualitative research unless one has in mind the type of quantitative model and/or instrument one will later seek to employ.

Furthermore, knowledge of the procedures used in some highly technical analyses is necessary to recognize the data requirements involving qualitative definition. For example, unless a qualitative researcher is familiar with the literature on hierarchical decision making models (to date reported only in the "quantitative literature"), it will be difficult to conduct focus groups designed to reveal the types of decision making rules used by respondents.

Moderator Skills Overload

My concern here is with all of the skills which a focus group moderator is asked to master. Generally, these include question/problem/hypothesis formulation, focus group outline development, moderating, analysis, oral presentation, and a written report. It is not inconceivable that good moderators may not be good writers and/or good presenters, etc. In any case, all of these skills require some form of systematic training. I am particularly uncomfortable with the "see one, do one, teach one" model which many of us seem to have adopted for focus group moderator training.

Information Requirements for Exploratory Qualitative Analysis

Eighteen information requirements derived from current expectancy value attitude theory serve as the basis for ARBOR's systematic methodology for exploratory qualitative analysis. They form a system for developing a comprehensive focus group moderator's guide from which the outlines for individual studies can be constructed consistent with their specific goals. In presenting this system, I will provide an example of one of the several specific questions used in each area to help clarify the issues being investigated within a specific information requirement.

1. Definition of significant classes of the attitude object
 - . "What kinds of cookware are there?"
2. Brand awareness
 - . "What brands of cookware are you familiar with?"
3. Evaluation of attitude objects
 - . "Which brand is best, worst, and why?"
4. Situational contexts/relevant others
 - . "How, when and where do you use cookware?"
5. Weights of situational contexts/relevant others
 - . "When giving cookware as a gift, what is important?"
6. Evaluation of each attitude object in each situational context/relevant others
 - . "Which brands do you prefer as a gift, and why?"
7. Attributes of the attitude object for each situational context
 - a. Physical attributes
 - . "When you think about cooking with aluminum pans, what features of the cookware come to mind?"
 - b. Interpersonal
 - . "Does anyone in your family care what type of cookware you use?"
 - c. Affective
 - . "Do you have any special feelings towards particular pots and pans?"
8. Associations among attributes
 - . "If a pot is heavy, will it be more or less likely to have even heat distribution?"
9. Dimensions, levels and range of attributes
 - . "When you say you want a heavy pot, what do you mean by 'heavy'?"
10. Threshold of satisfaction
 - . "How long does a pot have to last for you to consider it durable?"
11. Beliefs and opinions of brands on attributes, dimensions and threshold of satisfaction
 - . "Are Mirro aluminum pans durable enough for you to consider buying them?"
12. Latitude of acceptance of beliefs and opinions
 - . "Would you believe it if I said that the TeflonTM coating on a pan will last longer than the pan itself?"

13. Evaluation of attributes (salience)
 - . "For which of these things which you say you want in your next set of cookware would you be willing to pay more?"
14. Determination of values
 - . "How would you characterize someone who is a good cook?"
15. Hierarchy of values
 - . "Would you rather be a good cook or have a successful business outside of the home?"
16. Saliency of relationships between attributes and values
 - . "You say you want a pot with even heat distribution. What does that affect, your health, your reputation as a cook, or what?"
17. Attribute salience and latitude of acceptance as related to values
 - . "How much do you think easy cleaning cookware can really affect your lifestyle?"
18. Category importance as related to value system
 - . "How much time in an average day do you spend with cookware?"

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USING QUALITATIVE FOCUS GROUPS IN GENERATING
HYPOTHESES FOR SUBSEQUENT QUANTITATIVE VALIDATION
AND STRATEGY DEVELOPMENT¹

Larry Percy
CREAMER INC

Abstract

This paper follows Calder's notion of construct operation in focus group application reporting the results of an explanatory approach to qualitative research where first degree constructs are generated in three areas, with subsequent quantitative measures that produce their corresponding second-degree constructs. These findings are reported in sufficient detail to track the hypothesis generation-validation procedure, along with the resulting strategic decisions following from the results.

Introduction

Too often the use of qualitative research in general, and focus groups in particular, follows no systematic or purposeful plan. It is seen as a (relatively) inexpensive and easily interpreted means of gathering some information about a question; one where answers are readily and quickly forthcoming. While this rather serendipitous approach may indeed be occasionally useful, or more to the point thought to be useful, it does not begin to realize the potential power of focus groups in an integrated research program.

Borrowing from Calder (1977), qualitative research should be utilized to generate constructs suitable for measurement. He distinguishes three approaches to qualitative research: exploratory, clinical, and "phenomenological". The latter are groups conducted to familiarize oneself with the everyday language and experience of consumers. This type of approach does not lend itself to subsequent quantitative inquiry, yet more often than not such qualitative groups are used as a basis for further quantitative measure.

If one is using qualitative research as a springboard to further inquiry, an "exploratory" mode is more appropriate. Such an approach treats reality as it is understood by the consumer (something Calder has called "first degree constructs"), and juxtaposes it against the everyday experiences of the consumer. Hypotheses emerging from this type of qualitative focus group research are then ready to be validated through explicit numerical measurement to test the hypotheses generated, not merely enumerate results.

The Hypotheses Generation - Validation Procedure

What one is actually seeking in conducting exploratory focus groups is insight from the everyday knowledge and experience of consumers. While it is not expected that people are necessarily introspective about their behavior, by listening to them discuss their attitudes and behavior in the area of interest, one hopes to infer something of the decision process involved in choice behavior. This is by no means a simple process, and one is particularly cautioned against the assumption that the hypotheses generated are in fact "findings." This is not to imply that

¹The author is in obvious debt to John R. Rossiter, who conducted the actual exploratory focus groups discussed in this paper and who was in large part responsible for the hypotheses generated.

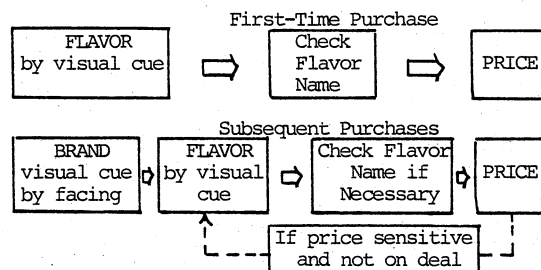
what you can learn from the exploratory focus group is therefore useless. It should shape one's thinking and suggest appropriate methodologies for further quantitative development. The real mistake is to simply assume answers have been forthcoming from the groups, subject only to the limitation of the small samples involved.

As Calder (1977) has pointed out, perhaps the single question most often raised in utilizing a focus group methodology is the generalizability of the findings. Generally, this is discussed in the usual way one talks about the generalizability of survey data: how "reliable" is the information; can we "project" it to the population at large? But this is clearly not the way to look at qualitative research, especially in the exploratory mode. In fact, it is not even particularly meaningful.

Our goal in conducting focus groups in an exploratory mode is to outline a hypothesis or model that must be confirmed by subsequent quantitative research, and at that point the question of sample generalizability becomes germane. From this perspective, it is simply not appropriate to think about the generalizability of exploratory focus group results. (While somewhat more applicable to a phenomenological or clinical approach to focus group research, that is not our focus here, nor, in the main, should this be the focus of most consumer behavior research.)

It follows, then, that the hypotheses generated by exploratory focus groups require quantitative development; not because of problems with sample generalization; but for the more important requirement of scientific discipline. To illustrate, extensive exploratory focus group work was conducted some years ago in an effort to develop some understanding of how consumers made choice decisions in purchasing yogurt. The resulting "model" inferred from the research is shown in Figure 1. It postulates a two-step model; one for first time purchases, and one for subsequent purchases. The key attributes effecting choice were flavor, brand, and price. Initially, brand was not considered, only flavor (keyed by a visual cue), and price. Assuming the experience was favorable, brand then became highly salient, acting as an anchor for subsequent purchase (providing stability in choice). The model implies a definite sequence in which potential buyers first seek out the familiar (i.e. "safe") brand, verify the desired flavor, then check price.

FIGURE 1
HYPOTHEZED PURCHASE DYNAMIC MODELS



However, for this model to be useful, not only must we determine its efficacy through quantitative measures, but for purposes of advertising and marketing strategy, it is necessary to determine which of the stages of the model contributes most to ultimate choice. To evaluate if the brand - flavor - price hierarchy implied by the model was correct, a conjoint measurement analysis was used. The part-worth values revealed price was actually the most important consideration, followed by brand, with flavor least important.

An interesting measurement consideration here underscores the importance of selecting the most appropriate quantitative technique for hypotheses testing. To have simply asked consumer which of the three factors was the most, and which the least, important consideration in choosing the product would have ignored the potential of interaction effects, and provided misleading results. Response to that question indicated that flavor was the most important consideration, and brand least (Percy, 1979).

Application to Strategic Planning

A particularly effective example of how a well-conceived application of exploratory focus groups to generate hypotheses for subsequent validation through quantitative analysis arose from a concern a number of years ago among potato growers and marketers over a long and continuing decline in per capita potato consumption. In addition, there was a feeling that the image of potatoes was suffering from a growing negative attitude toward its food value; a parallel problem to the public policy concern over America's food habits, especially nutrition.

Specifically, exploratory focus group sessions were conducted among homemakers in three geographically diverse cities. The groups were structured to treat reality as it was understood by the consumer, following what Calder (1977) has described as "first degree constructs," and juxtaposing it with the everyday experiences of the consumer. Hypotheses generated by these groups were then subjected for validation through a "scientific" approach (again, following Calder): i.e. using the quantitative measures to test the hypotheses, not merely enumerate results. These hypotheses were in fact pre-tested among 120 homemakers in three additional cities to optimize the measurement instrument, and validated among a nationally representative sample of over 1,200 homemakers.

Construct Generalization and Measurement

Results of the exploratory focus groups generated a number of first-degree constructs from which hypotheses evolved; three are discussed below in some detail in order to illustrate the procedure. Family Influence on Consumption; Attribute Importance in Selection; Images and Beliefs Associated with Consumption.

Family Influences on Consumption. Family influences on serving potatoes were found to center around a general feeling that husbands, and to a certain extent children (especially with french fries), were much more likely than the homemaker to enjoy potatoes and feel they are important to a meal. Women in the exploratory groups consistently voiced their husbands' stated belief that (referring to dinner): It's not a meal without potatoes. This was in fact found to be the case when measured in the quantitative phases. Nearly two-thirds of all homemakers felt their husbands "liked" potatoes, and over one-half said children like potatoes. In terms of the importance of serving potatoes at the main meal, women perceive their husbands (or men in general if not married) to be significantly more likely to find serving potatoes with the meal very important; and in addition, nearly all agreed strongly, with the statement: Most men feel a meal is not a meal without

potatoes. So despite the fact that serving a potato at the main meal of the day is not considered very important to most women, they do feel it is important to their family.

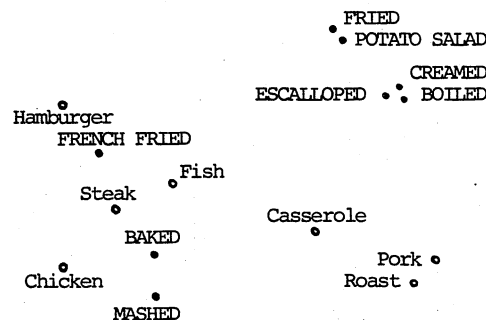
This potential dissonance relationship between personal vs. family preferences in shaping potential use also extends to the ways in which potatoes are prepared. Clear favorites for different family members were measured in the quantitative phase: the husband's paralleling the more all purpose and frequently served potato dishes; the children's quite different from the husband's; and the homemaker's paralleling those she perceives as best tasting. One might conclude from these results that the husband's taste, rather than the homemaker's, tends to be dominate use. Also apparent were a number of intra-potato dish differences and similarities.

Attribute Importance in Selection. As a result of the exploratory quantitative research; it was hypothesized that the potato selection process could be modeled as follows: first, a shopper searches for the general type of potato that will best meet their end-use meal planning needs. Here they would be looking for attributes of potatoes, or of various types of potatoes, in a positive sense. Then, once the general type decision is made, a particular potato within that type category is selected from the loose or bagged potatoes of that type which are available at her supermarket. This is achieved by a process of negative attribute avoidance.

Essentially, it is the particular set of attributes associated with a particular type of potatoes which determines selection, always with end-use in mind. The functional typology suggested appears to be as follows: a) for baking, thicker skinned potatoes, principally Idahoes; b) for boiling, thin skinned or skinless "regular" (non-Idaho) potatoes, red potatoes, or whole "baby" potatoes; c) for mashing, almost any potato, but more often the regular; d) for french-fries the longer potatoes (for cutting) such as Idahoes or large regular whites; e) for home-fries, regular whites or canned baby potatoes; and f) for potato salad any regular white or red. The hypothesized relationship in almost all cases was specifically upheld, with only minor variations, in the quantitative phase.

Additional measures were gathered in the quantitative phases in an effort to establish the cognitive links between particular types of potatoes and main meal end-use. Each of the original functional types, plus two additional "special occasion" types (creamed potatoes and escalloped potatoes), were ranked in terms of their appropriateness for seven selected main dishes.

FIGURE 2
UNFOLDED POTATO SIDE DISH PROFILES: TWO-SPACE
CONFIGURATION FROM M-D-SCAL 5M
Stress = .0303



The resulting data were mapped into measurement via a multi-dimensional unfolding analysis. Looking at iso-preference contours for each main dish, the closer any particular potato dish lies to the main dish, the more likely that particular potato dish is considered appropriate to serve with that main dish. In the solution space shown in Figure 2, for example, one can see that roasts and pork are seen as being very much alike in terms of potato dishes most likely to be served with them. Another interesting finding is the remarkable similarity (in terms of main dish serving likelihood) of boiled, creamed, and escalloped potatoes. They seem to derive their commonality from the fact that unlike the other potato dishes, they are neither very likely nor unlikely to be served with any of the main dishes studied.

Images and Beliefs Associated with Consumption. While a number of associative attributes were generated in the exploratory phase of the research, the resulting image of potatoes was hypothesized to center around health and nutrition beliefs, with a basic positive side and a basic negative side. Questions of "value," although in some ways related to each of the previously discussed first degree constructs, also tended to be wrapped up in health and nutrition based beliefs.

On the positive side, potatoes were hypothesized as a food staple, and a major source of vital energy-producing carbohydrates. It was found, however, that it was not the vitamins in potatoes that were valued, nor even the vague term "minerals" (although the latter was a more common association). When people refer to potatoes as "nutritious" they do not mean the word in its colloquial sense of "vitamin rich" but rather in its literal sense of "nuturant" or "sustenant." This, of course, is an important distinction. Additionally, potatoes (or more precisely fresh potatoes) are hypothesized as being regarded as a natural food—a product of nature with minimal interference from outside influences.

Measurement of these beliefs confirmed that indeed most homemakers would apply the vague attribute of "nutritious" to potatoes, but few would ascribe the more specific attributes of "rich in vitamins and minerals" or "Vitamin C." Coincidentally, the attribute "natural" factored with "nutritious" (along with such other general attributes as "fresh" and "food staple"), further underscoring the hypothesized literal sense of "nutritious" rather than its colloquial sense of vitamin and mineral rich.

The negative image of potatoes drawn from the qualitative research clearly centered on health fears associated with potato consumption: overweight and attendant medical complications, aesthetic loss of bodily trimness, and cosmetic complexion problems. A complicated set of beliefs appeared to be involved.

When pressed, people will logically admit that it's not the potato that causes problems but (a) what you put on it and (b) how you prepare it. The idea of "what you put on it" may seem to exonerate potatoes, but it doesn't. People very very rarely eat potatoes plain. Baked potatoes are eaten with butter, margarine or sour cream; mashed, with gravy or cheese topping; boiled or roasted, with gravy; french fries, ketchup; potato salad, mayonnaise or dressing. Public knowledge of vitamins and balanced diets may be vague or ill-formed, but people readily identify foods high in "fats" (saturated fats which produce cholesterol). Note how many of the typical potato add-ons are in the high fat group: butter, cream, cheese, egg yolks in mayonnaise, oils in salad dressings, meat fat and sugar in gravy.

The second idea which potentially shifts blame away from potatoes *per se* lies in the way they are prepared. Quite aside from whatever is added later, it was hypothesized that people perceive a kind of "health hierarchy" based on

mode of preparation. It begins with the likely healthiest form, potato salad, and descends through the hot varieties.

The hierarchy introduces another common belief about potatoes, namely that most of the vitamins and minerals are contained in the skin. Removal of skin thus reduces health and nutrition (colloquial sense this time) connotations.

Measurement in the quantitative research provided ample support for these hypotheses. A significant number of women believe you can't eat a potato without something on it, and almost all strongly agree that seasoning is very important in preparing fresh potatoes; and nearly everyone agreed that the skin is the most nutritious part of a potato.

Finally, the third important negative aspect of potatoes is a popular belief in their high caloric content. Again, the psychological basis of this belief appears to be fairly complex. First of all, potatoes just seem to be heavy by their very nature. Factual caloric evidence to the contrary, other starches such as rice or bread—even with topping or butter added, simply taste and look lighter than potatoes.

Supporting the high calorie perception is the mental picture of heavy potato eaters as being heavy people. Subjects were asked to descriptively profile their image of a frequent eater of potatoes, then to profile a non-eater of potatoes. The strongest frequent eater image was that of a large, heavy or fat man; if not fat, a large "plain eating" manual worker. Non eaters, in contrast, suggested a slim woman, a weight watcher or dieter.

Quantitative measurement reveals that fewer than one-half would say a potato is "healthy," while over one-third felt they had too many calories. Asked to describe someone who eats a lot of potatoes, overwhelmingly a person's first image is one of someone who is fat; this contrasts with the image of someone who never eats potatoes as thin or dieting. It is no wonder that inhibitions are focused on the potato itself, regardless of how it is prepared or served.

Strategy Derived from Quantification

Because of the potential instrumentality between behavior and the negative salience of many beliefs, initial strategy development is drawn from those constructs; family influences or consumption and attribute importance in selection are utilized only as secondary or mediating constructs. Assuming the dominance of the image dimension, our first task in developing a successful advertising strategy from the validated hypotheses is to construct a set of values for the target receivers, distinguishing positive and negative. Major values are derived from the foregoing discussion, and arrayed in a value hierarchy from strongest to weakest (see Table 1).

TABLE 1
MAJOR VALUE HIERARCHY

Positive Values	Negative Values
1. Taste enjoyment	1. Overweight (calories)
2. Balanced diet	2. Heart disease (fats)
3. Adequate vitamins	3. Preparation time and effort ¹
4. Natural food	4. Menu boredom
5. Saving money	5. Complexion problems (fats)

¹ Specific to fresh potatoes

When a communicator is presenting a communication in which the conclusion is one with which the audience already agrees (e.g. the positive value links described above) he need only present a favorable one-sided argument. However, when the communication involves a conclusion with which the audience is predisposed to disagree (e.g. the negative potato value linkages) he has a choice of either ignoring the audiences natural counter-arguments or refuting them with a two-sided argument of his own--i.e. one which attempts to address and refute the audience's side and persuade them over to the communicator's side. The ignoring strategy works best when the counter-arguments are either weak or nonsalient. When the counter-arguments are both strong and salient, too much so to be ignored, a refutation strategy should be adopted.

Some of the earliest work on the efficacy of refutational appeals came out of research during the second World War by Hovland and his associates (cf. Hovland, Lumsdaine, and Sheffield, 1949), which showed that neither ignoring opposition arguments nor explicitly refuting them has greater efficacy under all conditions. In general, ignoring the opposition was found to be more desirable if the receivers were initially favorable towards one's conclusion, but the mentioning and then refuting the opposition is somewhat more desirable if the receivers were initially opposed to one's position (as is the case in this problem). Work by others (mentioned by McGuire, 1969) has likewise indicated that refuting or ignoring opposition arguments are about equally effective overall in producing direct attitude change, although earlier studies by McGuire (1963) found that explicitly refuting opposition arguments, rather than ignoring them and presenting only one's own arguments, does produce more direct attitude change.

Since any communication effort would involve a message conclusion which the target segments were predisposed to disagree with, it was quite clear that a major reversal of diminishing homemaker favorability toward potatoes could only be accomplished by successfully refuting the increasingly strong negative health aspects surrounding the image of potatoes. It is a well established research finding of social psychology that when both positive and negative attitudes are held toward a common entity, negative characteristics subjectively outweigh the positive in determining outcomes (Wyer, 1974).

One is forced to adopt a refutation strategy in order to break down the existing beliefs and replace them with new beliefs which could be subsequently associated in a positive fashion with potato usage. The general refutation format suggested was:

- (1) Forewarn the receiver of the intended conclusion. This places the source bias out in the open at the very beginning, maximizing potential reception of the point of the message. It is, of course, no guarantee of persuasion.
- (2) Present receiver-beliefs first. This has the effect of preventing an early tune out to the message; and importantly, tends to reduce the likelihood of the receiver raising those same beliefs in counter-arguments after the advertiser's side of the message.
- (3) Present message points which refute receiver's negative beliefs and support advertiser. This is the start of the advertiser's message.
- (4) Draw the conclusion explicitly. This serves three functions: (a) it overcomes any receiver reluctance to draw it himself; (b) it provides a sense of closure and completeness; and (c) it underscores the confidence of the source in his position.

One successful print execution of this strategy utilized a headline reading "Lies, Lies, Lies" over a picture of a

large baked potato surrounded by negative captions that mirror many of the target segments' negative beliefs. Body copy refuted those beliefs, and closure was provided by the tagline: "The Potato. Something good that's good for you" (see Table 2).

TABLE 2
APPLICATION OF REFUTATION STRATEGY TO REDUCE
HIGHLY SALIENT NEGATIVE BELIEFS ABOUT POTATOES

Refutation Steps	Execution
1. Forewarn the receiver of the intended conclusion	Headline: "Lies, lies, lies"
2. Present receiver-beliefs first	Visual: picture of large baked potato surrounded by captions reflecting negative beliefs
3. Present message points which refute receiver's negative beliefs and support advertiser	Copy: refutes misconceptions, underscores positive health benefits
4. Draw the conclusion explicitly	Tag: "The Potato, something good that's good for you"

Results of the advertising campaign developed from this communications oriented segmentation of the potato market based upon homemaker attitude has been significant over the last several years. As reported in the Marketing News (1976) the general level of attitude had changed from a "not-very-nutritious, fattening substance, to a nutritious vegetable that isn't too fattening." They quote data from a research study that showed the number of people who believe potatoes have too many calories had dropped from about 1/3 to 1/4 over a two year period, while the percent who believe they are basically nutritious grew from 55% to 81%. And most importantly, consumption of fresh potatoes by the average household rose 17.7%; the first major rise in usage since 1950.

CONCLUSION

In summary, when using focus groups in the study of consumer behavior, it is important to bear in mind that these groups are used only for generating hypotheses, and do not represent findings. These hypotheses must be validated through quantitative research. It is essential to the development of effective marketing or communication strategy that this two-step process be followed. The first is necessary to ensure the domain under study is adequately addressed from the reality of the consumer; the second that it is valid.

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TURNING FOCUS GROUPS INSIDE OUT

William A. Cook, General Foods Corporation

Abstract

A comparison of two group-interaction methodologies was used to suggest some opportunities for improvement of focus groups to be explored in methodological research. The Synectics® group problem solving methodology was chosen for the comparison because it had been developed from an extensive research program.

Introduction

Research on ways to improve the focus group interview has been quite limited. Somehow, our emphasis on developing moderator expertise has produced an art form more than a scientific tool. Consequently, there are many skilled moderators, but little canonized knowledge on record. Lists of "Do's and Don'ts" have proliferated, but testable hypotheses have been infrequently postulated and less frequently put to test.

We have expressed strong reservations about the use of focus groups for a variety of purposes, but we have been less clear about those applications for which they are suited. Even though many of us decry the use of focus groups for decision making, their output looms larger than life and, indeed, often does influence our decisions.

The intent of this paper is to highlight some lines along which we might develop research programs to improve our use of the focus group interview. The vehicle for this is a comparison of focus group methodology with that developed by Synectics® Inc. for group problem-solving meetings. My choice of Synectics was motivated by their heavy reliance on research as the basis for development of their methods. In fact, they continue to modify their process as further experimentation indicates ways of improving such meetings.

Both the focus group and the Synectics group share the same mixed blessing. The group interaction which is integral to them both is at once a blessing and a curse. To achieve the desired synergy, the group leader must relinquish some control to the group and that introduces certain risks and complexities.

Definition of Terms

Let me clarify what I mean by these two terms. By focus group interview, I refer to an interview between a trained moderator and a group of 6-12 willingly recruited participants. The composition of the group varies according to the needs of the client, but generally they do not know each other or, at least, lack any working relationship. By a synectics group I refer to one using the group problem solving procedures developed by Synectics® Inc. in Cambridge, Massachusetts. Most often these groups are composed of fellow workers who bring with them certain pre-established roles and relationships. Their participation may be in response to managerial fiat instead of their own choice. A smaller group is likely with six considered optimal in most cases. Like focus groups, synectic groups generally have a pre-established agenda, but there is wide latitude in following it.

Objectives

The objectives for the focus group interview are generally stated in such nebulous language as:

- To provide a source of ideas or hypotheses to be tested in subsequent research.
- To improve our understanding of how a given segment talks about or thinks about this topic.
- To provide the creative team with input for creating an ad or a campaign.

The objective for a synectics problem solving group is to develop one or more possible solutions to the problem before the group. An acceptable solution must be novel, feasible and sufficiently well-developed to have identifiable next steps from the point of view of the person whose problem it is. The group approach is usually dictated by the failure of the person whose problem it is to come up with a satisfactory solution alone and/or the need for group participation in the implementation of any solution.

Roles

In the focus group there are two designated roles: moderator and participant. The moderator is responsible for both the content, or what gets discussed, and the process, or how it gets discussed. Typically, the content focus shifts within a session from the general to the specific. The procedure can vary from a "serial interview" where the moderator poses the same question to each participant in turn to the moderator sitting as a silent observer of a free discussion among participants. The moderator usually is fairly active in the discussion as he tries to balance participation among group members, direct the content toward some focal area, and to get participants to be more self-disclosing than they typically are in a statement of opinion. The participant's role is to "be herself", to tell what she does or doesn't like or want to understand or whatever. Sometimes participants choose other roles for themselves rather than the implicitly assigned one. Under such circumstances, the moderator may find that there is suddenly:

- A Co-moderator, who interjects her own questions into the proceedings, and often her own opinions, too.
- The Interpreter, who explains to the moderator what everyone else just said.
- The Expert, who speaks for the group on every topic and takes issue with any who disagree.
- Or any of a number of other disruptive, counterproductive roles.

In synectics groups, the roles are explicitly identified. They may change during the meeting with the consent of the group, but a training session is used to convey what is permissible behavior for each role and what is not. At the end of the training an attempt is made to secure an informal verbal contract with each participant so that they understand the importance of each one filling their role. Leadership of the meeting is divided between two people--one taking process leadership and one content leadership. The Process Leader, or Facilitator, serves as: scribe, recording the meeting activity on a large easel pad; traffic cop, insuring the free expression of ideas and that the rules are followed; time keeper, seeing to it that breaks and session endings occur on time, etc; and catalyst, by changing pace or focus when needed to stimulate activity. The client is the person who owns the problem

and has chief responsibility for implementing the solution. He tries to stay out of the process and to listen receptively to the ideas offered by the group. The rest of the group are designated as participants. Their job is to aid the client principally by offering evocative ideas. Criticism of ideas is primarily restricted to the client and at specified points in the meeting. Both clients and participants are urged instead to try to build on existing ideas overcoming any negative aspects they see.

Communications Networks

It is not surprising that a communications network analysis of these two types of groups reveal substantially different patterns of interaction. The presence of the client in the latter case is quite a significant difference in composition.

Ideally, the focus group would have balanced and abundant interaction among participants with minimal involvement by the moderator (See Figure 1). Frequently, the moderator or another member of the group will evolve into a "node" with communications primarily channeling through that person as shown here. Where this occurs, group participation is reduced.

With the synectics group, the client ideally is a node in the communications network (See Figure 2). The participants want him to understand and consider their ideas. At times the communications will be formally restricted to interaction between the Content and Process Leaders for brief periods while the Content leader or Client indicates his desire for the group to redirect its attention. Typically, the group is privy to this dialogue but their input is limited. Since ideas are recorded by the Facilitator, there is a tendency to speak to the chart pad or to the group at large. Too much of this may weaken group cohesion and the willingness of participants to listen to each other and build on one another's ideas. Consequently, the Moderator must exercise some effort toward pushing communication back down so that participants interact more. A light, friendly atmosphere is very valuable here just as it is in a focus group session.

Barriers to Effective Interaction

There are numerous barriers to effective group interaction in these two types of meetings. In the focus group, a common inhibitor to participation is one's perceived lack of expertise on a topic. Similarly, if a person views her opinions as uniquely different from the rest of the group, she is less likely to expose herself as an oddball. Other sources of group heterogeneity (race, sex, SES, product usage, etc.) may also restrict interaction and self-disclosure. Where both spouses are present there is a good chance that one will speak for the couple while the other sits silently. In the case of various professional groups, such as doctors, the participants are inclined to state the "party line" instead of disclosing their own views or feelings when they are surrounded by their peers.

Additional barriers to effective group interaction are found in the typical synectics group. They center around the groups previous working relationships with each other and with the problem being addressed. Issues of turf and lack of trust are common in large organizations and bear heavily on how a group interacts. Similarly, there are various pre-conceived notions regarding what the "real" problem is and how it should be attacked. Getting all the hidden agenda out on the table is not always possible, but deserves some time. The practice of gathering a list of alternative problem statements from which the client is to choose is a good means of accomplishing this.

Implications

There are several means used by Synectics practitioners to restructure group interaction. These may have applicability to improving focus group methodology. For mnemonic purposes I have identified four R's of Restructuring as:

1. Relegating new roles
2. Rechanneling criticism
3. Recognizing contributions
4. Relating to reality

In the relegation of a specific person to the role of client, the ability to focus the meeting is substantially enhanced. At the same time, by removing process control from the client, the participants are assured that whatever the clients views, their ideas will receive a fair hearing. Freeing the participant to serve as an uncritical resource permits them to consider riskier, more fanciful ideas than they might otherwise.

The rechanneling of critical thinking is brought about through various means. The use of more open-ended language such as "I wish..." or "How to..." is part of that. Allocating separate periods to expand or alter the groups perception of the problem (to blue-sky it) and to narrow the focus and introduce practical considerations insures that blue-sky thinking can occur without the risk that it will stop there. Encouragement to seize on that which is of value in an idea and to build on that doesn't lead to an immediate elimination of our knee-jerk critical response, but it does reduce the frequency of such behaviors.

The formal recognition of contributions does more than just get an idea recorded for future reference, it bolsters the participant's sense of security and rewards her for actively participating. In addition to summarizing an idea up on the chart pad, the facilitator may request elaboration or clarification of the idea from its contributor. The facilitator may turn to the group and specifically ask for a build on that idea to provide additional reinforcement for it, or comment that a new idea is a nice build on someone's previous idea.

Relating the synectic's problem solving activities to reality does more than provide a concrete, practical outcome, it serves as a milestone, a tangible reference point for the group, representing how far they have moved toward solving the problem. Of course, a reality-oriented solution is more likely to be translated into action than a blue-sky one. The need for both kinds of thinking derives from the difficulty we have with our practical approaches in escaping our old ways of thinking about the problem with all their inherent limitations.

This notion of closing the loop is one I have found very helpful. It provides a chance for the group to see just what they have accomplished. To determine that they have brought something new to bear on the problem and that it is implementable is very rewarding. The articulation of the next steps to be pursued provides a bridge between the meeting and the future where the ideas will be realized.

Speaking of closing the loop, I would like to ask you to join me in considering some ways of translating the elements of synectics into researchable hypotheses for studying focus group methodological development. Perhaps you have experimented some in a less formal fashion and have an idea you would like to share. I would like to study the impact of recording the ideas in a focus group up on a pad. I would expect that it would reward the participants for contributing and would serve to focus attention. A simple experiment might involve the note taking in the presence of the group for one set of groups and behind the mirror for another.

I have experimented with presence and absence of client in a focus group session, but not to the point that I would generalize my experience. I would hypothesize that group participation would be increased if the client was present but restrained in her level of activity. I would further hypothesize that group participation would decline if the client took a more active role. I doubt that the bias toward expressing only positive views is a serious issue if the client expresses sincere interest. I hope that you will join me in seeking answers to these and other relevant issues.

FIGURE 1

FOCUS GROUP COMMUNICATIONS NETWORK

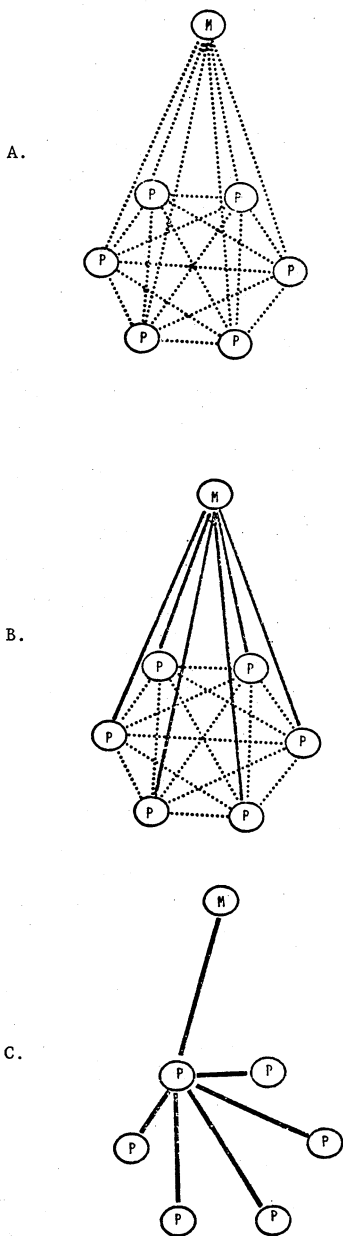
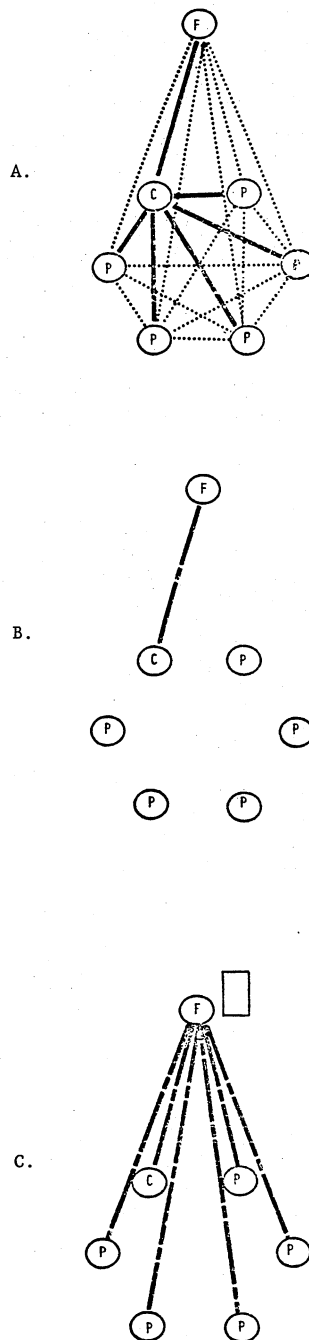


FIGURE 2

SYNECTICS® COMMUNICATIONS NETWORK



EXPLORING MEMORY PROCESSES IN CONSUMER CHOICE.

Gabriel Biehal, University of Houston
Dipankar Chakravarti, University of Florida

Abstract

An experiment examined the effects of task environment structure (different information presentation formats) and learning goal differences (directed versus non-directed learning of product information) on consumers' retrieval of product information from memory and on choice processing. Analysis of choice and retrieval verbal protocols showed significant processing differences in both memory-retrieval and choice stemming from the manipulations. Implications of the results are discussed, together with directions for further research into memory processes in consumer choice.

Introduction

Memory research in psychology shows that the type of processing that occurs during learning or acquisition of information affects its organization in memory and subsequent retrieval (Tulving 1979; Tulving and Thompson 1971, 1973; Craik and Lockhart 1972). Two types of learning situations are fairly common in consumer information processing (CIP) tasks. First, learning product information may be the primary goal of processing. Consumers may perform this type of "directed learning" either with the intent to make subsequent verbal reports (say to friends or family members), or in anticipation of making future choices. Other CIP situations may involve non-directed learning of product information. For example, product information may be acquired and stored in memory while choosing products in a store or while watching T.V. (Bettman 1979).

Differences in task structure also affect processing at acquisition (Newell and Simon 1972). CIP task environments may differ in the way product information is organized. For example, commercials and product packages present product information by brand, whereas some comparative advertisements provide information by product attribute, and in some instances (e.g., Consumer Reports) information is provided in a matrix of brand-attribute values.

Since learning goals and information presentation formats affect information processing during acquisition, they are likely to affect the organization of product information in memory and subsequent retrieval and choice based on it. This paper examines how learning goals and task structure affect (1) retrieval of product information from memory and (2) choice processes. Learning goals were manipulated by having some subjects learn product information in anticipation of a recall task (directed learning), while others acquired product information incidental to performing a choice task. Task structure was manipulated by presenting product information organized either by attribute, by brand or in a brand-attribute matrix.

Hypotheses

Overview

Consumers may acquire product information either incidental to making a choice or while learning in anticipation of subsequent retrieval from memory. The encoding operations performed during either situation will generate various associations. The nature of these associations will depend on the pattern of prior associations, the learning goals at the time of encoding and the information structure in which the task is pursued. Some of these associations will be

stored in long term memory (LTM). Subsequent attempts either to retrieve information or to make a choice based on memory should therefore be a function of the initial learning goal, the structure of the task environment and the nature and extent to which these two factors influence memory content and organization.

Consumer Memory-retrieval Processing

Organization of Product Information. The organization of product information in LTM is not well understood, though it is probably organized by brand. Results showing higher retrieval accuracy (Haber 1964) and faster learning times (Lappin 1967) for object-coded versus dimension-coded information are consistent with this notion. Also, Johnson and Russo (1978a, 1980) argue that, since most consumer experiences with products occur in brand structured environments (e.g., product displays on supermarket shelves and the viewing of brand based advertising), a predominance of brand organized product information may be expected.

H1: Product information in LTM is organized by brand.

Information Format and Memory-retrieval. Information retrieval from LTM should reflect memory organization. If brand organized environments facilitate brand based encoding, retrieval of such information should also be brand based (Tulving 1962). When information is organized in a brand-by-attribute matrix some attribute based associations are likely to be encoded in memory despite the consumer's tendency to encode by brand. In attribute organized environments encoding of attribute based associations is even more likely. Therefore retrieval of information from memory should be predominantly brand-based, most when external information is brand organized, somewhat less when matrix organized and least when organized by attribute.

In contrast with situations where learning is the primary goal, learning may be incidental to other behaviors, e.g., brand choice. Task structure has been shown to influence choice strategy (Newell and Simon 1972; Bettman and Kakkar 1977). Thus environments structured by brand (attribute) should facilitate processing by brand (attribute). Matrix organizations do not explicitly favor processing by brand or by attribute.

Since information format affects how it is processed, format should also affect the organization of product information in memory. Therefore, retrieval processing should reflect memory organization, i.e., attribute processing should be lowest when the external environment at encoding is brand structured, somewhat higher when matrix structured, and highest when organized by attribute.

H2: Under both directed and non-directed learning attribute processing in memory-retrieval will be lowest when the external information is brand organized, highest when it is attribute organized, and at intermediate levels when it is matrix organized.

Learning Goals and Memory-retrieval. When learning is non-directed (e.g., during product choice), choice heuristics may determine how information is processed and thus influence the nature of the associative links stored in memory. Consequently both the choice heuristics used and the existing memory organization will influence the associations made when new information is processed. Since attribute processing should be higher during choice compared with

directed learning, retrieval of information stored during choice should show higher levels of attribute processing relative to retrieval of information learned under explicit recall directions.

H3: Retrieval of information acquired during choice will exhibit higher levels of attribute processing than information acquired in a directed learning context.

Consumer Information Processing in Choice

Several studies suggest that for choices using external information consumers tend to process by attribute (Russ 1971; Russo and Rosen 1975; Russo and Doshier 1976; Tversky 1969, 1972; Bettman and Jacoby 1976; Bettman and Kakkar 1977). However, the use of attribute based strategies may be moderated by the organization of product information, and whether the information is externally available or drawn from memory.

Thus consumers may make choices using information acquired and stored in LTM in earlier contexts quite different from the present one. It was proposed earlier that the organization of information in LTM is likely to be affected by the structure of the environment at encoding. These organizational effects of the task environment should influence subsequent choice processing based on memory. Hence when choices use memory information, attribute processing should be highest when that information is initially encoded in an attribute structured environment, somewhat lower in matrix structured environments and lowest in brand structured environments.

However, the previous discussion suggests that because of a predisposition toward brand organized memory, some brand based reorganization of this information may occur in LTM. Hence, choice processing using memory should show less attribute processing than when external information is used.

- H4: Choices based on external information will show most attribute based processing when the information is attribute organized, least when it is brand organized and at intermediate levels for matrix organizations.
- H5: Choice based on information in LTM will show most attribute based processing when initial encoding occurs in an attribute organized environment, least when the environment is brand organized and at intermediate levels for matrix organizations.
- H6: Choices based on information in LTM will show lower levels of attribute processing than choices based on externally available information.

Method

Overview

Subjects performed one of three tasks. Some learned information in anticipation of a recall task and were subsequently given the recall task. Others had the same directed learning task but were then given an unexpected choice task based on information stored in memory. Finally, subjects in the non-directed learning condition made a choice using externally available information and were then unexpectedly asked to recall the information acquired during choice. Product information was presented either by attribute, by brand or in a brand-attribute matrix. Tape-recorded verbal protocols of recall and choice processing were coded to yield an index of percentage attribute based processing operations. The index was analyzed as a function of the three information presentation formats and either (a) recall under directed versus non-directed learning, or (b) choice based on memory versus externally available information.

Subjects

Subjects were recruited from the University of Florida, Gainesville, campus community by offering a \$3 fee for participation in a study "involving human memory." Of the 108 subjects, 80% were undergraduates; the remainder were secretaries or graduate students. By age, 88% were in the 18-25 group; 68% were female.

Stimuli

Product information consisted of four fictitious toothpaste brands named Mast, Foam, Banner and Lark, described on four dimensions: price per 10 ounce tube, flavor, fluoride and mouthwash content (Figure 1). Concern for mundane realism

FIGURE 1.
Product Stimuli.

Dimension	Brand			
	Mast	Foam	Banner	Lark
Mouthwash	No	No	Yes	Yes
Price/10 oz. tube (\$)	1.49	1.49	1.54	1.59
Flavor	Regular	Mint	Regular	Mint
Fluoride	Yes	No	No	Yes

guided the choice of toothpastes as the product category. Fictitious brands were used to eliminate problems arising from prior knowledge. The brand names, selected to be high and similar on concreteness, imagery and meaningfulness, were drawn from a list of nouns measured on these dimensions by Paivio, Yuille and Madigan (1968). Selection of attributes was guided by an exploratory study conducted with a convenience sample of undergraduates. The four attributes consistently rated as most important were chosen.

Experimental Design and Procedures

The study was a 3x3 factorial design with 12 subjects per cell. Three task conditions were crossed with three information formats (brand, attribute and matrix organizations). Each subject was tested individually.

After being randomly assigned to one of the experimental cells, subjects went through seven stages. First, all subjects indicated attribute importances by allocating 100 points among the four toothpaste attributes. Four irrelevant products were included to avoid cueing the subjects on toothpaste as the product category of interest. The second stage was a "warm-up" for the verbal protocol procedure. Subjects described aloud how they chose their present apartments, until the experimenter was satisfied that they were not inhibited by being tape-recorded.

Learning Goal Manipulation. In the third stage Task Groups 1 and 2 were given the product information and asked to learn it "to be able to answer questions about the information later". This constituted the directed learning manipulation. Subjects were told that there was no time pressure for learning, but learning time was surreptitiously recorded. Subjects in Task Group 3 (non-directed learning) were asked instead to choose the most appealing brand based on the information provided. Subjects talked out loud as they made the choice. These protocols were tape-recorded and timed by replaying the tapes later.

Information Format Manipulation. Information presentation during directed learning was controlled. Subjects in the attribute format condition were first given a sheet of information for all four brands on the mouthwash dimension, i.e., the first row of Figure 1. Subjects could take as much time as they wished to learn the information, but once they moved to the next attribute information sheet the previous sheet was no longer available. Information for the four

brands on the price, flavor and fluoride content dimensions was provided sequentially. Subjects in the brand format condition were given sheets containing information for one brand at a time on all four dimensions, i.e., the columns of Figure 1. The brands were presented in a fixed order (Mast, Foam, Banner and Lark) for all subjects. Subjects in the matrix condition were given all 16 pieces of information organized as in Figure 1.

In Task Group 3 (non-directed learning) the format manipulation was administered through information sheets identical to those used in the directed learning condition. Subjects had access to all the information sheets while they made the choice.

In the fourth stage each group performed a different task. Task Group 1 was given the free recall instruction "tell me (the experimenter) in your own way all the information you (the subject) just learned". This protocol was tape recorded and timed. In Task Group 2, subjects were unexpectedly asked to "choose the brand that appeals most to you (the subject) based on the information that you just learned". Subjects talked aloud while making their choice. These protocols were tape recorded and timed. Finally, in Task Group 3, subjects were given an unexpected free recall instruction, "tell me (the experimenter) all the information you (the subject) just examined for making your choice". This protocol was also tape recorded and timed.

In the fifth stage of the study, subjects were given a knowledge test using a questionnaire with 16 brand-attribute value questions, such as "What was Mast brand's price?". The questions were in a fixed order but subjects could answer them in any order they wished. A four minute time limit encouraged subjects to move on if they were having trouble answering a particular question. The time taken and the responses for each subject were recorded. The number of correct answers out of 16 was determined later.

Next, subjects completed a task evaluation questionnaire that contained questions on (a) task perceptions (e.g., stimulus realism, task fatigue, care in task performance and clarity of instructions); (b) subjective appraisals of choice or recall performance; (c) manipulation effectiveness and (d) subject demographics. Finally, subjects were debriefed and paid. Typically debriefing took 10 minutes and the experimental task took about 35 minutes.

Analysis

Protocol Coding

Four types of verbal protocols were collected. Two were free recall protocols, one following directed learning of product information (Task Group 1), the other following non-directed learning during choice (Task Group 3). The other two were for choice tasks, the first using information stored in memory during directed learning (Task Group 2), the second using external information (Task Group 3).

Protocols were transcribed from the tapes and coded by the authors using Bettman and Park's coding scheme (1979, 1980a). The protocols were first edited¹ and divided into short, task-related statements. Statements were then coded as either Attribute Comparison Processes (processing within an attribute or set of attributes across brands) or Within Brand Processes (processing within one brand over one or more attributes)².

1. Editing involved removing experimenter-subject interactions in the body of the protocol and clarification statements at the beginning and end of the protocol.
2. The Bettman-Park coding scheme contains code categories for Use of Prior Information, Statements of Plans and General. Because of the experimental task these categories were rarely used, and thus not used in the dependent measure.

The coding scheme was pilot-tested on some pre-test protocols. After resolving some basic differences (Biehal and Chakravarti 1982a) the two authors independently coded all 144 protocols without knowledge of the subjects' cell assignments. The recall and choice protocols yielded 1,401 and 1,625 phrases, respectively. The two coders were in agreement on 90% of these 3,026 phrases³.

Dependent Variables

Hypotheses were stated in terms of attribute based processing as a function of learning goal and presentation format. This dependent variables was operationalized by a "percentage attribute based operations" measure, derived as follows. For each protocol the number of adjusted⁴ Attribute Comparison Process statements (Bettman and Park 1979, 1980a) were summed. The result was divided by the total number of Attribute Comparison Process statements and Within Brand Process Statements. The resulting proportion expressed as a percentage yielded the dependent measure.

Results

Manipulation Checks

The learning goal manipulation was checked by assessing the degree to which subjects anticipated a requirement to perform tasks other than the stated task. Most subjects in Task Group 3 reported being surprised by the free recall task following choice. The directed learning manipulation may have been less successful. Task Group 2 subjects reported only moderate surprise when asked to choose a product from information in memory following directed learning, i.e., some of these subjects may have been evaluating the brands while learning. Though most subjects denied having done this, their choice protocols showed some evidence of choice processing prior to the receipt of explicit choice instructions. The debriefing questionnaire indicated that subjects found the study to be realistic and not fatiguing to perform. The stimuli were rated as realistic and easy to learn.

Consumer Memory-retrieval Processing

Brand Based Organization. Hypothesis H1 proposed that product information in memory is predominantly brand based. Consequently retrieval processing following a neutral probe should reflect internal organization and also be predominantly brand based. Table 1 shows the least squares estimates of the mean "percentage attribute based operations" (PABO) for each cell in the free recall protocols. Since by definition the percentage brand based operations equals (100-PABO), these values were 64%, 88% and 77% for the attribute, brand and matrix format conditions, respectively. In one-tailed t tests, these values were significantly greater than 50%. Thus, using the cutoff level of 50% as the basis for predominance, the data support the hypothesis.

Effects of Information Format. Hypothesis H2 stated that brand (attribute) organized external environments should facilitate brand (attribute) based encoding in both directed learning and in non-directed learning during a

3. Agreement on the recall protocols was 75-100% (M=95%). It was lower on the choice protocols (43-100%, M=86%) since these were usually longer and more complex. Problematic phrases were discussed until a code was agreed upon.
4. The adjustment process is described in Biehal and Chakravarti (1982a). The procedure involved counting the number of implied retrievals of brand-attribute values in a phrase that was coded as a single Attribute Comparison statement in the Bettman and Park scheme. This helped remove the bias implicit in a simple frequency count of brand and attribute codes.

TABLE 1
Percentage Attribute Based Operations
During Free Recall

Learning Goal	Cell Means			
	Attribute	Brand	Matrix	Mean
Directed Learning	36.0%	11.6%	23.0%	23.5%
Non-directed learning	68.8	39.7	45.7	51.4
Mean	52.4	25.6	34.4	

Source	Analysis of Variance		
	S.S.	D.f.	F-value
Format (F)	8956.8	2	3.92*
Goal (G)	13995.8	1	12.25**
Interaction (FxG)	310.8	2	0.14
Error	75396.6	66	

Overall Model: $R^2 = .24$; $F = 4.07$; $p = .003$

* $p < .05$
** $p < .001$

choice task. Matrix organizations do not explicitly favor either type of processing. This implies a main effect of presentation format in free recall where "percentage attribute based operations" are highest in the attribute format condition, intermediate in the matrix format condition, and lowest in the brand format condition. The ANOVA results in Table 1 showed a statistically significant format effect ($p < .05$). Further, the format manipulation cell means for both the directed and the non-directed learning conditions followed the predicted ordering. Since the format by learning goal interaction was not statistically significant, the overall means for the three levels of the format manipulation (across both directed and non-directed learning) were compared pairwise using the Tukey multiple comparisons test. Only the difference between the brand and the attribute format conditions was statistically significant ($p = .05$ for the family of tests).

Effects of Learning Goals. Hypothesis H3 predicted that "percentage attribute based operations" in free recall of information learned during choice should be higher than for information learned under recall directions. Table 1 shows that, as predicted, the percentage attributed based operations in retrieval of information learned during choice was significantly higher ($p < .001$) than in the directed learning condition.

Consumer Information Processing in Choice

Task Group 2 generated a verbal protocol while choosing a product based on information they had previously learned. Task Group 3 also generated a choice protocol when they selected a product using externally available information. The three-level information presentation format factor and the two-level choice task factor (memory versus external information) and their two-way interactions were used as independent variables in the analysis (Table 2). The

5. Since the design was balanced, the analyses without covariates yielded least squares estimates of cell means identical to raw cell means. With covariates the estimates were slightly different from the raw cell means, reflecting small differences between the means of the covariate(s) in the cells. The discrepancies were under one percentage point in all cases. The least square estimates of the cell means are reported throughout, for consistency.

TABLE 2
Percentage Attribute Based Operations
During Choice

Choice Task	Cell Means			
	Attribute	Brand	Matrix	Mean
Memory Based Info.	60.2%	46.7%	67.4%	58.1%
Externally Available Info.	80.8	70.0	72.1	74.3
Mean	70.5	58.3	69.8	

Source	Analysis of Variance		
	S.S.	D.f.	F-value
Format (F)	2331.9	2	2.85*
Choice Task (C)	1585.5	1	3.88*
Variance of Importance Wts (V)	1442.0	1	3.53*
F x C	95.6	2	0.12
F x V	556.9	2	0.68
C x V	3.6	1	0.01
F x C x V	198.3	2	0.24
Error	24519.6	60	

Overall Model: $R^2 = .28$; $F = 2.15$; $p = .03$

* $p < .10$

variance of the importance weights assigned to the four toothpaste attributes was also included, together with its two- and three-way interactions with the manipulated factors. This was done to control for the possible effect of individual differences on the dependent variable.

Effect of Information Format. Hypothesis H4 stated that for choice using external information attribute based operations should be highest when information is attribute structured, lowest when it is brand structured, and intermediate for matrix structured information. The cell means in Table 2 show this predicted order for the external information condition. However, the differences were not statistically significant. Only the difference between the brand and attribute conditions was significant at the .10 level.

Processing External versus Memory Information. Hypothesis H5 proposed that attribute processing during choice using memory information will be highest when the information is learned initially in an attribute structured environment, at intermediate levels when the environment is matrix structured and lowest when it is brand structured. The PABO cell means for choice based on information in memory partially violated this prediction. The matrix condition showed the highest level of attribute processing, followed by the attribute and brand conditions, respectively (Table 2). It is interesting to note that brand organized information seemed to lower the level of attribute processing in choice.

Hypothesis H6 stated that choice using memory information will show lower levels of attribute based operations relative to those using external information. A comparison of average cell means across all three format conditions for the two choice task conditions showed that for memory based choice, attribute processing was 16 percentage points lower than for externally based choice (Table 2). This significant ($p < .05$) difference indicates that the predominantly brand based organization of the memory store

generated during directed learning may have attenuated attribute processing in choice.

Discussion

Limitations of the Study

Interpretation and discussion of these findings must be tempered by the limitations of the study. First, the free recall instructions asked subjects to tell the experimenter the information they had learned. This instruction may have biased the way subjects reported the retrieved information. If the social context of verbalizing led subjects to assume that brand-organized information was preferred, the format in which the information was reported may not have matched the format in which it was organized in memory. Russo and Johnson (1980) used a similar free recall instruction which, in addition, cued subjects by the product category. Potential biases generated by such "free" recall instructions need investigation.

A second limitation was the degree of experimental control over subjects' processing under directed learning conditions. While subjects learned product information in anticipation of a recall test, some protocols showed that they may have nevertheless engaged in some choice processing. Thus these protocols may have been in part retrospective descriptions rather than concurrent choice protocols. The existence of this problem is significant, since it shows that consumer information acquisition is not passive. Some degree of product evaluation may occur naturally, even when the consumer's primary concern at acquisition is not choice or evaluation. Osgood, Suci and Tannenbaum (1957) have suggested that evaluations are often a primary factor in the search for meaning in stimuli, and may therefore be an important part of the product information encoding process.

Third, the results were based on analyses of aggregate counts of attribute based operations over time. Processing differences over various stages of the protocol were not examined. While this limitation is more relevant to choice as opposed to recall processing, the analyses may have masked subjects' phasing behavior.

Finally, the use of undergraduate students as subjects may have affected the external validity of the study. Although the task parameters (e.g., the product category and the attributes) were designed with the sample in mind, students may differ systematically from the average consumer in their use of memory-retrieval and choice strategies. In this study the need to minimize between subject variance due to learning and processing ability differentials in response to experimental manipulations dictated the use of a homogeneous subject population. Students were chosen due to cost considerations. However, the caveats noted by Bettman and Zins (1979) about using student samples do apply.

Summary and Implications of Findings

Both information presentation format and learning goal showed fairly consistent effects on retrieval and choice processes. Thus, directed learning of product information led to brand processing in free recall. This effect was moderated by information presentation format. However, even when the external information was attribute structured, and therefore did not facilitate brand based encoding, retrieval processing remained predominantly brand based. To the extent that free recall protocols permit inferences about memory structure, the findings suggest that consumer memory for product information may be primarily brand organized.

While retrieval of information acquired under directed learning conditions was primarily brand based, memory-retrieval of product information learned during choice showed more attribute based processing. This seems to reflect the higher levels of attribute based processing

during choice, when information was acquired. Thus the nature of processing at encoding affected the organization of information in memory, and subsequent retrieval behavior reflected this organization. These results demonstrate isomorphism between encoding and retrieval processing and are in agreement with and provide process-based evidence for the "encoding specificity principle". (Tulving and Thompson 1971, 1973).

The structure of the external stimulus also affected processing. Attribute based processing in retrieval, whether initial learning was directed or non-directed, was highest when the information was learned in an attribute structured environment. This follows logically from the fact that attribute based processing is facilitated most in attribute structured environments. However, even though processing adapted to some degree to the task environment, neither processing activity nor memory organization seem to have been bound by it to the extent suggested by other researchers e.g., Johnson and Russo 1978a, Bettman and Kakkar 1977). Learning goals may dictate that consumers transcend the constraints caused by external information formats. Thus, during choice from external information significant amounts of attribute processing occurred, even in brand structured environments. Also, after directed learning, memory-retrieval behavior remained primarily brand based, indicating that brand based memory organization predominated even when the external environment was attribute structured and presumably did not facilitate brand based processing.

Thus, it may be appropriate to temper an earlier conclusion that "consumers seem to process information in that fashion which is easiest given the display used" (Bettman and Kakkar 1977). Rather, processing may be adaptive, with the nature and extent of adaptation contingent upon the cognitive effort necessary to transcend any constraints imposed by the task environment. This adaptive perspective is consistent with the notion of "constructive processing" (Bettman and Zins 1977, 1979; Bettman and Park 1980a, 1980b): consumers develop or construct choice heuristics from memory contingent upon the properties of the choice task and the phase in the choice process (Wright 1976; Wright and Barbour 1977).

Finally, attribute processing in choice based on memory information was significantly less than when choice was based on external information. Brand based memory organization of information acquired under directed learning did not facilitate attribute processing and lowered its level relative to that observed for choices based on external information.

Future Research

A variety of memory related phenomena warrant further, detailed investigation by CIP researchers. First, individual preferences for different product attributes may affect choice processing and thus both the amount and organization of the information in memory acquired during a choice task. A consumer who attaches extreme significance to one or a few attributes may use more attribute based processing. In contrast, one who values a larger number of attributes more or less equally may use more wholistic evaluation strategies, implying more brand based processing (Biehal and Chakravarti 1982b). Experiments to examine how individual differences affect the choice strategies used and, in turn, the organization of product information in memory seem to be an important priority.

Second, when choice is the primary task less effort may be directed toward developing well-defined associative links between stimulus elements, or to encoding all the available product information. This implies that less information may be retained relative to directed learning situations, and that what is retained may be subject to greater retrieval error. Since the information that is processed may be contingent upon the demands of the choice task, it is

possible that some brands may be quickly eliminated based on certain attribute values and that information on less important attributes may not be entirely processed. Hence, information on rejected alternatives and less important attributes may be only partially acquired and stored. Therefore, memory for chosen alternatives and key attribute information that receives greater processing attention should be better. Johnson and Russo (1978b, 1981) and Biehal and Chakravarti (1982a) report that recall accuracy is higher for chosen brand information relative to brands that were rejected.

Also, in situations where the choice criteria for subsequent decisions change, difficulties associated with memory retrieval may affect the consumer's ability to perform memory-based choice and thereby influence choice outcomes. For example, when faced with changes in attribute importance weights, a consumer may react in a variety of ways: (1) conduct renewed external search on previously rejected alternatives; (2) use inference processes to assign brand-attribute values to alternatives they have difficulty remembering; (3) ignore altogether specific brands and dimensions in the choice process. The strategies consumers use in response to memory retrieval difficulties is another important area for further research.

Third, future research should examine other incidental learning situations, where consumers' information processing goals may be quite different from those in choice. Thus, tasks requiring overall evaluation of product stimuli may generate different processing patterns, as well as the processing of significantly more elements of available information than in a choice task. This suggests that the memory traces resulting from overall evaluations should be stronger than those for incidental learning during a choice task. Some social cognition research has shown better recall performance following a judgment task than under directed learning (Hamilton, Katz and Leirer 1980). This suggests that in situations where consumers examine all available product information and devote processing attention to developing associative links between stimulus elements in the course of forming an overall judgment about products, memory performance may be better than for either directed learning or non-directed learning during choice.

Another incidental learning situation occurs when product information is acquired under "low involvement" conditions, e.g., viewing a TV commercial. In such instances the amount of processing directed at specific information elements may be less than in choice tasks. Consequently, memory traces for product information acquired under low involvement conditions may be weaker, resulting in differential retrievability and usage of the information in subsequent choices. In summary, future research should explore in more detail different types of incidental learning of product information, and trace their influence on subsequent choice behavior.

Fourth, future research should investigate choice processing and choice outcomes in situations that involve both internal and external information. While past CIP research has focused considerable attention on external search, very little research addresses the interaction between internal and external search processes. Constructive processing implies such an interaction, and propositions about the congruence between external search processes and internal memory organization (Bettman 1979) need empirical investigation. In addition, factors that moderate the relative amounts and sequencing of internal and external search need to be identified, and their effects ascertained. The ways in which consumers resolve potential tradeoffs between memory-retrieval difficulties and the costs associated with external search are also an important CIP research domain.

Finally, the use of verbal protocols as data continues to be of some concern in CIP research. While the validity of

verbal protocols has been debated (Nisbett and Wilson 1977) recent papers by Ericsson and Simon (1979, 1980) provide more balanced appraisals, particularly with respect to concurrent verbal protocols. However, there remains concern about how the gathering of protocols affects the choice process. For example, when verbalizing their choices, subjects may feel an implicit need to justify the selection and/or elimination of certain alternatives. This may result in a greater use of attribute comparison processes than would otherwise occur. Hence the verbal protocol method may cause an artifactual overstatement of the degree of attribute processing in choice.

Even if the choice process itself is unaffected by the gathering of verbal protocols, it is possible that verbalization generates stronger memory traces for information that is processed. Verbalized information may be easier to retrieve in subsequent recall or choice tasks relative to when information is not verbalized, and may affect the results obtained in longitudinal studies of consumer memory and choice processes where subjects perform sequential choice or retrieval tasks for which concurrent protocols are collected. Additional validation of the protocol method needs to be undertaken, perhaps using less intrusive measurement methods, such as response latencies.

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COMMENT: CONSUMERS' MEMORY FOR PRODUCT KNOWLEDGE

Reid Hastie
Psychology Department, Northwestern University

To begin with, I would like to propose a general five-part model to describe the cognitive representations and processes that yield a decision such as a judgment of product desirability or a preference among products. This general model is summarized in Figure 1. First, there is generic knowledge which includes general information about classes of products, instances exemplifying the products, the existence of different types of products (implying knowledge of correlations between product attributes such as luxuriousness and gas consumption of an automobile), and information about the attributes or dimensions that are relevant and important in making decisions concerning the products (e.g., the distribution of existing product types along the price dimension).

Second, there is individual knowledge about specific products that are involved in a judgment or choice. This would include information such as the prices, color, taste durability, features, etc., of each product. Furthermore, this knowledge structure would include information about relationships among the products. For example, that product X is more expensive than product Y, or that product A and product B are manufactured by the same company.

Third, there is information that serves as ingredients to the judgment or choice strategy. This information might include specific facts from either individual or generic knowledge stores concerning the products, as well as information that is inferred (not given) about the individual products that may be relevant to a specific judgment strategy. For example, if product durability is deemed to be important in making a decision and durability information is not available, the subject will be likely to infer product durability for each product under consideration. This durability information would be an ingredient in judgment and decision stages of the overall process.

Fourth, there is a judgment procedure that combines the ingredient information to render a characterization of each product that is reflected in the subject's individual product ratings. The most general judgment procedure appearing in virtually every theory of judgment and choice is the linear weighted combination rule (e.g., Information

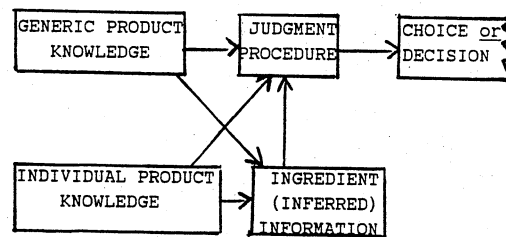
Integration Theory's weighted averaging rule, Social Judgment Theory's additive composition rule, Decision Theory's expected utility, and so forth). However, alternative representations of the product, for example, as an image composed of perceptual and conceptual features, would also be admitted.

Fifth, decision strategies are concerned with commitment to an action such as purchasing or not purchasing a product. Here there is a greater variety of processing models. Some strategies compare unitary representations of products to choose an optimum (highest expected utility) or a minimally acceptable (satisficing) item; some search product-by-product for a conjunctive intersection of jointly sufficient

features or a disjunction of separately sufficient features; some involve an attribute-by-attribute comparison of products that eliminates products until a winner is chosen (elimination by aspects); some compare products to a prototype instance to select the product most similar to the ideal instance; and so forth.

FIGURE 1

General Model of the Consumer Decision Process
(Arrows indicate the flow of information.)



The arrows in Figure 1 indicate the flow of information from component to component in the general model. It is important to note that information from generic knowledge and individual product knowledge are inputs into the judgment procedure as well as inputs for inferred ingredients for the procedure. For example, information in generic form about the importance of product attributes in choices will influence some of the judgment and decision procedures (e.g., weights on a dimension, order in which attributes are considered, and so forth). Similarly, generic knowledge will determine what some of the ingredients look like, particularly when inferences concerning unknown attributes of a product must be made. Individual product knowledge will have its primary effect on the decision strategy through the form in which individual products are displayed. For example, one display format of several products will induce a subject to use an attribute-by-attribute elimination strategy while another display will lead to a product-by-product strategy.

The most important message from Figure 1 is that theoretical issues concerning the representation of generic product knowledge and individual product knowledge must be considered in the light of the functions that this information is expected to serve in natural decision tasks. Thus, it is important to have information in generic knowledge structures concerning the distribution of product types and the

importance of various product attributes to guide the formation of a judgment procedure or, when inferences are made, to create ingredients for the judgment procedure. It is interesting that many theoretical issues in cognitive research on the structure of very long-term semantic memory have been resolved by a consideration of the deductive processes (analogous to judgment strategies) that use the information. Thus, a hierarchical representation of information concerning noun categories is a particularly economical structure for semantic memory if one of the main functions of semantic memory is to allow category membership inferences. The simple task analysis, summarized in Figure 1, may serve as a useful beginning to an analysis of the function-knowledge relationship in consumer choice and judgment tasks.

In short, what I am saying is that a typology of judgment and choice strategies (part of a larger task analysis) will be a useful precondition to an analysis of knowledge content and structures in various memory stores. I am optimistic that there are currently only a few relatively simple judgment procedures and decision strategies that are relevant to most consumer decisions.

The following comments on papers presented at the Association for Consumer Research meeting panel on memory for product knowledge were stimulated by the preceding analysis of memory function. Jerry Olson has attempted to measure the structure and content of generic knowledge of products. His correlational analysis suggests that he prefers a dimensional or spatial model as a metaphor for the structure of the generic knowledge store. If all of the choice and judgment strategies that we wish to postulate in the more general model require only similarity judgments among products, or preference orderings among products, the spatial metaphor may be adequate. However, if more complex relations among products are needed to infer ingredients to the judgment strategy or in forming a decision strategy then the spatial metaphor will fail and must be replaced by hierarchical or more complex structures. Furthermore, there are types of information that I suggest should be included in generic knowledge (e.g., information about the correlations among product attributes or information about the importance of attributes in decision procedures) that are not included in Olson's model.

The paper by Gabriel Biehal and Dipanker Chakravarti reported work that touches on the judgment procedure, decision strategy, individual product knowledge, and generic product knowledge, but without committing itself to a specific process model or structural representation for any of the components. In particular, I think a first goal of this work should be to attempt to identify the decision strategy employed by subjects attempting to perform the choice task. A second goal would be to characterize subjects' generic knowledge concerning the relevant products, or the ingredient information input to the judgment procedure. Individual product knowledge was measured using a standard recall task. It would also be important to explore some of the relations between generic knowledge such as subjective dimension weights for the decision and memory for individual product information.

The paper by Raymond Burke and Thomas Srull uncovered an interesting phenomenon that involves an interaction between decision strategy and individual product knowledge (knowledge for a product when a related product is presented or is not presented). Here, again, generic product knowledge was not measured nor was an effort made to capture the subject's judgment process. The phenomenon appears to be of substantial

magnitude and a number of plausible explanations can be advanced for future test. First, research on interference in A-B, A-D paired associate learning has shown that, under some conditions, presentation of the A-D term facilitates recall of the A-B term. Presumably facilitation occurred because of increased rehearsal of the A-B term of presentation of the A-D term. Second, an explanation based on Watkin's cue-overload principle postulates that the effectiveness of a retrieval cue for a particular item of information is inversely related to the number of items of information associated with that cue. Thus, a cue associated with many pieces of information is "overloaded" and is a relatively ineffective cue for any single piece of information. Third, a schema-assimilation interpretation based on the work of Thorndyke and Hayes-Roth suggests that as more related events occur, a schema representation is induced, but at the same time memory for the details of events is lost.

Eric Johnson's paper reported an application of cluster analysis fitting a hierarchical structure to the representation of individual product information. My intuitions agree with Johnson's analysis that a simple spatial model will not be sufficient. However, it would be interesting to see some sharp tests of "badness-of-fit" comparing spatial and hierarchical tree structure fits or a summary of specific characteristics of the data that defy representation in the simple spatial mode. Johnson's earlier work has constrained possible models for the subjects' decision strategy in choice and judgment tasks with his product materials. However, again, it would be important to specify a clearly defined process model sufficient to perform Johnson's choice and judgment tasks. (I believe that his model DECIDER is a useful step in this direction.)

In summary, I am advocating attention to three theoretical questions. One, what functions will generic product knowledge and individual product knowledge be used to perform in natural consumer decision tasks? Two, what are the major judgment procedures and decision strategies (expressed as process models) that subjects use when evaluating consumer products? Three, what are the inferred information ingredients that are required as input in each of the judgment procedures or decision strategies?

INDUSTRIAL BUYING BEHAVIOR IN ELECTRONICS:
CASE OF MEMORY CIRCUITS

K.E. Kristian Möller, Helsinki School of Economics
and University of Vaasa, Finland

Abstract

This study focuses on the buying behavior of a semiconductor component in a Finnish company. A detailed decision process model is developed by identifying the stages of the buying process and the departments and persons involved. Emphasis is put on the criteria and decision heuristics employed. The practical implications of the findings are pointed out and their relationship with theoretical buying behavior concepts is analyzed.

Introduction

This report is a part of an international Industrial Buying Behavior Project conducted in the United States and 7 European countries. The present paper gives an analytical in-depth description of the buying process of a strategic semiconductor component. Based on the data collected in four two-phased semistructured interviews with both the buying and technical personnel of Nokia Electronics (NE), Finland, an inductive model for buying memory circuits is developed and discussed.

The behavior and management implications reported are limited to NE's purchases of one type of production material; the attempt is not to generalize across other firms, components, or time periods. The study is a building block for constructing a generalized model. The approach follows the tradition of decision systems analysis (Wind, 1967; Farley, Howard and Hulbert, 1971; Pettigrew, 1975, and Farley, Hulbert and Weinstein, 1980). For a detailed methodological discussion see: (Baker and Woodside, 1982) and (Woodside and Vyas, 1982).

General Context and Organization of Buying
in Nokia Electronics

Nokia Electronics is an independent division of the Nokia Group, a leading industrial company in Finland. NE consists of four subdivisions: Telecommunications, Industrial Automation, Data Processing, and Forest Industry Systems, organized as profit centers. These are supported by Finance and Economics, Marketing, Components & Technology, and Materials Administration Departments. In 1980 net sales were 120 million USD, 15 % of parent company sales; 26 % of the sales were export invoicing. In Scandinavia NE is a major producer in certain products, eg. minicomputers, terminals, specific data modems but very small compared to multinationals like IEM, Siemens, and LM Ericsson. Telecommunications and Data Processing profit centers use the bulk of the components purchased through the Materials Department. Typical end-products requiring a great number of components are NE's own minicomputer series Mikko, as well as terminals, radio links, and data transmission modems.

The central semiconductor buying market, especially the LSI (large scale integrated circuits) -components are characterized by: (1) Business fluctuations due to economic conditions and active R & D creating new component generations, which is reflected in fluctuating prices and delivery times, (2) Rapid learning effects causing as big as 30 % yearly reductions in the prices of new component generations; on the other hand, the yields at launching stages can be only 5-10 %. (3) An oligopoly of few large American

and Japanese producers are dominating the market. Further, the quality of LSI-components is crucial for electronics end-products. In brief the buying situation is featured by both technological (quality) and commercial risks.

In Nokia Electronics buying is organized under the Materials Department led by a Vice-President reporting directly to the Division President. The Materials Department is divided into two Buying Offices, in Helsinki and Espoo, 10 miles apart, led by Purchasing Managers. The Espoo Office is responsible for the Telecommunications purchases and has three buying groups - for active and passive electronic components, and electromechanical components. The buying volume is about 15 million USD. The Buying Office shares premises with the Production unit of the Espoo plant and the R & D engineers for Telecommunications. The Helsinki Office is responsible for the buying of the other three subdivisions. There are two buying groups for components and one for other materials and capital equipment. Concerning components the most important customer is the Data Processing subdivision producing Mikko minicomputers and terminals in Helsinki. The buying volume of components is about 7.5 million USD. The buyers' work is supported by a Quality Control unit within the Materials Department consisting of a manager and three component engineers. Quality Control is responsible for testing all LSI-components, and for developing new testing methods.

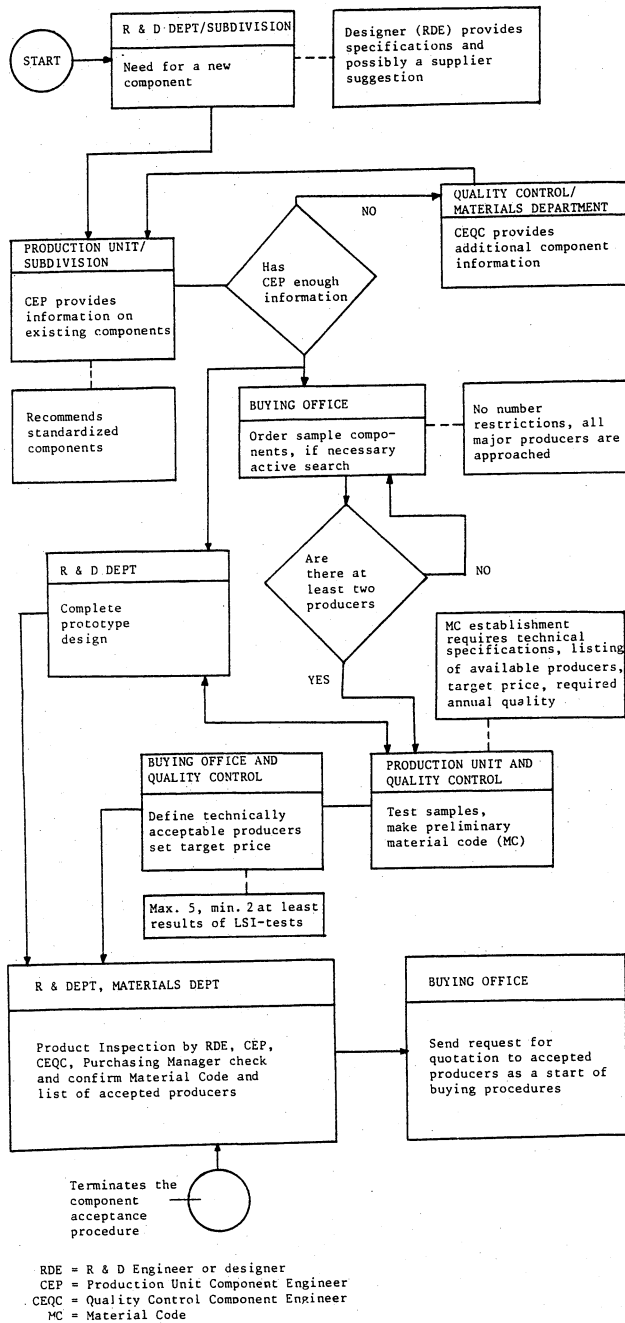
To have immediate access to principal producers and the latest information about the semiconductor market Nokia Electronics has established a Buying Office at the US subsidiary Nokia Inc., Atlanta, Georgia. This has recently (1979) expanded operations by establishing a buying unit in Silicon Valley, California. These buying offices are not used for independent purchasing of components, but they are important for buying market research, personal contacts, and fast purchasing operations in times of crises. To sum up, in Nokia Electronics buying is administratively centralized but geographically or plant-wise decentralized. This organization facilitates the buyers' and Quality Control component engineers' interaction with the R & D and production people.

Accepting a New Component into Buying Program

The initiative for incorporating a new semiconductor component into Nokia Electronics' buying program usually comes from the R & D department of the subdivision in question. The suggestion has to pass a standard acceptance procedure described in Figure 1. First, the R & D engineer (RDE) contacts the component engineer of the subdivision production unit (CEP) and tells him about the characteristics of a new component required for a new prototype under design. The CEP provides the designer with information about the existing components and their producers. The principle is to use standardized components whenever possible. If the production component engineer lacks adequate knowledge he turns to the respective Materials Department's Quality Control component engineer (CEQC), who is responsible for monitoring international component development and availability. When the designer (RDE) has provided specific enough information on his component requirements the Buying Office orders sample components from all relevant producers.

Parallel with accomplishing a prototype of the new product

FIGURE 1
NEW COMPONENT ACCEPTANCE PROCESS



(by the R & D) both component engineers develop a preliminary Material Code (MC) for the new component and test the sample components. A Material Code comprises basic component specifications, information about alternative producers (their number, market shares etc.), an estimate of the volume required in the first normal year of production, and a target price. Quality Control is responsible for sample testing and Material Code development. A technically acceptable and commercially advisable component is

suggested to the R & D engineer, and a list of acceptable producers is defined. At least two and at most five producers are selected (more than five producers are considered to increase evaluation and buying costs unnecessarily). The choice criteria comprise factors like price, quality specifications, delivery history, general dependability. The interaction of the R & D and Quality Control terminates at Product Inspection where the prototype is evaluated component by component. In case of an important prototype the Inspection is carried out by the R & D engineer, Production and Quality Control component engineers, and Purchasing Manager. The guideline in Inspection is to minimize component costs by trying to use only standardized components from commercially attractive producers, while still maintaining high quality. After possible alterations the Material Code, with its volume requirement and target price, is approved. The actual buying process is then handled by the Buying Office.

Buying of semiconductors:
The case of 16 K EPROM-memory circuits

The 16 K EPROM -component is an active memory circuit, having a 16-kilo memory capacity. It has been used for 2-3 years as a micromemory unit in Nokia Electronics' Mikko minicomputers produced by the Data Processing subdivision. To provide the minicomputer with the necessary user flexibility it has to be reprogrammable which requires durability and dependability. The memory's price accounts for about 3 % of the material costs of a Mikko computer line. Owing to its importance for the computer's performance the memory is, however, a strategic component for the computer.

Buying Market Situation and Annual Contracts

According to the appraisal of the Manager of Materials Department the Japanese have, at the moment, the leading role in memory development and production. US companies rank second, European producers have not been able to make a significant entry into the market. Few fairly large producers dominate the market (e.g. Intel, Hitachi, Fujitsu, Mostek, Nippon Electric Company and Texas Instruments). Nokia Electronics is internationally a small buyer, with annual (1981) demand of about 40,000 16 K EPROM memories. This is about 0.5 % of European demand and 15-20 % of Finnish purchases. Nokia Electronics has, however, some importance as one of the leading buyers in the Scandinavian market. The memory buying market is influenced by business fluctuations, R & D and learning curve effects.

As strategic, frequently required components, the memories are purchased through annual contracts. Potential suppliers have been previously evaluated according to price, quality characteristics, delivery dependability, and supplier characteristics. At the moment Nokia Electronics has four accepted producers: two American and two Japanese companies. On the request of Nokia Electronics the supplier names are not disclosed. The dominating features of the memory circuits contracts are delivery terms, quality and price - with a clause providing for "a considerably downward trend in the market". For instance, the price of 16 K EPROM memories for 1981 was renegotiated even before any deliveries were made.

The present contracts are with one American and one Japanese producer, the other two producers are in reserve. The choice reflects Nokia's policy to try to create keen competition between the producers of these dominating countries. The Japanese companies have only relatively recently been included in Nokia Electronics' list of accepted producers, and only after a conflict resulting in a major change in the buying sources of memories and other key semiconductors. As such the development merits a brief digression.

Until the late 1970's Nokia Electronics used almost entire-

ly US made semiconductors. The buyers, however, were not satisfied with the negotiations. The chief buyer believed that the American producers were aware of each other's prices and acted accordingly. Also single source situations, delivery difficulties, and even cancellations turned up during periods of capacity shortages. The Materials Department evaluated leading Japanese producers by acquiring information and component samples. These satisfied the Quality Control and Buying Office, and the Department introduced the new component alternatives to the R & D people. The majority of R & D engineers had been working only with American semiconductors as electronic innovations has traditionally been made by US companies. Consequently the R & D department refused to use Japanese components whatever the test results. The deadlock was not settled until the Materials Department had arranged a minute inspection visit, attended by the R & D manager, to the Japanese producers' plants. The results were found satisfactory and the Japanese producers became Nokia's standing semiconductor contractors. Because of Nokia Electronics' profit-oriented dynamic buying policy, all contracts are evaluated periodically and the market is monitored for potential suppliers. This procedure is described in the next section.

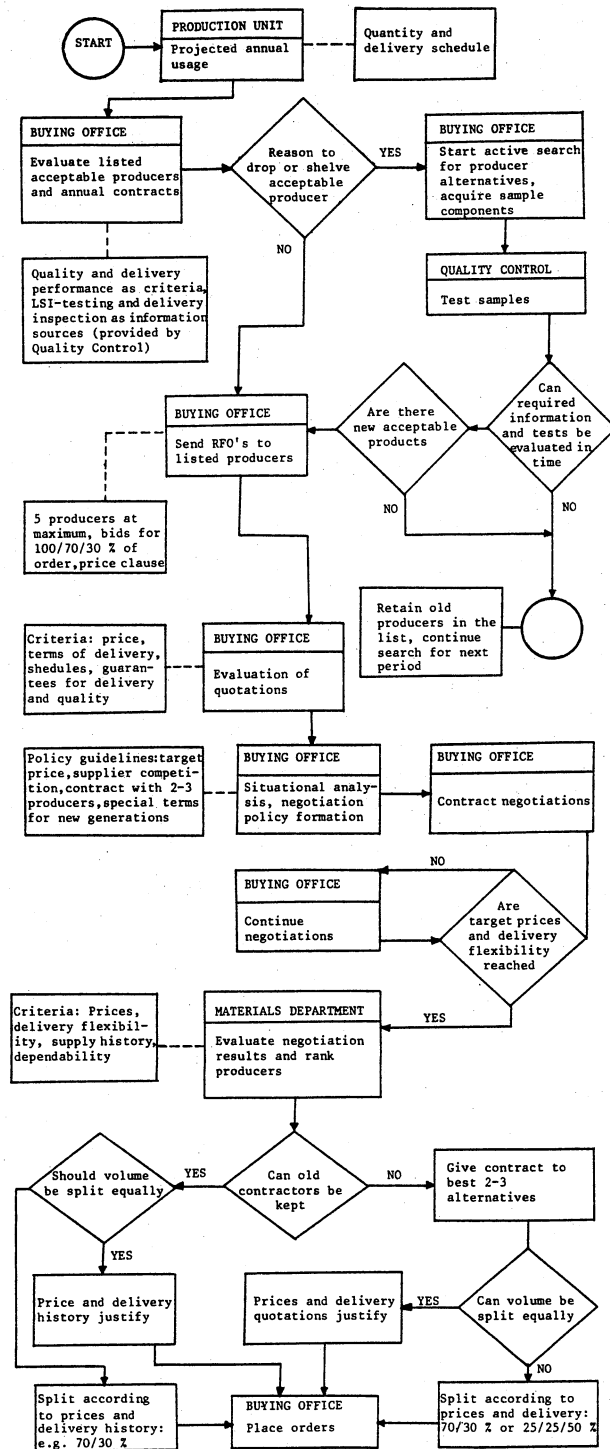
Memory Circuits Buying Process

As an old component the 16 K EPROM memory has passed the new component acceptance procedure and has a Material Code. The Helsinki Buying Office is responsible for the buying process comprising the check-up of contracts, search for new suppliers and their evaluation, sending requests for quotations (RFQ's), and finally negotiating and choosing the vendors for annual contracts. The buyers are supported by the component engineer belonging to the Materials Department's Quality Control unit. A decision analysis flowchart is given in Figure 2.

Initiative and Information Search. In routine situations the Production unit of the Data Processing subdivision gives the expected quantity of micromemories and the approximate production (delivery) schedule to the Buying Office. As mentioned Nokia has four accepted suppliers for memories and annual contracts with two of them. The Buying Office continuously receives new suggestions and information on the memory circuits. The producers are fairly active; Nokia Electronics receives about three significant company visits per main producer annually. Usually both technical and sales representatives are present. The R & D designers are the principal targets of technical marketing. Further, Nokia Electronics' American buying Offices provide information on market developments. Other relevant sources are trade fairs, especially München Electronika and Composant Electronic in Paris, trade journals, technical advertising and other buying companies. A severe problem in information acceptance is reliability. Nokia's buyers claim that some American producers provide information on interesting new components which actually do not exist yet. Producers try to evaluate the marketing potential. If the results are unsatisfactory the project is silently dropped but some R & D designers may actually have started new product designs based on the promises made. In addition to external search the buyers receive suggestions from the Data Processing subdivision's R & D unit. Generally these require more sophisticated memories. These initiatives have to come through the production and Quality Control component engineers. Finally the Quality Control unit provides the Buying Office with the results of the delivery inspection of the present contractors' memories.

Initiation and information search are routine matters as long as there are at least the four accepted producers. The situation changes if only one producer is available or some of the main suppliers are not satisfactory. In the past the latter condition lead the Buying Office to active search for Japanese producers.

FIGURE 2
BUYING PROCESS OF 16 K EPROM MEMORY CIRCUIT



Selecting Suppliers for Quotations. The annual contractors are evaluated on their memory quality, delivery performance and price level. These factors are used as criteria in determining acceptable suppliers for RFQ's. The original definition of the criteria is a two-stage process where the R & D engineer and the component engineers agree on the minimum technical requirements specified in the Material Code - and the Buying Office sets the price, delivery and guarantee targets, see Figure 1. If a contractor is not considered satisfactory it can either be dropped or the matter is taken up in the coming negotiations. Radical steps can be taken only if there are acceptable alternative producers. A few years ago Nokia Electronics dropped an American memory producer. The decision was made only after the Japanese alternatives had been accepted. The rejection reasons were poor delivery performance and the aim to get better price agreements by using also non-US producers.

The RFQ's are planned according to the annual agreements to facilitate the evaluation process and negotiations. Usually, however, more than one order size is used. A typical request might ask for firm bids for 30-70-100 % of the total volume of memory circuits. Other important specifications are the downward trend price clause, and delivery guarantees and schedules.

Negotiations and Supplier Selection. The quotations are evaluated by the Buying Office by comparing them on the specified items. The goal is to establish annual contracts with 2-3 producers. As the technical specifications have been tested and should be almost identical among the producers, the buyers concentrate on delivery terms and price. Before opening the negotiations the buying situation is assessed and a target price set. The aim is to reach a mean price level somewhat below the world market price for a specific purchasing volume. The quoted prices and other market information are used as guidelines. When a change to a new memory generation is expected, a leading producer is given priority despite a possibly higher price. In case of equal prices producers who can guarantee flexible changes in volumes within the contract period are preferred. Finally the information collected on each producer is rechecked and individual negotiation arguments are formed.

Since the number of bidders is only four negotiations are carried out with each of them. The initial contacts are arranged by the Purchasing Manager of the Helsinki Buying Office and his chief electronic component buyer. Decisive talks are attended by the Purchasing Manager of the other Buying Office, the component engineer from either the Production unit (Data Procession) or Quality Control, and on special occasions the Manager of Materials department. The producer's interests are generally in the hands of his marketing manager for Finland or Scandinavia and the respective agent's marketing manager or managing director.

In negotiations the arguments selected are used in order to get concessions concerning price and delivery terms. The policy is to create competition between the producers. Further the volumes are often changed on the basis of previous supplier performance. The reasons are given to the supplier in question. In general delivery difficulties have been the principal reason for quantity reductions. Nokia's Purchasing Manager (Helsinki Buying Office) regards the atmosphere in negotiations as very important. Certain openness and trust should be expected when long-term contracts are discussed. Considering the American and Japanese parties he thinks that the latter are more trustworthy because they very seldom promise anything they cannot keep. The US producers seem to be guided by more shortterm and strict profit policy. Some have, eg, dropped a component abruptly if it has fallen below their profit margin. According to Nokia's sales personnel also these cultural or negotiation style dimensions are taken into account.

The negotiations usually take about two months, concentrating at the final stages on the price issue. If a pro-

ducer offers the lowest price it is usually given the largest order. In case of two contractors the ordinary split would be 70/30 %, and in case of three 50/25/25 %. Price, established relationship, and dependability influence both contractor selection and order quantity decisions. When there are no considerable differences between the two selected contractors the order is split; in 1981 between a Japanese and a US producer. The manager of the Materials Department has the final decision maker.

Practical implications

Nokia Electronics has clearly recognized the significance of buying and centralized this function under the Materials Department reporting directly to the Division President. The organization of the Department takes into account both the commercial and technical requirements in semiconductor components through the joint operations of the Buying Offices and the Quality Control unit. Further, the Quality Control engineers have an important mediating role in the crucial relations with the R & D engineers and with the component engineers of the Production units. The concern about components integrate the R & D, Production, and Buying functions. The potential conflicts of R & D and buying interests are channelled through the Production unit and Quality Control component engineers who have more in common as for education and jargon. Their roles secure strong quality orientation for the Materials management.

The buying process of strategic components is characterized by a series of preselective stages of securing the final supplier choice and order quantity decision. The first stage covers the introduction of a new component into the buying program. Here the emphasis is on finding two to five technically acceptable producer candidates. The principal issue is to establish quality acceptability through sample analysis, the responsibility is mainly on the Quality Control component engineer. The R & D designer, Production unit component engineer, and Buying Office staff interact in the final decision stage where the component is issued a Material Code and the list of accepted suppliers is confirmed.

As the search and testing procedures are terminated after establishing five acceptable producers the Quality Control component engineer (and the chief buyer who may provide him additional information) acts as a gatekeeper in regard to with the companies first approached. The five rule is seen as necessary to avoid high vendor testing and evaluation costs. A producer may, however, be included in the testing procedure if his prices are significantly below the listed producers'. This practise diminishes the risk of biased action on the part of the Quality Control component engineer.

The second selective stage concerns the submitting of RFQ's According to a policy principle all producers on the list receive an RFQ. Before that, however, the contractors' delivery and quality performance is carefully evaluated. In case of discontent an active search for new producers is mobilized in order to maintain a position where the company can drop or shelve unsatisfactory contractors. An example of this kind of action was the introduction of Japanese producers into the negotiations to balance the US contractors' unsatisfactory delivery dependability and price level.

The evaluation of quotations forms the third appraisal stage. The emphasis is on delivery terms, quality guarantees, and quoted prices. These and the supplier history provide the basis for negotiation strategy and target prices. In negotiations Nokia's tactic is to try to create competition among producers in order to get concessions. The buyers are striving for an established target price and delivery flexibility in terms of quantity and schedule. Moreover, a price caluse hedging against a possible down-

ward trend in market prices is a standard clause in the contracts.

In the final stage two or three producers are selected for annual contracts. The decision is based on the negotiation results, known supplier history, and the willingness to maintain longterm supplier relationship. These same criteria are further used, emphasizing prices, in the order quantity division between the selected suppliers.

As can be noted the early part of the buying process concentrates on component quality. The latter part carries through the buying and delivery related criteria and procedures. In the light of the summarized buying case Nokia Electronics' buying system seems to be able to integrate technical and buying interests, and further to carry out targeted contractor negotiations effectively.

Concerning electronic component marketing Nokia's buying system suggests a few implications. As to a producer marketing new generation semiconductors it would be important to be included in the tests for the list of accepted producers. The first phase efforts should be concentrated on the R & D designers and both component engineers. If the marketer is not accepted at this stage the principal method to get a chance later is aggressive pricing. One should also have information on the established suppliers' possible capacity and/or quality difficulties and try to use this period for focusing marketing efforts on the buying staff. Considering an accepted contractor the policy depends on how important a customer Nokia Electronics is. Nokia tries to maintain long-term relations but does not tolerate poor delivery or quality performance long without retaliating.

Theoretical comments

The objective has been to describe the central events, decisions, actions, and persons (or organizational positions) involved in buying memory circuits, an LSI-component in one company. Here the aim is to conceptualize the findings and relate them to certain research paradigms active in industrial buying behavior research.

Concerning the fairly complex structural solutions for integrating the R & D, Production and Materials Administration it seems that these are reactions both to contextual and internal complexity - comprising the often discussed buying market turbulence and vested interests of R & D staff versus the buyers. This phenomenon is in accordance with the organization theory postulate that complex context brings about complex organization solutions.

The relationship between Production, R & D, and Materials Administration is organized around the component concept. The actions and decisions are focused on components and the different points of view toward these are reflected in the central organizational solution - in the Production unit and Quality Control component engineers. The intersection of R & D designers' component requests - often unique - and Buying Office's strive for "cheap" - but still reliable - standard components forms the focal point of conflict in the buying process. The component engineers referred to actually represent a method for both reducing the probability of conflicts and solving them. Concerning social conflict and exchange in buying see (O'Shaughnessy, 1977), (Bagozzi, 1978), and (Wilson, 1978).

In addition to the social conflict and power concepts the perceived risk theory has an important role in buying behavior research (Håkansson and Wootz, 1975; Newall, 1977). In the case of Nokia the employed selective processes, comprising the principal part of the total buying process, hedge effectively both the quality and buying type risks. First, through the formalized procedure of Material Code establishment and the confirmation of Accepted Producer

List. Second, through the evaluation of the listed producers on their price, quality and delivery performance for the RFQ's and finally again in the negotiation stage. Risk reduction was in each case performed by staff specialized in the risk type in question. Moreover, the buying policy principles employed have also a risk securing influence. The requirement of at least two or five procedures covers against delivery shortages and supplier dependence and the price clause hedges against the rapid learning curve effects reflected in downward price trends.

The decision heuristics used in the buying process exhibit interesting patterns. In the Material Code or producer acceptance a noncompensatory judgemental rule is employed (for a discussion on judgemental rules see: (Green and Wind, 1973), (Crow, Olshavsky, and Summers, 1980), and (Möller, 1981)). The established minimum levels for component quality specifications act as criteria in an essentially conjunctive dichotomizing of the producers into accepted/unaccepted sets. The R & D managers early rejection to use Japanese components is an illustration of the disjunctive heuristics. The country of origin or actually company image formed the top criterion which the manager used in his discrimination of the two supplier groups (Japanese vs US).

When the buying process proceeds to the supplier evaluation for RFQ's the more complex compensatory rule is applied. Here price, delivery and quality performance can, in some degree, compensate each other. No formalized or explicit importance weights were used, although it became apparent that the criteria had different weights depending on the unique situation in question. A similar compensatory heuristics was also employed in both the final supplier choice decision and in the division of the orders between selected suppliers.

The choice or judgemental rules described are both empirically and theoretically sensible. In the early stage when the emphasis is on the quality qualification of the alternative producers the used conjunctive rule represents the most simple and certain way of ensuring the objective. The compensatory heuristics employed in the RFQ's stage, final supplier selection, and order quantity decision, are more complex and cumbersome to carry out but allow for taking into account the various factors influencing the decision. In balance, the results justify the usefulness of collecting detailed buyflow descriptions. Such research is helpful both in creating new hypotheses about industrial buying and in validating existing theoretical conceptualizations.

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INTRODUCING A NEW PURCHASING STRATEGY IN A FIRM PRODUCING TO ORDER: A CASE OF STEEL CASTINGS

by Orla Nielsen

Copenhagen School of Business Administration and Economics, Institute of Marketing

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Introductory remarks.

The firm: A.B. Nielsen & Co.¹⁾ is a danish firm engaged in among other things the production and selling of turn-key projects. The firm has at present 4.400 employees. Main office in Copenhagen and subsidiary offices in Europe, North and South America and Japan. Turnover in 1980 more than 6 billion d. crowns (about 825 million US \$). Profit shows stagnation in the last two years causing the board to call in a consultant firm to investigate rationalization possibilities. The analysis resulted in among other things a recommendation of a new purchasing strategy for steel castings, which are bought from sub-contractors. The strategy calls for developing framework agreements in order to primarily cut prices, thereby introducing a more aggressive buying behaviour on the part of ABN. This case reports on the first results using the new strategy.

The purchasing department is managed by a commercially educated purchasing director, who reports to the production director, who reports to the general manager. About 75 employees in the department. All leading personnel have engineering degrees, some also a supplementary commercial education. Purchasing personnel are also employed at the ABN-offices abroad. The department is divided into 7 different sections: Staff, project coordination, ABN-machinery, foreign machinery, steel castings, electrical equipment and service functions. Another important department in this connexion is the dep't of quality and inspection. Several employees in purchasing have a past as inspectors.

Steel castings:

Each turn-key project demands several different types of steel castings. In the following these are named A, B, H. Patterns are made from ABN drawings and materials are specified according to different international norms. Patterns remain ABN-property but stay usually by the supplier. The steel castings vary much in size from type H (measured in grams or kilograms) to type A and B (weighing up to 180 tonnes per piece). The high quality demanded creates the need of continuous inspection and the weight demands consideration of transport facilities and, the geographical position of the sub-contractor related to that of the erection place of the particular turn-key project.

The method of research:

The method corresponds to the method described in "Industrial Buying Behavior of Fuel Oil" (Woodside and Vyas, Jan. 1981). In the actual case 2-4 interviews with five persons in three departments have been made.

1) Pseudonym.

The purchasing dep't.: The director of purchasing, the section head and a senior purchasing engineer both of the steel casting sector. The head of the quality and inspection department and, a business engineer of the sales department. Written material has been examined and, a meeting in the purchasing dep't concerning the new procedure has been joined by the author. The final report has been accepted by the respondents as regards its reflection of reality.

The results:

The results are shown in the flow charts. Figure 1 shows the development of RfQ's for frame contracts for steel castings as a whole. Figure 2 shows the selected vendors and the corresponding quantities for the different types of steel casting. Figure 3 and 4 show the actual decision process of awarding frame contracts for types H and B, respectively, figure 5 depicts the decision process as regards the placing of specific orders within or outside the particular frame contracts.

The buy-flows are made as informative as possible in themselves, as there is no room for further explanation of the behaviour in this summary of the total report. In this connexion "diagnostic comments" will have to suffice. These are followed by a few comments on theoretical implications.

Diagnostics.

The unsatisfactory development of net earnings caused ABN to call in a professional consultant firm in order to investigate rationalization possibilities. It is worth noting that the analysis also covered the purchasing-processes and resulted in recommending a new strategy involving firstly the establishment of frame contracts, secondly a more aggressive purchasing behaviour. This development ABN has probably in common with very many firms, and as the past has witnessed rationalization efforts in primarily production and administration it is not surprising that purchasing is now also involved. Particularly, as analyses have shown that managements have often been satisfied with "passive buying" (c.f. Dean S. Ammer). This case indicates that the future will see more aggressive buying, and the emerging strategy may be utilized by other firms in a corresponding situation.

This case deals with the choice of subcontractors and very big money is involved, the buys of steel castings being important parts of the turn-key projects. The purchasing department has been shown to play an important role in the process. The products, although technically complex, are standardized due to the use of ABN-drawings and patterns, and technical problems are solved with the help of the inspection and quality department, and as regards specifications covering particular turn-key projects through cooperation be-

tween sales department, construction department and the representatives of the customer, resulting in well defined needs submitted to the purchasing department. This division of technical and commercial decisions is probably a necessity for leaving the choice of sub-contractors in the hands of the purchasing department. As has been shown, however, sales managers and to a lesser degree the quality and inspection department may fill the role of influencers in particular cases where compensatory buys in a given country is either demanded or interesting in the eyes of the sales department. And in exceptional cases where buys from a new market involving sensitive political areas, the general management may be the final decision maker. The gatekeeper function of the quality and inspection department and sometimes also the business engineers (caring to the world wide interests of ABN) should also be noted.

The composition of the buying center therefore varies as regards type of decision (technical, commercial and calculation of demand) and due to specific factors, always involving the purchasing department in the critical choice decision.

The buy flow is clearly divided into three parts:

- 1) The development and choice as regards RFQ's.
- 2) The choice of suppliers to award frame contracts and
- 3) The choice of supplier regarding specific orders,

reflecting a hierarchy of decisions.

Based on a demand prognosis two principal decisions are made early in the process, i.e. the validity period of frame contracts and base volume for the different types of steel castings. The "second" decision is developed from the demand prognosis and was 75% of expected demand, leaving 25% as degrees of freedom in order to couple particular turn-key projects with optimally placed suppliers (geographically). This rule was inspired by the consultants firm and does not seem to have been evaluated by the department. In this connexion it may be mentioned that not only was the purchasing department reorganized, but simultaneously all employees but the purchasing manager were in fact discharged and had to apply for positions in the department together with possible applicants from outside. No doubt this has put some pressure on the individuals as regards complying to the new procedure. The "first" decision regarding the period of validity to be requested was $\frac{1}{2}$ years, the origin of this is not quite clear but it is evident that two factors: 1) the quality of the prognosis as regards certainty of expected demand and, 2) the expected degree of inflation and thereby what time period it would be possible to have accepted by the vendors, have played an important role. Still one gets the feeling of a somewhat arbitrary choice, which may later be better argued in accordance with the firms learning process.

The choice of countries as the first step leading to the selection of vendors to be sent RFQ's seems to be guided by past experience and knowledge/impressions as to technological level of steel castings industry, currency rate level and possibilities of gaining financial advantages. However, as it must be characterized as a low risk decision, no doubt exists that the purchasing department is open for suggestions from both internal and external sources. The proce-

dural rule put forth by the consultants of asking 7 vendors for quotations was not quite complied with. Note especially the case of steel castings, type H. The reasons given were primarily the limitations presented by the market structure (fewer suppliers and their limited capacity in relation to the demand). Probably also the greater difficulties of an exact demand prognosis (type H is also needed for other plants than the particular turn-key projects, and demand may arise rather suddenly) play a role. It is however interesting to note that work has been started to create a "supplier-matrix", containing information on possible suppliers on a world-wide basis about capacities, price levels etc. The matrix calls for continuous information to be processed electronically thereby creating the possibility of getting up to date information on possible suppliers of any type of goods in any given geographical area immediately a purchasing problem arises.

The particular problem of deciding whether RFQ's should be sent by the ABN-head-office or through ABN local office reflects an area of conflict, which does also come through in the later negotiation phase. The process does not exactly show the characteristics of a game for power, it does indicate, however, that distinct rules are probably needed in the future in order to avoid conflicts to develop.

The initial search process described is influenced by past experience, note that only few "new" vendors were asked to quote prices, but as it is shown it is fairly easy both for internal influencers (like the sales department) and from vendors showing initiative and interest in ABN-orders to have the choice possibilities expanded. That is true even if past experience has not been satisfactory, c.f. the vendor in the UK as regards type H, and with "unknown" vendors (provided that the report on technological capabilities etc. is favourable), the last, however, only being granted a trial order. Note also in this connexion that unsatisfactory performance does not automatically lead to rejection, but calls for an investigation of the possibility of correcting the mistakes in the future, the result of which rules the decision. The aim of getting 7 bids followed by a recommended 7 rounds of negotiations using a price-squeezing policy is decidedly to be termed "aggressive" buying, also compared to what the purchasing department has done in the past. Still the "2 times 7", being arbitrary (?) high figures, would tend to be interpreted as symbolic and expressing the wish of the management to gain more effective buying, rather than to be accepted as practical rules of thumb. As the buy flows show, they have been interpreted in that way. The case of type B is closest to the recommendation, but the visualizing of the time needed to negotiate in full with all vendors clearly demands the rejection of some of the bidders early in the process. The differences in the prices quoted support the decision to reject the highest bidders immediately, although not without applying a compensatory decision model. When comparing the buy flows type H and type B it is evident that although the total structures are much alike there is definitely a difference in buying style. In the type H process the initiative to better the bids is primarily left to the competing vendors, whereas in the case of type B counter offers are

2) Having finished the report, it was sent to ABN for confirmation. It became evident that the consultants in reality had recommended 3 to 5 rounds of negotiations and the first of these should cover all the bidders. The above "2x7" represents a communication distortion, which has now been corrected, also to the respondents.

developed especially in the last phase. This may reflect the differences in the situation as it develops in the course of the process, but the author's impression is that individual characteristics of the buyers primarily in charge of the negotiations are important causes. However, face to face negotiations were applied in both cases, and were in fact considered both necessary and preferable.

The incident of only one negotiation, which occurred for small B's in the case of the East European vendor, which succeeded in getting a one year contract of 600 tons by introducing the not expected offer of firm prices for such a long period, is probably to be viewed as an exception. Considering the expected rate of inflation it is understandable that the buyers accepted an awarded the contract, but it must be noted that simultaneously the decision cutted out the possibility of negotiation for the total tonnage of both small and big type B's with other vendors.

In this connexion it is also to be noted the fact that the buying process seems to be carried through for each type of steel castings, and not for the total or even a combined tonnage of different steel castings. Figure 2 shows that this should be a possibility at least in relation to some of the vendors. The reasons are difficult to assess. It may be that it is due to characteristics of the different types of steel castings and coutumes of the industry, but it may also be that as yet unused ways of aggressive buying are to be found here.

A total evaluation of the new buying strategy of ABN cannot be made now. All in all, however it represents the most aggressive and professional buying the author has experienced up to now, and it has resulted in better agreements according to the purchasing department. The question of working out an effective tool of measuring the effectiveness of the department's work is still unsolved. The consultant firm has recommended to construct a price-index as basis for comparing the actual prices obtained by ABN. It is considered at the moment but it is evident that the work will present not easily overcome difficulties, also regarding keeping such price indexes up to date. One disadvantageous effect of the frame-contract strategy, at least at short sight, is the discrepancy between the challenge to the purchasing assistants and their capabilities. A secondary beneficial effect

may be experienced due to the fact that the existence of frame contracts presents the possibility of raising the level of relevant information needed for more accurate calculation of costs when offering turn-key projects, which is certainly important.

Theoretical implications.

The author is not prepared to draw many conclusions from this analysis, it being restricted to one firm in one industry and to the persons in this plant in their decisions and actions related to the buy flow of two types of steel castings in a specific period of time, when a new buying strategy is applied for the first time. The result as such is but one bit of information (Compare Woodside: "The fuel 6 case").

The method represents a challenge to the analyst, and this author does believe that it has been beneficial as regards creating a better understanding of the complexities of buying in a situation like the described. There is also no doubt that the author is going to analyse corresponding buying behaviour in other firms in order to compile experiences.

However, the approach presents very big problems as regards the probabilities of generalizing the results. They are not to be considered easily overcome even when it is only a question of one author and his own peculiar "bits of information" like what is recorded in this case, but it is certainly even more difficult when a mass of cases done by different analysts are to be integrated.

The buy-flows are probably the key of the matter, and consequently the IBB-group may have to develop a more precise and general "alphabet" for constructing buy-flows, even if this means cutting out some of the details. However, such an "alphabet" can only be constructed on the basis of accurate, specific pictures of reality, which are not possible to deduct at a writing-table. This then becomes the prime reason for studies like this, allowing for the fact that the descriptions may be valuable in their own right also to the firma analysed and as case material in teaching courses.

Figure 1. Buy Flow: Development of RFQ's

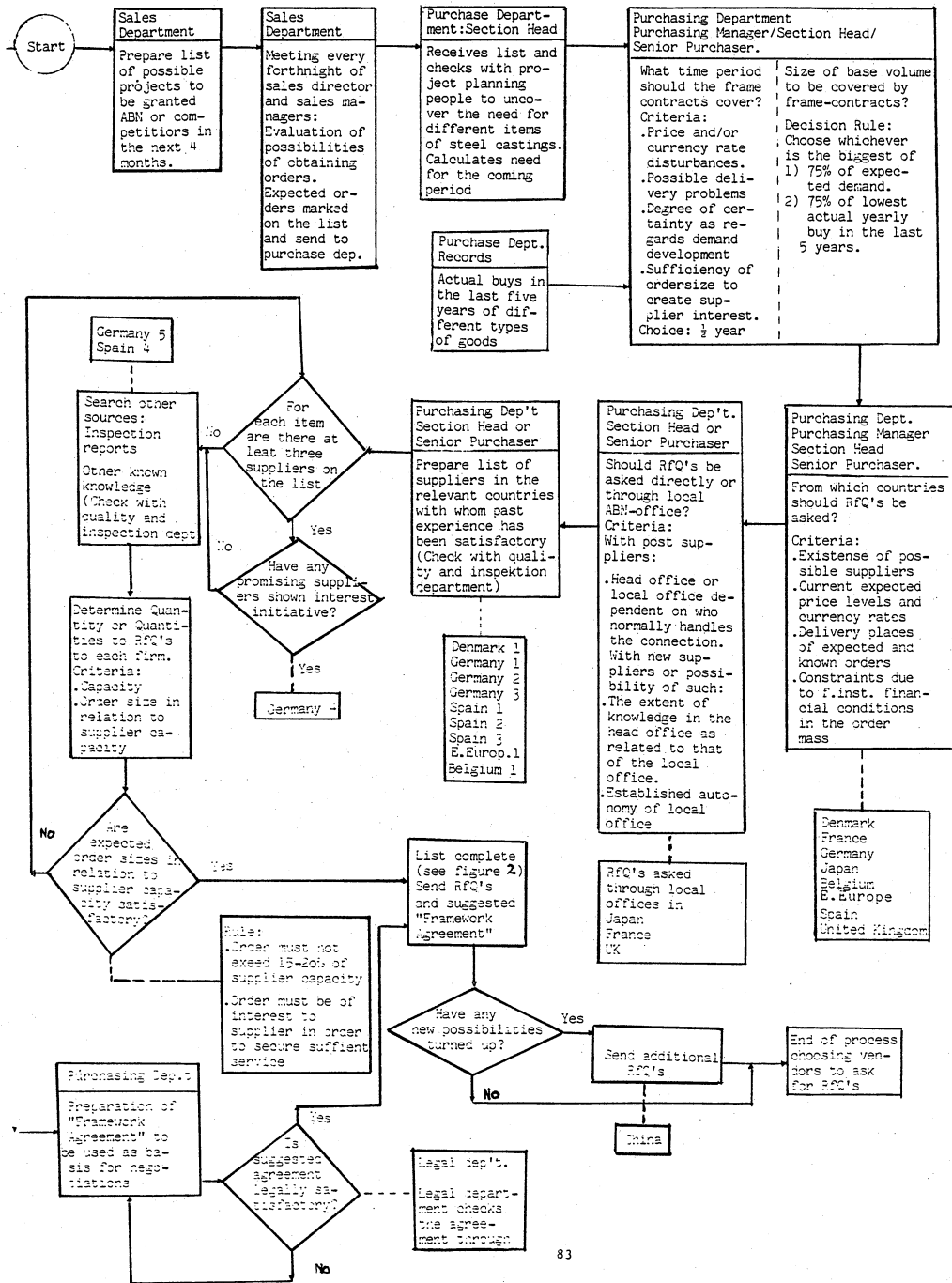


Figure 3.
Buyflow of Steel Castings, type H.

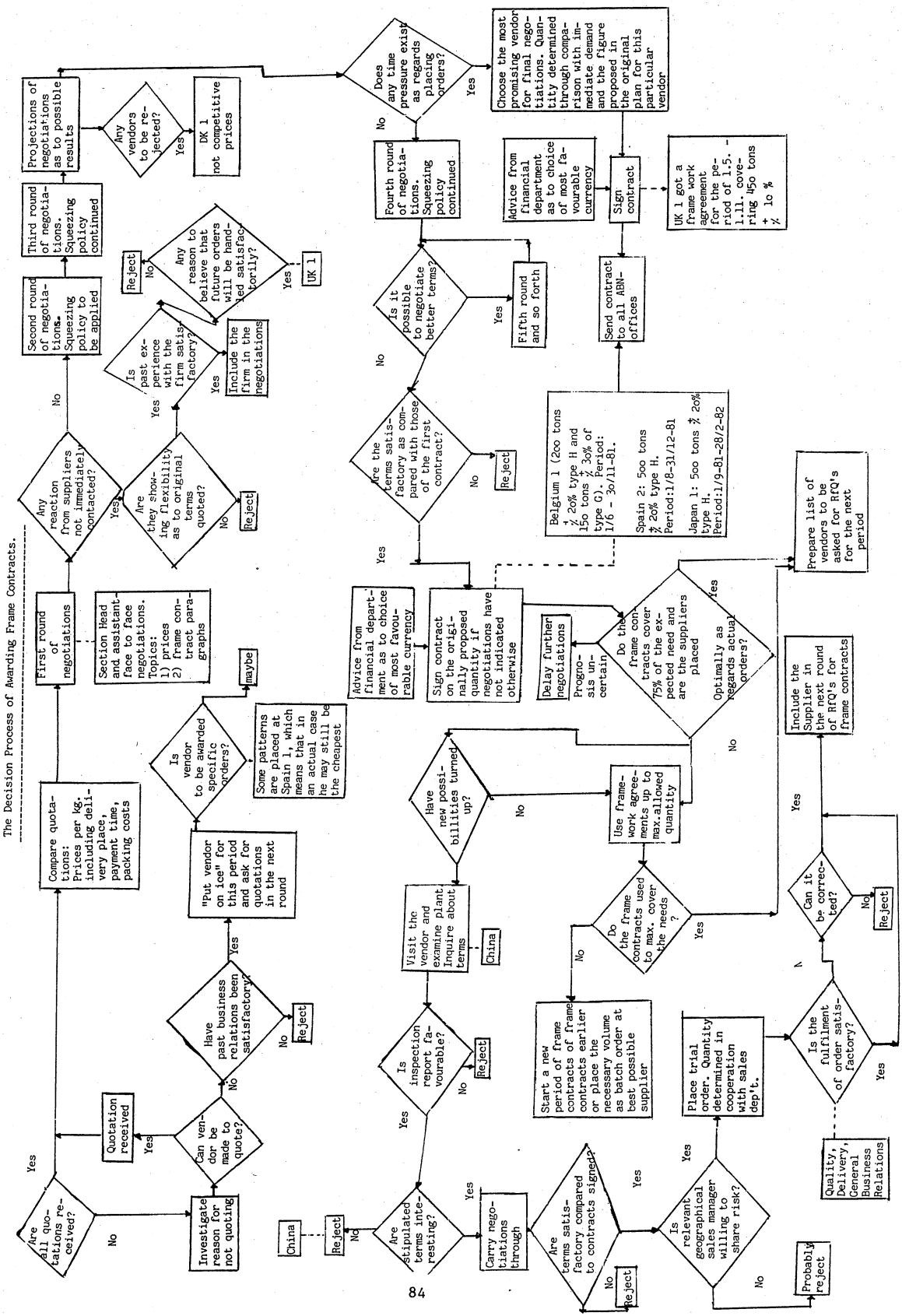


Figure 4.
The Decision Process of Awarding Frame Contracts:
The Case of Steel Castings, type B.

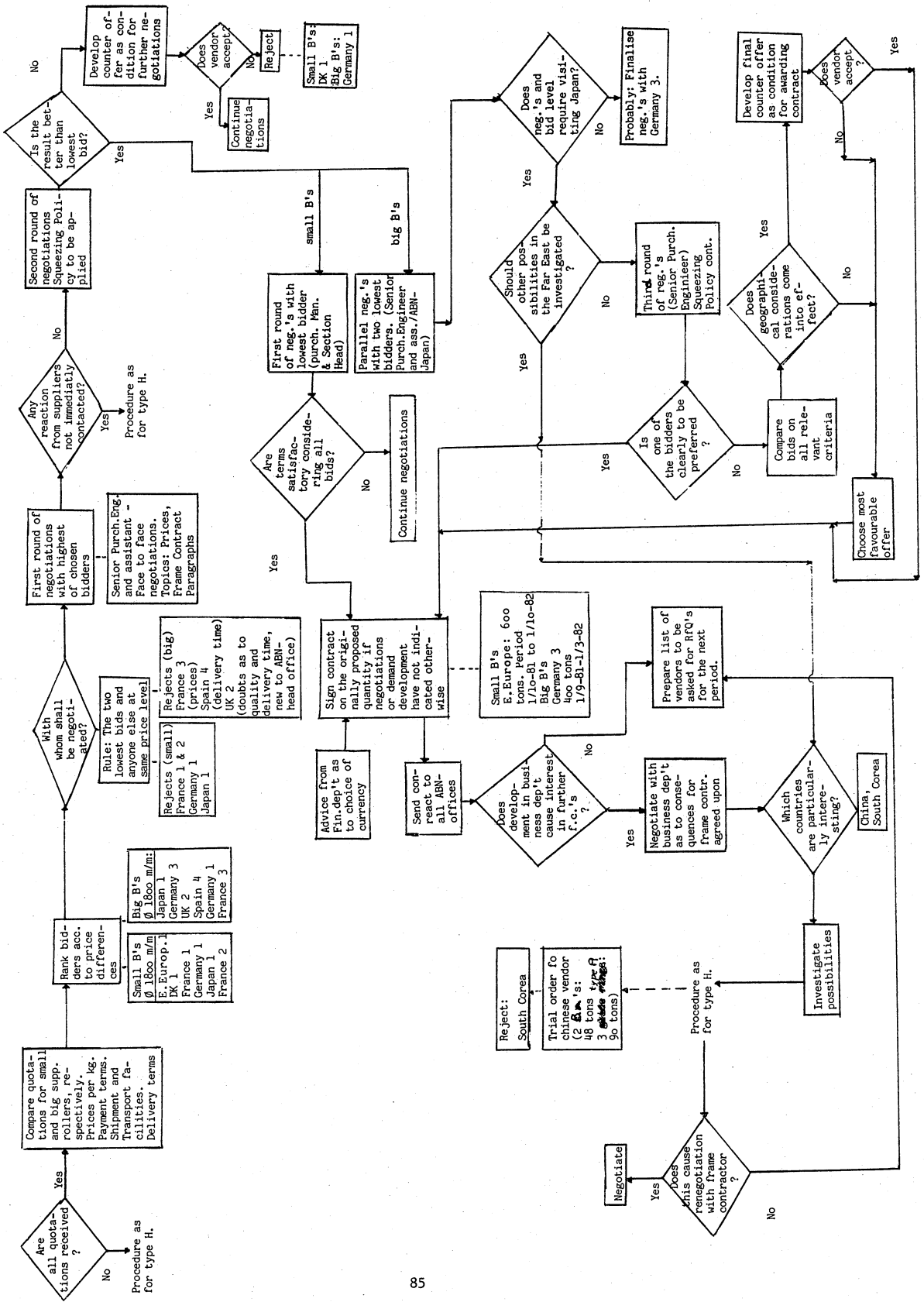


Figure 5.

Buy Flow - The decision process as regards placing specific orders.

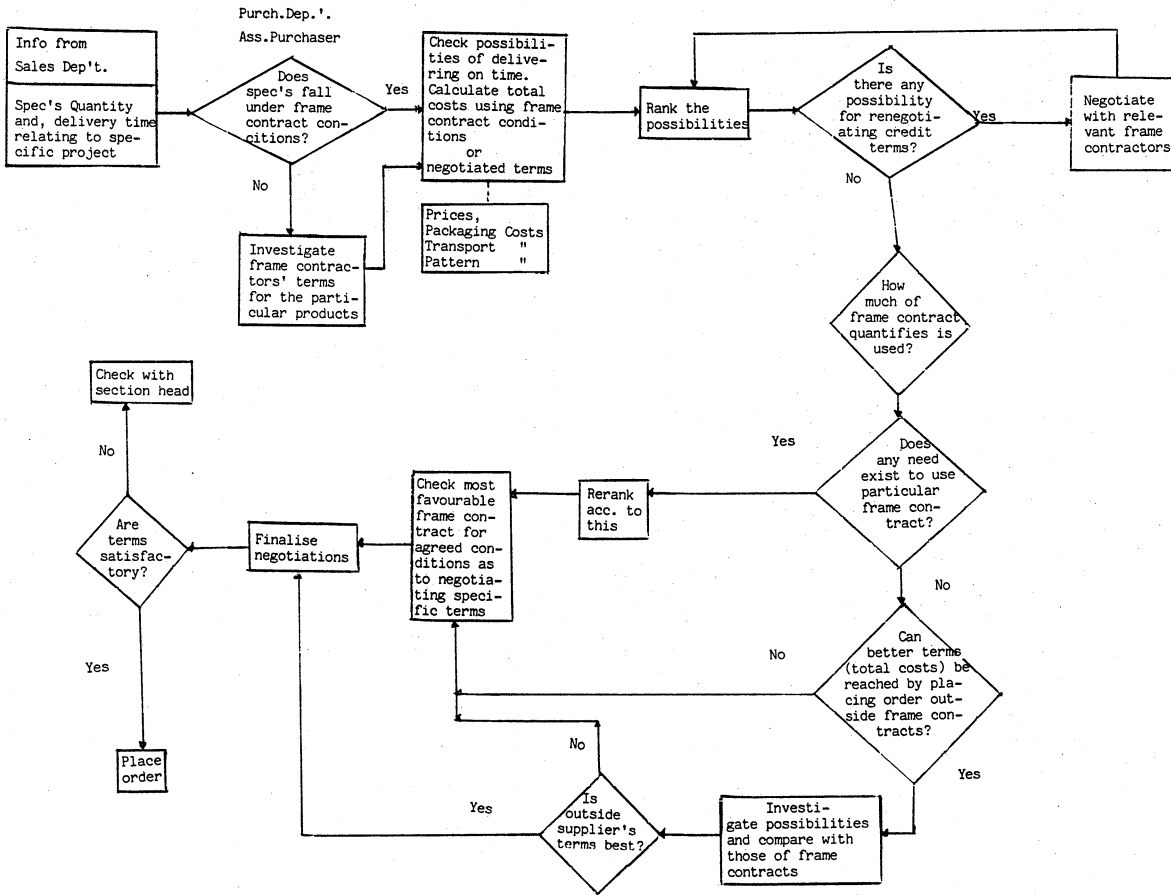


Figure 2.

List of vendors to be asked for RfQ's.
 Germany 5 and Spain 4 are new possible suppliers.
 Only type C were relevant for Spain 4.
 The base volume in the right column shows the calculated 75 % of the expected demand covering the chosen time period.

vendor item	ABN/Japan	ABN/France	ABN/UK	Denmark 1	Germany 1	Germany 2	Germany 3	Germany 4	Germany 5	Spain 1	Spain 2	Spain 3	Spain 4	E. Europe	Belgium 1	Base Volume
A	770	770			770			770				770				770
B	800	320		320	800		500					800		320		798
C	100	100			100	100				100			100			118
D		140		140	140	140				140						138
E		95			95	95										94
F		50			50	50										45
G		200	200	200						200	200				200	243
H	500		500	600						500	500				500	2018
Total tonnes	2170	1675	700	1260	1955	385	500	770	140	800	700	1570	100	320	400	4226

A FUNCTIONAL ANALYSIS OF THE ROLE OF OVERALL EVALUATION OF ALTERNATIVES IN CHOICE PROCESSES

James R. Bettman, University of California, Los Angeles

Abstract

A functional analysis of the use of evaluation processes during choice is developed, arguing that overall evaluations are likely to be performed under some conditions, but not others. The conditions which may lead to presence or absence of evaluation processes are analyzed.

Introduction

Several views exist regarding the role played by evaluations of alternatives in the consumer choice process. An evaluation of an alternative, in this discussion, will be defined as some overall judgment of the goodness or badness of the alternative. In many consumer choice models (e.g., Howard and Sheth 1969, Engel, Blackwell and Kollat 1978, Hansen 1972), evaluation processes (i.e., forming an attitude toward each alternative) appear to be viewed as a necessary part of choice. That is, an overall evaluation of each considered alternative is assumed to already exist or to be formed before a choice is made. Zajonc (1980) also argues that evaluation always occurs before choice. However, he argues that evaluation is predominant, can occur in the absence of cognitive inferences, and that the evaluative and cognitive systems are relatively independent. Finally, Bettman (1979) also claims that evaluation and choice can proceed independently, but argues that choice processes need not involve any overall evaluation of alternatives.

The latter viewpoint does not imply that attitudes and evaluations are not involved in choice processes. Rather, Bettman's notions imply only that formation of overall evaluations and the process of choice are conceptually independent. Each process can occur in the absence of the other. The purpose of the present paper is to expand upon this argument, and to claim that a uniform view of the role of evaluations in choice is incorrect; rather, a contingent view is more appealing. Hence, a functional analysis of the use of evaluation processes in decision making is presented. It is argued that evaluations are likely to be performed in certain circumstances and not in others, and the conditions which may lead to presence or absence of evaluation processes are analyzed.

In the following sections, the three viewpoints on the role of evaluations in choice noted above are discussed in more detail. Then a functional analysis of the use of evaluations in choice is presented, discussing first the conditions under which evaluations might not be performed and then the circumstances favoring the utilization of evaluations. Finally, discussions of methods for testing the hypothesized effects of such sets of conditions and the ecological frequency with which these conditions may arise are presented.

Three Views on the Role of Overall Evaluations of Alternatives in Choice

Overall Evaluation as an Integral Part of Choice

Most consumer choice models (e.g., Howard and Sheth 1969, Engel, Blackwell and Kollat 1978, Hansen 1972) assume that formation of an overall evaluation of each alternative is an integral and necessary component of choice processes. There is a heavy emphasis on the role of attitude in these

theories, perhaps stemming from the great degree of reliance on linear compensatory models in research on choice. Such models, of course, provide a direct evaluation of each alternative. Hence, the use of linear models implies that formation of an evaluation is the essence of the choice process. Even if usage of linear models is not directly assumed, the allied concept of alternative evaluation appears to have been accepted in most theories of consumer choice. Thus, in this view forming overall evaluations of alternatives and the choice process are inextricably linked.

Some might argue that this depiction of current theories of consumer choice should be qualified. For example, in many of these theories, the differences between complex and routine or habitual choices are noted. In particular, the argument is made that for routine choices, problem recognition may lead directly to intention and then to choice. However, upon closer examination, it is not clear that evaluation is bypassed. Such habitual choices are often directed by previously formed evaluations, the process Wright (1975) terms affect referral. The most detailed analysis of different types of choices is probably contained in Howard (1977), who distinguishes among routinized response behavior, limited problem solving and extensive problem solving. In the latter two cases, attitude (and hence evaluation) plays a central role (see pp. 47 and 101). In the case of routinized behavior, Howard (1977, pp. 23-30) argues that impersonal attitude is involved, which he defines as the consumer's evaluation of characteristics such as price and availability, which define the conditions of purchase. In addition, prior evaluations of brands are used during the process. Thus, evaluations (perhaps previously formed) still play a central and integral role in choice. A second potential qualification, the case of low involvement processes, is discussed in more detail below.

The Predominance of Evaluations

Zajonc (1980), in a provocative and controversial analysis, argues that affect and cognition are physiologically and psychologically independent systems. Although the focus of Zajonc's analysis is affect, and hence is broader than the more limited question of whether or not overall evaluations are formed, he appears to argue that evaluations always occur, generally occur prior to cognitions, and can in fact occur without accompanying cognitions. (The distinction between the presence or absence of affect and the presence or absence of overall evaluations in choice is discussed further below.) In particular, Zajonc notes that the features of stimuli most useful for cognitive tasks such as recognition or categorization, features he calls discriminanda, are unlikely to correspond to the features used in forming evaluations, which he calls preferenda. Thus, although Zajonc appears to believe that evaluation and cognition are independent systems, he also argues that evaluations always accompany choice processes.

A Contingent View of the Role of Overall Evaluations

Bettman (1979) also claims that evaluation and choice are conceptually independent, noting (pp. 180-185) that many choice heuristics (e.g., conjunctive, lexicographic, elimination by aspects and additive differences) do not yield overall evaluations of each alternative. The argument is made that choice and formation of overall evaluations are in general two different tasks that need not be

interrelated. One can make a choice with or without overall evaluations of alternatives, or form overall evaluations of alternatives with or without making a choice. Given this view, one must attempt to specify the conditions under which evaluations will be used in making a choice and the conditions when choice will be made without forming overall evaluations of the alternatives considered (for excellent related discussions, see Wright 1976a, 1976b).

Prior to examining conditions under which overall evaluations may or may not accompany choice processes, the scope of the analysis must be delimited. In the following, the major focus is on cases where no strongly held prior evaluation exists and hence there is some (perhaps limited) active processing of available information. The situation of routinized decision processes where there is a strongly held prior evaluation (affect referral) is briefly considered following the main analysis. Zajonc (1980) and Wright (1976a) also make such a partitioning in their discussions. Hence such cases as first choices in a product class, choices where there are very long inter-purchase times, and so on are the focus in the analysis below.

In addition, the analysis only considers the use or non-use of overall evaluations during choice. This is a different issue than the presence or absence of affect during choice. For example, one might make a choice using a conjunctive heuristic, which does not yield an overall evaluation of each alternative. However, affect may be involved in determining the cut-off levels for each attribute, deciding which levels of the attribute are acceptable and which are not. Thus, the analysis presented below does not concern the more general topic of affect, but the more limited issue of whether or not overall evaluations of alternatives are formed.

Before considering the conditions associated with usage or non-usage of evaluations, a brief introduction to the philosophy underlying the functional analysis is in order. The approach taken is functional in the sense that it is argued that evaluations are made when they serve a function in making a choice, when the choice is made easier or somehow 'better' if evaluations are formed. The main arguments are based on the notion that evaluations will generally be formed when choice would be too difficult or much more effortful to do without using evaluations; when evaluations can be carried out; and when consumers feel their decisions might be more optimal if evaluations are made. Conversely, evaluations would not be made when they were not needed to make a choice, or when they could not be carried out easily. The specific conditions underlying these global notions are discussed below.

When Overall Evaluations May Not Accompany Choice--The Case for Cold Cognitions

It is perhaps easiest to understand the factors which might lead to formation of evaluations during choice by considering the opposite case, the case where evaluations might not be undertaken. As noted above, there are many choice heuristics which do not yield direct overall evaluations of alternatives, but which could lead to choice of an alternative. Some brief and highly simplified scenarios pointing out such possibilities are considered, and then the conditions fostering choice without evaluations are detailed.

Scenarios for Choice Without Overall Evaluations

Consider a consumer who has just moved to a new state, and who is examining a bank's brochure about the various possible savings accounts available at that bank. The

brochure presents a matrix display of information on the various accounts and their features (e.g., interest rates, minimum amount required, time the amount must be left in the account, and so on). The consumer is in a hurry, and quickly scans the data, looking at one account at a time, eliminating all accounts requiring a minimum deposit of more than \$2,500 or with interest below 7%. This leaves only one account, which the consumer chooses. This choice could be described as a conjunctive process. Such a process does not yield an overall evaluation of each alternative, but simply accepts or rejects it. Hence, one could choose without explicitly forming evaluations of each alternative.

Next, imagine a consumer shopping in a grocery store who has just acquired a dog as a pet, and wishes to purchase a flea collar. The consumer is not very involved in the choice of a particular collar and knows very little about them. When the consumer finds the display of collars, there are only two alternatives. Each has the percentage of various ingredients, the length of time it can be used, and the price on the front of the package. The consumer quickly notes that the prices are the same, and chooses the brand with the longer usage life, ignoring the chemical information. This choice, essentially lexicographic, was made by considering information on one attribute at a time. Each alternative was not processed as an overall entity. Hence, one might argue that there would tend to be no overall evaluation of each alternative in such a case.

These brief scenarios provide instances which illustrate the potential for choice without an accompanying evaluation process. In the following, some of the factors underlying these examples are discussed.

Conditions Underlying Choice without Overall Evaluations

Now several types of factors which might lead to choice without overall evaluations are considered. The list is not intended to be complete; individual difference factors are not considered in any detail, for example. However, several major sets of factors are examined. These sets of factors include the mode of presentation and type of information available; the level of importance or involvement characterizing the choice; characteristics of the set of alternatives; characteristics of the decision situation; and the level of knowledge the consumer possesses about the product category. The necessity and sufficiency of these various factors, alone and in combination, for producing choice without evaluations are discussed later in the paper.

Mode of Presentation and Type of Information. The presence of the following conditions would encourage choice processes without overall evaluations of alternatives: i) all information considered is externally available at the point of choice; ii) the information on various brands and attributes is presented or available simultaneously; iii) the format in which the information is presented is compatible with strategies other than those based on processing one brand at a time; iv) the information available can be easily compared within attributes, across brands; and v) the information available is "cognitive" rather than "affective" in nature. The rationale for these conditions is now considered.

If conditions i, ii, iii, and iv are met, the consumer is facing an information environment which allows for a great deal of flexibility in processing the available information. If all the information considered is available at the point of choice, whether the point of choice is in a store, at home, or elsewhere (e.g., on packages, displays, in brochures, in a table in Consumer Reports), then there is a relatively complete external memory. If that information is also available simultaneously (i.e., the consumer has all the information available at once, rather

than receiving it in bits and pieces), then there is no particular need to form and remember a summary evaluation of each alternative based on information obtained elsewhere or obtained earlier in the decision process. Rather, it is relatively easy for the consumer to make a choice based only on some processing of the information currently available in external memory. In addition, if the format in which the information is presented is organized by attribute, or in a matrix display, or in some other form allowing easy attribute-based comparisons (e.g., a display with very few brands, each with the same information on the package), then various heuristics based upon attribute processing which do not yield global evaluations can be used (Bettman 1979, Wright 1976a).

Conditions iv and v imply that certain types of attributes would be predominant in the information considered during the choice. One useful typology of attributes has been proposed by Nelson and others (Nelson 1970, 1974, Darby and Karni 1973). Attributes of alternatives are of three types: search (can be ascertained by inspection, prior to use--e.g., price, size); experience (can be ascertained after use--e.g., taste); and credence (cannot be ascertained even after normal usage without consulting an expert--e.g., vitamin content). The type of information characterized in conditions iv and v might often be objective search attribute information, but this need not be the only case. For example, *Consumer Reports* often provides ratings of brands on experience attributes. Such ratings provide a common scaling across brands, ensuring condition iv. If the same experience attribute is described in different terms across different brands, then the consumer would find it harder to process by attribute, and might tend more to look at each brand as a separate entity, leading to a greater chance for overall evaluation of each brand.

Finally, a brief explanation of condition v is in order. Some products are marketed using information which is very "cognitive," whereas others use information which is much more "feeling" or "affective" in tone. For example, bath soaps often stress how one feels after using them, rather than weight of the bar, usage life, or other features. To the extent that such "affective" attributes are the major ones stressed for a product category, development of overall evaluations might be fostered. A related distinction might be information which is expressed basically in semantic form versus that which is basically visual. It is possible that the visual information may more readily lead to evaluative responses in some individuals. (For a very interesting related discussion, see Holbrook and Hirschman 1981). In summary, conditions i-v specify an information environment which makes it very easy to make a choice without forming an evaluation of each alternative, and which fosters very "cognitive" processing.

Importance and Involvement. The conditions above allow the consumer to process without forming overall evaluations. However, there has been no consideration thus far of those motivational conditions which might lead consumers to process in such a fashion. That is, one could argue that the environment described above would also make it easier for consumers to form evaluations if they so desired. Hence, the role of the importance of the choice to the consumer or the degree of the consumer's involvement in the choice must be considered.

The simplest notion about the role of involvement would be that consumers tend to process without forming evaluations for unimportant, low involvement decisions. This is related to the prediction of the standard low involvement hierarchy (Ray 1974), which argues that cognition leads directly to behavior, which then leads to attitude change.

Despite some conceptual and empirical support, however, there is still controversy over the proposed hierarchy. Petty and Cacioppo (1981) argue that the sequence is still

cognition, evaluation, and behavior in processing persuasive communications under low involvement, but that the focus of the cognitions switches from issue-relevant arguments in high involvement to non-issue-relevant features, such as properties of the source, in low involvement. Also, Leavitt, Greenwald, and Obermiller (1981) postulate the existence of a low involvement path characterized by preattentive processing and change in evaluations. Finally, Hansen (1981) argues that individuals may use evaluative right brain hemisphere processes in low involvement.

The resolution of this debate is presently unclear. For the moment, the hypothesis that consumers will tend more to process without making evaluations for uninvolved, unimportant choices will be retained. Combining this discussion with that in the previous section, the choice situations which should lead to the highest incidence of choice without evaluations are those characterized by a well-structured processing environment and uninvolved decisions.

Characteristics of the Set of Alternatives. Features of the particular alternatives considered may affect whether or not evaluations are performed. Two such characteristics are the number of alternatives and their complexity. There is some evidence that either a large or small number of alternatives can lead to usage of choice strategies which may not involve an evaluation. In choice settings with a large number of alternatives, consumers often use cut-off strategies to eliminate alternatives (Wright 1976b, Wright and Barbour 1977, Payne 1976). Such strategies include the conjunctive and elimination by aspects heuristics. Neither of these heuristics requires an explicit evaluation of the alternatives. On the other hand, as in one of the scenarios described above, there can also be choice without evaluation with a small set of alternatives. Even if the information is displayed by brand, the consumer can sometimes process by using attribute-based comparisons if the number of alternatives is small. Such attribute-based processing often can lead to choice without evaluation, as noted above.

Complexity of the set of alternatives also has an impact on the use of evaluations. The more complex the alternatives, other factors being equal, the more the consumer tends to rely on simplifying heuristics, and simplifying strategies often involve no direct evaluation of alternatives. Both the number of alternatives and their complexity thus effect the consumer's ability to form evaluations.

Characteristics of the Decision Situation. Two characteristics of the choice task which can lead to decreased use of evaluations are time pressure and distraction. Both Wright (1974, 1976a, 1976b) and Einhorn, Kleinmuntz, and Kleinmuntz (1979) note that decisions made under time pressure may involve greater use of non-compensatory choice strategies, which do not involve alternative evaluations. Greater usage of unidimensional comparisons and cut-offs is observed. Greater use of cut-offs has also been observed as the time horizons involved in a choice are shortened (Wright and Weitz 1977). Finally, distraction may also lead to decreased usage of evaluations (Wright 1974). Again, both distraction and time pressure lessen the consumer's ability to form evaluations (or do any kind of processing) in a given choice setting.

Knowledge of the Product Category. In general, one would expect that the consumer would have to possess a reasonable understanding of the product category to enable an evaluation to be formed. The consumer would need to understand the nature of the attributes, potential trade-offs, and so on. In other words, the consumer would need to understand the product concept and choice criteria (Howard 1977), or possess a memory schema for the product category (Olson 1978). Hence, low to moderate levels of

product class knowledge may lead to choice without evaluations. There is some indirect support for this notion, as several studies have found that consumers with less experience use attribute-based processing to a greater extent (Bettman 1979, Bettman and Park 1980). However, if knowledge is extremely low, the consumer may find processing any available information too difficult, and may use evaluations based on very simplistic criteria (Bettman and Park 1980). Finally, Johnson and Russo (1981b), contrary to the reasoning above, found no differences in use of overall evaluations as a function of knowledge. However, the product category used was automobiles, which may be somewhat familiar to most individuals. Thus, the role of level of knowledge in the usage of evaluations requires empirical clarification.

To summarize, several conditions which might lead to choice without forming overall evaluations have been postulated. These conditions specify a choice setting characterized by information which is conveniently structured, easily compared, and "cognitive" in nature; low involvement; and factors which might reduce the consumer's ability to develop evaluations (number and complexity of alternatives, time pressure and distraction, lack of knowledge). Hence, when the consumer lacks the ability or motivation to form evaluations, "colder," more cognitive information processing may occur.

When Overall Evaluations May Accompany Choice--Heating Up the Choice Process

Scenarios for Choice with Overall Evaluations

Imagine a consumer who is about to make his or her first purchase in a product category such as bath soap, toothpaste, coffee, or beer. Such categories are characterized by a relative lack of information on the package or elsewhere in the choice setting; rather, much information comes in advertisements for the various brands. Hence, the consumer often receives information sequentially, one brand at a time. In addition, the information which is received is often very "affective" or "feeling" in tone, and is not easily comparable across brands, even for the same attribute. For example, various soaps may attempt to characterize how refreshed or invigorated one feels, or beers may stress various qualities of their taste. Such information can be difficult to process using attribute-based comparisons. For example, how one compares "gusto" and "high country" taste for two brands of beer is not obvious. In such choice situations, overall evaluations of each alternative can play a very useful role, as detailed below.

Conditions Underlying Choice with Overall Evaluations

Mode of Presentation and Type of Information. The presence of the following conditions would encourage choice processes with overall evaluations of alternatives: i) some of the information considered and impacting the choice is not externally available at the point of choice; ii) information on various brands is presented sequentially; iii) the format in which the information is presented leads to processing one brand at a time; iv) the information available cannot be easily compared within attributes, across brands; and v) the information available is "affective" or "feeling" in tone.

If conditions i to v are met, the consumer faces a choice environment which severely constrains the types of processing which can be readily carried out. In effect, the sequential, brand-based environment changes the consumer's task to one of single brand evaluation rather than multiple brand choice (Wright 1976a, 1976b). In many product categories, much of the information and persuasive claims are available in advertising messages, but not on the package or elsewhere at the point of choice. That is,

external memory may be relatively incomplete. If the consumer is to use such information from advertising, it must be stored in and later retrieved from memory. If, in addition, the consumer sees information sequentially, typically one brand at a time, comparisons using attribute-based processing are very difficult. The consumer would have to store information on various brands in memory, retrieve this data and make comparisons and calculations with little external memory aid. This might also be true if the format of the information were by brand, even if the information were available simultaneously. Such processing would be quite difficult.

What type of processing strategy or approach would ease this memorial and computational burden? Perhaps the easiest strategy in such a situation is to form a summary evaluation of each brand when information on that brand is presented, and then to update those evaluations as new information is received. Such a strategy is feasible, given the sequential, brand-based presentation, and reduces the burden on memory. Only the summary evaluation must be remembered, not the more detailed data which underlie that evaluation. Thus, evaluations serve an important function in such a constrained processing environment by allowing the consumer to make a choice without undue burdens on memory or computational skills.

Such formation and updating of evaluations may seem to contradict the claim above that only cases where no strongly-held prior evaluation exists would be considered. However, the intent was to consider cases where there is no prior evaluation from a previous decision episode. The decision episode examined, however, may extend over time, particularly in the case of sequential information presentation.

There is evidence and reasoning to support the analysis above. Johnson and Russo (1981) show that global evaluations are remembered better than the underlying brand-attribute ratings, and cite other studies consistent with the hypothesis that the results of internal processing are often remembered better than the original data which were processed (e.g., Russo and Wisner 1976, Doshier and Russo 1976, Johnson and Raye 1981). Hence, the consumer is apparently better able to recall evaluations which have been formed than the data underlying those evaluations. Thus, conditions which require the consumer to use information in memory rather than merely processing externally available information are likely to result in retrieval of evaluatively laden memories. Tversky (1969) argues that sequential presentation of information will encourage brand processing, and Bettman and Kakkar (1977) show that information presented in a brand format (which is by nature sequential) tends to be processed by brand. Finally, Herstein (1981 p. 852), presents some strong evidence for the notions discussed above. Herstein collected protocols from 20 subjects during a voting choice task. A total of 42 overall evaluation statements occurred in these protocols, of which 40 of 42, or 95%, occurred in a condition with a format encouraging processing of one candidate at a time.

The analyses above involve conditions i, ii, and iii. Conditions iv and v also would lead the consumer to form and update summary evaluations. If information cannot be easily compared within attributes, then brand-based processes would be encouraged, where the task again becomes analysis and probably evaluation of single alternatives, rather than simultaneous comparison of several options. In addition, if the information available is very "affective" or evaluative in tone, stressing experience or credence attributes, evaluations may be encouraged. As noted in the brief scenario above, the information in advertising for many products is of this sort, describing in highly "feeling" terms the taste or experience of a brand. Such information would also be difficult to compare within attributes across brands, making the tendency

for forming evaluations of each brand even higher. Hence, for brands with many experience and credence attributes which are depicted in "affective" terms, where information is presented sequentially by brand, and where the consumer does not have the aid of a relatively complete external memory, it is very functional to form overall evaluations and update them.

Importance and Involvement. In addition to the impact of the conditions described above, the importance of the choice can affect the use of evaluations. Einhorn, Kleinmuntz, and Kleinmuntz (1979) argue that more important decisions will receive more consideration and deliberation, and more deliberation will lead to greater incidence of overall evaluation. The standard high involvement hierarchy (Ray 1974) argues that cognitions lead to evaluations which then lead to behavior. In addition, important or involving choices implicate the self, which may lead to greater involvement of evaluation (Zajonc 1980). Self-relevant information also appears to be better remembered (Rogers, Kuiper, and Kirker 1977), which provides additional indirect evidence that evaluations may be well remembered. That is, evaluations are more self-relevant than the basic data from which they are derived, and hence may be better remembered.

Despite these arguments, there is some indirect contradictory evidence. One might argue that to the extent consumers are involved in a choice or feel it is important, they will want to optimize that choice as much as possible. Wright (1975) found that consumers perceived linear compensatory strategies, which lead to evaluations, as less likely optimizers than conjunctive strategies, which do not lead to direct evaluations.

Characteristics of the Set of Alternatives. Evaluations will generally be easier to carry out, and hence more likely, if the alternatives are few in number and low in complexity (Wright 1976b).

Characteristics of the Decision Situation. Choice tasks which are characterized by ample time for processing (lack of time pressure) and few distractions will be more conducive to the formation of evaluations (Einhorn, Kleinmuntz, and Kleinmuntz 1979, Wright 1974, 1976a, 1976b). The arguments are the reverse of those made for the no evaluation case and are not repeated here. In addition, tasks where some kind of quantitative, graded, or ordered judgment is required will tend to evoke greater usage of overall evaluations (Einhorn, Kleinmuntz, and Kleinmuntz 1979; Johnson and Russo 1981b). Finally, Zajonc (1980) claims that social interaction is dominated by affect. Hence, choices made with others may be characterized by a good deal of information arising from that social interaction which is affective or evaluative in tone. Such information, as noted above, may tend to foster the use of overall evaluations.

Knowledge of the Product Category. As noted in the earlier discussion, one might argue that the consumer must have some basic understanding of the product category to be able to form evaluations based on available information. However, it is also possible that consumers may form impressionistic evaluative judgments based on no information or very little information.

In summary, conditions which might encourage the use of overall evaluations include a choice setting with sequential, brand-organized, "affective" information; high involvement; and other factors which affect either the consumer's motivation (need for a quantitative judgment; a choice involving social interaction) or ability (few simple alternatives, no time pressure or distraction) to form evaluations. Thus, two contrasting types of situations have been described, either encouraging the use or non-use of overall evaluations. A summary outline of the characteristics of each is presented in Table 1.

TABLE 1
SUMMARY OF CONDITIONS ENCOURAGING CHOICE WITH AND WITHOUT OVERALL EVALUATIONS^a

Conditions	Choice with Overall Evaluations	Choice without Overall Evaluations
Mode of Presentation and Type of Information	i) Some information considered not externally available at point of choice (relatively incomplete external memory).	i) All information considered externally available at point of choice (relatively complete external memory)
	ii) Information presented sequentially	ii) Information presented simultaneously
	iii) Format leads to brand processing	iii) Format allows attribute or other processing
	iv) Information not easily comparable within attributes across brands	iv) Information easily comparable within attributes across brands
	v) Some information "affective" in nature	v) Information "cognitive" in nature
Importance and Involvement	Mostly highly important and involving	Mostly unimportant and uninvolving
Characteristics of set of Alternatives	Few in number--not complex Not complex	Many or few in number Complex or not complex
Characteristics of the Decision Situation	Ample time for processing Little distraction Quantitative judgment required Choices made with or without social interaction	Time pressure Distraction present Only a choice needed Choices made without social interaction

^a Every condition may not be required in each case. See the text for a discussion of how the conditions might interact.

How the Conditions May Interact

In the above discussions, the various sets of conditions have been treated more or less independently. However, one might wish to consider how these sets of conditions might interact. That is, what might happen if information presentation is sequential and there is low involvement? The following is an admittedly speculative discussion of such interactions.

For a choice to involve overall evaluations, it may be sufficient if any of the five constraining mode of presentation and type of information conditions described in the discussion underlying choice with evaluations are met. These factors appear to be so strong that their presence may lead to use of overall evaluations of each alternative regardless of the levels of other factors such as involvement, task characteristics, or knowledge. Certainly if several of the five conditions hold, there are very strong pressures for use of evaluations. It is also possible that demands for a graded judgment and choices involving social interaction would consistently evoke evaluations, but these features may not be as strong as mode of presentation and information type.

Level of involvement alone is probably not sufficient to insure evaluations. Other factors probably need to be present, such as few alternatives, knowledge, lack of time pressure, and so on. If several of these other conditions are present, then one might find use of overall evaluations under high involvement even when concrete "cognitive" information is presented simultaneously, say in matrix format. Finally, factors such as knowledge, time pressure and number of alternatives need other conditions such as involvement or information mode to be met before evaluations would occur.

A choice would probably not involve overall evaluations only if all the simplifying presentation mode and type of information conditions specified in the discussion of when evaluations may not accompany choice are met and if some other conditions such as low involvement, lack of knowledge, or time pressure hold. These speculative characterizations obviously have implications for the frequency with which evaluations might occur in actual choices. However, discussion of this point is deferred for the moment so that the case where prior evaluations are present can be briefly considered.

When Prior Evaluations are Present

If the consumer has made previous choices in a product category or in some other fashion has developed evaluations of the alternatives, a particularly simple mode of decision making is to simply use those evaluations to make the current choice, without processing additional information. Such a procedure, termed affect referral by Wright (1976a), may be especially useful for habitual and routinized choices. Wright (1976a, pp. 120-121) provides a good discussion of conditions which may evoke affect referral, including existence of prior evaluations, low involvement, time pressure or distraction, and formats incompatible with other simple strategies.

Implications

Testing the Proposed Conditions

Testing the proposed conditions is not an easy task, as detection of the presence or absence of overall evaluations is not likely to be straightforward. However, several methods seem possible. One would first manipulate some set of factors discussed above (e.g., format, presentation mode, time pressure), and have the individual make a choice. The dependent measures might then include:

a) use of response times to memory probes asking about global evaluations of alternatives (Johnson and Russo 1981a). If an evaluation had been formed during choice, response times to the probe should be reliably faster than if one had not been formed; b) use of think-aloud protocols, which could then be coded for the frequency of use of evaluative statements (Herstein 1981, Bettman and Park 1980), or use of recall protocols (Johnson and Russo 1981b); c) use of electromyogram measures of muscular activity (Cacioppo and Petty 1981). Cacioppo and Petty note that it may be possible to test the temporal sequencing of cognitive and evaluative reactions to stimuli using this technique. Thus, although tests of the notions above may be difficult, there are several potential methods for approaching the problem.

Frequency of Evaluations in Actual Choice Tasks

Having described the types of conditions which may lead to use or non-use of evaluations, the question which naturally arises is, "How often will overall evaluations be used in making choices?" Based on the characterizations of these conditions, it appears that global evaluations may very often accompany choice. Many choices will be made using affect referral, i.e., most choices are routine or habitual. For choices which are not routine, sequential presentation, incomplete external memory, presentation by brand, and some "affective" information are likely to be very common. Put another way, the well-structured information environment postulated to foster choice without evaluations may occur relatively infrequently (perhaps most prevalently in the choice tasks given subjects in experiments on choice).

Thus, one would expect to see overall evaluations of alternatives accompany choice processes quite frequently. Therefore, positions such as those held by Zajonc (1980) and several consumer choice theorists, that evaluations are a necessary component of choice, may agree empirically with the present contingency position. However, there is an important conceptual distinction, in that the functional approach outlined above argues that evaluations need not accompany choice, even if they very often do so.

The implication of this line of reasoning is that the study of evaluation processes and attitudes should play an important role in cognitive information processing approaches to choice, and that careful consideration must always be given to the structure of the environment within which choices are made. "Cold" and "hot" theories of choice both have a role in understanding decision processes; rigorous analysis of choice tasks and the decision environment can help elucidate those roles more precisely.

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THE ROLE OF AFFECT IN CATEGORIZATION: TOWARD A RECONSIDERATION
OF THE CONCEPT OF ATTITUDE

Joel B. Cohen, University of Florida

Abstract

Affect (and attitude) have been viewed as the resultant of a set of analytical operations carried out on feature-based information using one or another learned combinatorial rule. This paper develops an alternative conceptualization of the evaluation process that builds on recent work on nonanalytic concept identification and behaviorally functional categorization and which is also consistent with schema-theoretic concepts and analog-based imagery processes.

Introduction

It is traditional in consumer behavior research to assume that a consumer's overall judgment and attitude toward a product are based upon implicit or explicit use of some information processing rule. Such rules (and their paramorphic representations: linear compensatory, weighted average, conjunctive, etc.) are frequently compared and debated, but their basic premise (i.e. the computational nature of information integration) frequently goes unchallenged. It is important to note that the application of a computational rule may often give the right answer or even outperform the supposed rule user because such rules are so robust: people, we are not surprised to learn, tend to prefer products which possess desirable qualities and not those which possess undesirable qualities. Yet such rules may not reflect how the individual actually goes about arriving at his/her overall evaluation of the product.

We have accumulated a fairly substantial literature which shows that many people can, in fact, process information using a number of possible feature/attribute combinatorial rules, especially if we provide some training in their use and an indication that it is appropriate to use them. In addition, it's easy to dismiss as an inarticulate boob the focus group respondent who casually remarks that he/she grabbed that particular package because "it just seemed to be what I was looking for," all the while secretly smiling to ourselves that Nisbett and Wilson (1977) really had a point in underscoring people's lack of ability to report on internal processing operations.

There are, however, some serious challenges to the prevailing view that evaluation is merely the end result of a feature/attribute based information processing rule. This paper will explore some of these perspectives and will propose an alternative conceptualization of the evaluation process.

Some of the recent work on cognitive organization and representation and the processes of concept identification and categorization may be viewed as inconsistent with earlier associational and rule-based cognitive processes affecting judgment. These are each complex and subtle research domains, and any brief attempt to integrate these must, of necessity, focus on particular aspects of this work and ignore much more. With appropriate caution, therefore, let us examine the relevance of each to an orientation we shall loosely characterize as "judgment through evaluative frameworks."

Schema Theories

Though the schema notion goes back at least as far as Bartlett (1932), its strong reemergence in recent cognitive and social psychology is ample tribute to the attractiveness of the concept. There are a great many schema theories and definitions. For our purposes it is useful to think of a schema as a hypothetical cognitive structure that integrates existing information into a more cohesive and directive organizational unit. Since the two key elements of this definition are that a schema is cohesive and directive, several cautions are in order. First, there is little evidence to suggest that individual memory traces are simply reorganized into larger schema-like structures and that their individual identity is then lost. It is also difficult to show unequivocally that activation of particular elements of an associative network would not provide an alternative explanation for many schema-like results.

The case for schema models as an accurate structural representation is not, however, crucial to this discussion. Much more important is the directive aspect of focused and organized cognitive structures (here termed schemas) on information processing. Such effects can be seen on attentional processes, on the encoding and integration of new information and with respect to subsequent inferences and memory reconstructions. Some of the early work on stereotyping (Allport and Postman, 1947), research on the role of implicit personality theory in impression formation, (Hastorf, Schneider and Polefka, 1970; Rosenberg and Sedlak, 1972) on the superior recall of information when a schematic context was presented (Bransford and Johnson, 1973; Smith, Adams and Schorr, 1979) and on the role of processing goals and tasks on perception and memory-based judgments (Lingle and Ostrom, 1979; Hamilton and Zanna, 1974; Cohen and Ebbesen, 1979) illustrate the directive role of memory schemata. In applying the schema notion to the concept of attitude, Tesser (1978, p. 297) writes: "There is not a single attitude toward an object but, rather, any number of attitudes depending on the number of schemas available for thinking about the object."

There are two aspects of this rich literature on cognitive schemas that are central to the topic of this paper. The first emphasizes the operation of integrated rather than discrete cognitive representations in information processing. The second focuses on the purposive and goal-directed nature of schemas, indeed on their readiness to respond to certain types and patterns of information. Schemas, in this latter sense, direct conscious attention to particular targets. And how are these targets selected and identified? Once a given schema is either activated or created, relevant research suggests that it functions as an organized whole. Thus, in the literature on person perception and impression formation such schemas (e.g. extravert, bleeding heart liberal, red neck bigot) are often treated as prototypes, and so, "It is probably the degree of 'family resemblance,' not the continuous surpassing of a few critical properties tests, that determines category membership in everyday person perception" (Cantor and Mischel, 1979, p. 30).

When the activated schema is simply a framework instigated by a context or meaning cue, then the schema serves mainly as a perspective for attending to and interpreting events. When, however, the activated schema

is instigated by personal goals and values or the need to take some action, in the broadest sense what we will be describing is judgment based on a type of matching process in which object categorization and evaluation are implicitly linked. To keep these types of schemas distinct, we shall refer to the latter schemas as evaluative frameworks. We will return to this conceptualization after discussing some other relevant perspectives.

The Role of Mental Imagery

If evaluative frameworks are presumed to function in this wholistic manner and to participate in a type of matching process, it would be reasonable to expect their memory representations to possess qualities that are consistent with such processing requirements. While both analytic and analog representational structures can, in general, be formulated to explain almost any particular research finding, there is a growing body of evidence to suggest that, whatever the deep representation of information may look like, an imagery system is an important aspect of a surface representation (Kosslyn, 1978). Kosslyn (Kosslyn and Pomerantz, 1977; Kosslyn, 1978) uses the metaphor of images being like displays on a cathode ray tube that are generated by a computer program. There is diverging opinion as to whether such an image is simply a biproduct of an underlying propositional structure or is, in fact, a representation that is decidedly more similar to that evoked when looking at a picture than when merely describing one (e.g., Anderson and Bower, 1973; Pylyshyn, 1973). Though it may not at first seem parsimonious to think of a representational system as having two different interpretive devices for images and propositions, such a "mind's eye" mechanism would appear to be needed to receive and hold perceptual images during information acquisition. In addition, a possibly more parsimonious structural account may be very much more complex in terms of the processes required to operate on propositional representations in explaining some key findings in the imagery area. Let us just highlight some pertinent findings which support a functional view of imagery and which thereby suggest that this type of representation may be particularly appropriate for the types of evaluative frameworks we are describing.

To help choose between imagery and associational explanations for the fact that it takes more time to mentally picture properties of smaller objects (e.g., the nose of a rabbit when imaged as standing next to an elephant than when imaged as standing next to a fly), Kosslyn (1976) found that people took more time to mentally picture smaller but more highly associated (in a propositional sense) defining properties than larger but more weakly associated properties. This finding was the reverse of that found under standard verification instructions which encouraged the use of propositional information. The results of a series of memory scan investigations (e.g., in one case people learned to draw a map of a mythical island and were then asked to image it) suggest that time to locate a given place on the map increased with distance from the focal point. This was not the case when people were asked to answer without being instructed to image the map. Jonides and Baum (1978) discuss this in terms of a "mental ruler" strategy as applied to the imaged representation of a map. Such results suggest that imaged representations are not only experienced but actually play a major role in information processing and judgment. Note that none of this research argues convincingly that images are stored in a rote form and are then simply replayed, like film through a projector. A deep representation could take several other forms (e.g. storage in a matrix format), though they must allow for sequential encoding and upgrading of an image over time, image

transformations (e.g., zooming in on a particular property or rotating the image), as well as the enhancement or construction of an image from purely propositional information (e.g., a Florida "gator" leaning on the St. Louis Arch).

At this time it is simply not possible to conclusively demonstrate that any particular underlying representation is propositional or analog. A strong version of an analog representation would hold that there is a high degree of isomorphism between a visual image and what it represents while a weak version might be that only certain spatial information is retained in an analog representation with the remainder filled in by propositional information. Palmer (1978, p. 297) terms analog representations "intrinsic" since, "whatever structure is present in an analog representation exists by virtue of the inherent constraints within the representing world itself, without reference to the represented world." Unfortunately we cannot look inside a person's head to know what inherent constraints on analog representations exist. About the strongest assertion that can be made is that imagery appears to selectively disrupt perception in the same modality (Kosslyn and Pomerantz, 1977), thus suggesting that there appears to be at least shared surface level processing.

While these are important representational issues, they are not central to the foregoing functional analysis of imagery in schema-based operations. It is more important to review some evidence on when images appear to be utilized. Clearly we do not need to construct or call upon a mental image to know whether or not Chevas Regal is a more expensive brand of Scotch than the discount house's surprise Scotch or whether a Cadillac El Dorado is more expensive than a Chevy Citation. It is reasonable to think of price as encoded propositionally (assuming the information has been encoded at all), in the sense that whatever relationships there may be among prices in the to be represented world can be extrinsically represented through a set of propositions that retain informational correspondence (but not isomorphism) with the represented world (see Palmer, 1978). In my own case, though, I believe I would have to try to picture a Chevrolet Malibu and a Monte Carlo to answer a similar question about price, since I do not know the prices but might be able to infer them from my overall conception of each car. What I think I would do is scan both images until I discovered aspects from which I could infer price differences. I certainly believe I would have to do so before deciding which is roomier or more luxurious or, in an overall sense, which I like more. Results from a series of size-comparison tasks, in which the helpfulness of propositional information was varied, are consistent with these introspections.

One question, then, is to what degree the kinds of schemas we have discussed earlier as evaluative frameworks rely mainly on propositional information and representations. To the extent they do, such schemas could certainly operate much like information processing rules or procedures and may be consistent with feature or attribute based processing algorithms. Hastie (1981) refers to this general type of schema as a "procedural schema," and it bears some relationship to Miller, Galanter and Pribram's (1960) concept of a plan as well as to various computer-based processing analogies. To the extent that the process relies more on a type of comparison between some overall or analog representation and sensory input (particularly when the system is more conceptually-driven), it may be poorly described and understood through the use of attribute/feature based processing algorithms. Much of the conceptualization and research relevant to this issue is centered in the concept identification and categorization literatures.

Analytic Concept Identification

Traditional concept identification research is more consistent with propositional representation. Recently, however, this evidence has come under attack from Medin and Schaffer (1978) and Brooks (1978). Some parallel developments can be seen in Rosch's (1978) work on principles of categorization and, within social psychology, in the work on person perception by Cantor and Mischel (1979). Let us begin by characterizing much of the early concept identification literature as interested in the types of generalities people would extract from various learning tasks. Much of this research has been carried out on novel and unfamiliar stimuli such as geometric shapes in combination with colors (for reviews see Dominowski, 1974; Bourne, 1974) and somewhat more recently on artificial grammar (Reber, 1967, 1969). Brooks' recent review of this work indicates that, as the regularities in the material (i.e., natural grammars) become reasonably complex, subjects intent on learning a rule to define a concept simply cannot do so, given any sort of time constraints. Furthermore, there quickly become so many possible rule-based hypotheses to be retained and tested that subjects generally stop trying. Now, that poses no problem if we are simply interested in how people learn to discriminate relatively simple concepts which obey straightforward conjunctive or disjunctive rules, though even here there may well be serious experimental demand effects which themselves lead people to search for and test such rules. So, we cannot conclude that such behavior is to be expected or preferred by people in more natural contexts. Brooks (1978, p. 180) refers to this type of learning as analytic concept identification and defines it as, "a process whose direct effect is to separate aspects of the stimulus and evaluate their ability to predict category membership." What emerges from this type of learning, then, is a rule which is "an explicit or implicit summary of the aspects of the stimulus that is used to assess category membership of any item in which these aspects occur."

Categorization

Let us now briefly leave this part of our story having engendered some doubt as to whether analytic concept identification is very descriptive of what people actually do either in relatively complex learning situations or when they are simply trying to judge the identity of some novel housewarming gift or mystery beast. We will return to consider Brooks' alternative proposal shortly. In our 1979 ACR conference paper (Cohen, Miniard and Dickson, 1980) we advanced an active hypothesis testing approach to overall judgment. In essence it imagined a person generating a small number of plausible hypotheses (e.g., as to the identity of a mystery beast) as soon as some minimal amount of perceptual information was processed. This process is analogous to the standard recognition paradigm used within cognitive psychology in which perceptual representations are compared to memory representations on the basis of judged similarity. Identification is easy or difficult depending on how well learned and discriminable the memory representations are, the similarity of the perceptual input to one of the representations, the accessibility of a given category at the time as well as contextual factors such as the presence of distraction. We envisioned concept identification as an overall categorization of a stimulus resulting from attention to stimulus information judged most likely to discriminate the most salient alternative concepts/categories. Saliency was conceived to be a joint function of stimulus cues and memory representations activated by each hypothesized concept.

Working from a different starting point, Rosch (1978) has advanced a set of principles to explain the set of categories found in a culture to describe natural objects. In doing so, she defines certain criteria for category membership, although her work does not directly address either processing or representational issues. One important premise is that through categorization we achieve an important degree of cognitive economy: "To categorize a stimulus means to consider it, for purposes of that categorization, not only equivalent to other stimuli in the same category but also different from stimuli not in that category" (Rosch, 1978, p. 28). It is to a person's advantage to be able to predict as many properties as possible simply by knowing the category membership of an object, but the large number of resulting categories (with fine discriminations between categories) would magnify behaviorally irrelevant differences. The meaningfulness of a given category should bear a close relationship to "cue validity," which Rosch defines as the validity of a given cue X as a predictor of a given category Y . This increases as the frequency with which cue X is associated with category Y increases and decreases as the frequency with which cue X is associated with categories other than Y increases.

The most relevant aspect of Rosch's work to the present discussion pertains to the assignment of objects to categories. She argues that categories do not have clear boundaries. Rather, a better way of achieving a separation and clarity among related categories is by conceiving of each category in terms of its clear cases and not its boundaries. Rosch refers to such clear cases as prototypes, though there is no attempt to link this concept to any particular model of information processing, representation or learning. Nevertheless, ratings of prototypicality follow closely the cue validity notion: the more prototypical the category member the more attributes it has in common with other members of the category and the fewer attributes it has in common with members of contrasting categories. In addition, prototypical category members tend to represent the means of attributes that have a metric. Research carried out on categorization indicates that the greater the similarity of a target object to a category prototype the faster it was identified, the more quickly children were able to learn to categorize it, the more frequently and earlier it was produced when subjects were asked to list members of a category, and the more frequently it is equated with the category of which it is a member (e.g., Robin or sparrow but not turkey or penguin, may sometimes be substituted for the category "bird" in sentences without greatly altering the meaning or the response to the sentence).

One way of looking at concept learning, then, is in terms of the development and differentiation of a cognitive category. Concept identification, similarly, may be seen as the placement of an object in a cognitive category. One way of carrying out these operations is to develop or discover the rules that define category membership by focusing on the features/attributes of the category, considering these one by one in a feature-by-feature comparison with respect to a given target. The features thus constitute necessary and sufficient conditions for category membership. This set of operations does not, however, account for the wide differences in perceived degree of typicality among objects and, therefore, does not address the range of within-category variability. A prototype matching strategy may be somewhat different in the sense that rather than attribute-by-attribute "pass-fail" decisions, this approach considers the degree to which the target is similar to a prototypical representation of the category. The prototypical representation, however, still is likely to be defined in terms of features, though more of an overall matching process is implied (Posner and Keele, 1970), possibly through the use of weighted features (e.g., the

defining/characteristic attribute distinction made by Smith, Shoben and Rips, 1974) or some multidimensional index of similarity.

A somewhat different category membership criterion may be thought of as "family resemblances." Many things that people group together have no obvious similarity to one another across a set of attributes. Wittgenstein's identification of the category "game" (discussed in Glass, Holyoak and Santa, 1979) provides a nice illustration of this, since professional football, chess, golf and solitaire really have no obvious defining set of attributes. Instead, each separate instance of the category "game" appears to be linked by some key feature to another recognized instance until they comprise a type of family in which each member has key elements in common with at least one other member.

The family resemblance notion is somewhat disturbing to both feature-by-feature comparison and prototype matching conceptualizations of categorization. This is not because categories such as "game," "rule," "friend," and the like are necessarily typical, but rather because there is the implication that categorization and more generally, concept learning may follow a very different path. Recall the earlier cited conclusion by Cantor and Mischel (1979) in reviewing the person perception area, in which they stress that family resemblance rather than comparisons on a set of defining attributes seemed to determine category membership when categorizing other people. Cantor and Mischel, however, prefer to describe the categorization process through the use of the prototype construct, stressing the "global configuration" aspects of prototype matching. In doing so they do not appear to have satisfactorily dealt with what may be an irreconcilable difference between a prototype model and one based on the family resemblance notion. That is, it does not seem to be the case that one would categorize separate game instances together by comparing each to some overall category prototype. Indeed, the point is that such a prototype may be an idealized abstraction and may not even exist in the memory structure of the individual.

Nonanalytic Concept Identification

We return now to an approach Cantor and Mischel term "promising" and which is the thrust of Brooks' proposal. Brooks, it will be recalled, approaches the topic a little differently, since he begins with the question of how concepts are learned in the first place. This seems a sensible place to start to appreciate category formation (and possibly some representational issues as well) and how we assign instances to categories. In distinction to the earlier described processes of analytic concept identification (with its emphasis on rule learning), nonanalytic concept identification, according to Brooks, leads to an inference of category membership based on an object's "overall similarity to a known individual or low-level cluster of individuals." Unlike prototype or defining features approaches, stimulus aspects are not weighted for their criteriality with respect to the concept being considered. Using Brooks' "mystery beast" example, a person would be using non-analytic concept identification if he decided that the beast was a dog and not a cat because it looked a lot more like Lassie than Fluff. If, instead, the mystery beast was categorized as a dog because it possessed specific canine features and because it did not possess retractable claws, and other cat-like properties, this would be an example of analytic concept identification. Note that nonanalytic is not equated with configural, since the use of overall body shape or other configural aspects involves a weighting of such attributes in a similar fashion to other object features in the development of an analytic rule for category membership.

The essence of nonanalytic concept identification is the learning and storage of an adequate number of specific instances. Learning idiosyncratic information is itself highly rewarded, since we do not behave in relation to categories of things (e.g., dogs) but to particular instances (e.g., we decide to pet this particular dog). Abstraction and generalization may be both efficient and economical, but these are overlaid on memory for specific instances, which are then available as exemplars. In addition, memory for particular exemplars is often very rich and well developed since in-depth exposure to a few individuals in a category rather than feature-based comparisons on many individuals appears to be the norm. This means that we are likely to know a fair amount about a few instances and are likely to regard that information as particularly reliable. When judgments regarding a possible instance of one or another concept are to be made, often under time pressure and given incomplete information, specific category exemplars may play a dominant role. When we encounter instances that are clear cases of a category, judgment may be almost instantaneous, and operationally, there may be little to choose among alternative analytic and nonanalytic concept identification processes in terms of accuracy or speed of performance. As we approach the boundaries of the category, however, we are likely to achieve better discrimination by comparing the instance to exemplars of each category than by either attempting to employ an analytic rule which summarizes stimulus properties of a given category or by comparing the instance to more idealized prototypical representations of each category. Thus, while it is usually the case that a number of somewhat different category exemplars may be available in memory to help in categorizing an object (e.g., Lassie, the poodle down the street, an Irish Setter) the utility of a central prototype in discriminating, say, a wolf from an Alaskan Malamute or Siberian Husky is not self evident. Even in those cases in which individuals have learned appropriate rules (e.g., English language pronunciation), Brooks argues that they are more likely to pronounce a list of novel words by analogy to specific known words.

Converging Perspectives

Throughout the paper there is at least the suggestion that the perspectives we have discussed are converging. It is now appropriate to clarify the sense of this implication and to indicate more specifically how this might be the case. First, we do not mean to imply that the evidence now points to one dominant form of memory representation or method of learning concepts or categorizing objects. Instead, the evidence suggests a high degree of flexibility in cognitive processes and operations such that, for example, either analytic concept identification or nonanalytic concept identification may be employed to fit individual and environmental circumstances. Convergence is used here in an overlapping sets sense. Specifically, certain types of schemata and the use of mental imagery appear to be more likely correlates of the types of category representations used in nonanalytic object judgments.

The basic argument runs as follows. We initially learn what most things are like through exposure to individual instances of them (e.g., the small child sees his father point at a robin and utter the word "bird.") or through learning about the specific experiences of others. These concrete and vivid instances are particularly amenable to imagery. Since it is very helpful to construct a meaningful and efficient organizational structure with respect to the objects and events that concern us, we begin to construct categories for similar instances. In order to determine that a new instance fits one category better than another, the perceptual representation of the new instance can be compared with the

images of category exemplars (at first especially instances around which a category may be said to have developed). This would allow us to make at least a first cut. We can then "zoom in" on particular features through the use of both analog and analytical (i.e. propositions stored in an associative network) representations if we have the time and inclination and there is sufficient need to do so. These categories, once formed, allow us to predict sets of properties, object uses, and person behavior on the basis of our assignment of such objects and people to them, without directly observing such aspects for each instance (Higgins et. al., 1977; Srull and Wyer, 1979; 1980). The set of beliefs and expectations we have about objects or people residing in a given category may be said to comprise a schema for that category. Through the use of such schemas we infer missing information about particular category members, and this is manifest both in responding to and encoding incoming information, in organizing such information in memory and in reconstructing memory representations. For many natural objects, the shared experiences of a culture (not to mention cross-cultural constancies in sensory structures and processes) and the widespread presence of correlated attributes (rather than random assignment of features and attributes to individual instances) leads to considerable uniformity in category structure and membership.

When, however, there exists much greater variance in experience, tastes and purpose, and properties of objects are not fixed, one would expect different sets of categories to emerge and there to be different object placements across the population. Under these conditions, the particular instances that become category exemplars are crucial to the person's subsequent judgments regarding the appropriateness of any newly presented instance for the particular category. This latter state of affairs may pertain fairly well to the marketplace for goods and services and to consumer judgments about them. If this is so then it may be useful to explore the relationship between such notions and concepts in the consumer behavior literature such as "evoked sets" (Howard and Sheth, 1969) and particular marketing and advertising practices (e.g., developing a "unique selling proposition" for each brand). The former concept may refer specifically to category membership and the latter to an exemplar based strategy for defining a particularly narrow category.

The Role of Affect In Categorization

Before developing this position a little further, it is important to specifically address the role of affect in such a process. There is an intriguing quote from Zajonc (1980) that is relevant here.

The stimulus features that serve us so well in discriminating, recognizing, and categorizing objects and events may not be useful at all in evaluating these objects. If this is indeed the case, then there must exist a class of features that can combine more readily with affect and thereby allow us to make these evaluations, to experience attraction, repulsion, pleasure, conflict and other forms of affect, and to allow us to have these affective reactions quite early after the onset of the sensory input (p. 159).

Rather than seeking affect in a unique and separate class of features (termed "preferenda"), perhaps we should treat affect as residing in the category itself. Earlier in the paper we described a class of schemata that we characterized as instigated by personal goals and values or the need to take some action as evaluative frameworks. Such evaluative framework schemata may be the outgrowth of categories that develop in response to

behavioral demands and subsequent learning. After all, a key premise underlying the hypothesized existence of categories in the first place is that they are functional: they help us to organize and cope with the environment. We don't simply organize the environment out of idle curiosity. As Jones and Gerard put it (1967, p. 185), "There is considerable uncertainty involved in predicting outcomes and the individual tries to reduce this uncertainty by information-seeking and to deny it by moving toward an unequivocal behavior orientation." Developing behaviorally functional categories (rather than merely mental dictionaries), such that objects grouped together meet a common purpose would be a useful way to organize one's environment. To achieve such a purpose, however, categories should not be neutral but inherently evaluative. (Recall that the single most important factor underlying the meaning of concepts is their evaluation -- how good or bad, valuable or worthless -- Osgood et. al., 1957).

Similarly, attitudes were conceived to be predispositions to respond in a favorable or unfavorable manner, and to exert a directive influence upon the individual's responses to objects and situations with which they are linked. To have an attitude toward an object, then, requires; first, that the object be recognized as an instance of a previously defined category, and, second, that the category possess a positive or negative value to the individual. Learning theory models of attitude (e.g. the Fishbein model) and related multiattribute formulations, in essence, attach affect to particular object features and by use of a combinatorial rule arrive at both an identification of and an overall attitude toward the object. The parallel with analytic concept identification processes is straightforward (Rhine, 1958). We have argued, however, that the use of such rules, particularly in natural settings, under time and capacity constraints and when clear category exemplars are available in memory from which to base an overall judgment should not be assumed. The role of advertising in creating product exemplars and the role of in-store promotions and packaging in priming these would appear to make this especially the case for many consumer products. In essence, then, matching an object directly against exemplars of plausible alternative categories not only provides an efficient means of identifying it but also evaluating it. To the extent that this is a particularly important judgment or when a lack of experience or stimulus ambiguity make it difficult to confidently compare the object to an exemplar, the person may try to develop or apply a feature-based categorization rule. The prevalence of analytic and nonanalytic processes in consumer behavior would appear to be an important empirical question.

In either case it seems reasonable to hypothesize that evaluative concepts may help define membership in a particular category. Thus, instead of thinking only in terms of descriptive product categories (e.g., cars, detergent, fast food restaurants) we might be well advised to think about categories that incorporate affect (e.g., affordable cars, detergents that clean well and fast food restaurants I'd eat at). Such categories would be at different levels of evaluation abstraction as a function of the judgments a person is called upon to make. They should, however, evolve according to the same principles advanced earlier.

In the case of a consumer product, the number of categories and the nature of each category should bear a strong relationship to the diversity of experiences with particular instances. One consumer may categorize all fast food restaurants together in guiding his/her behavior. Another may have a number of subordinate categories each developed around a particular exemplar. When a new instance of a fast food restaurant appears, it should be matched against the exemplars of the

available categories to determine how to think about it, feel about it and behave towards it. The role of category-based schemas in filling in missing information about a particular instance has already been discussed.

A related point of view has developed in the person perception area (see Hastie et. al., 1980, for a more inclusive treatment of this literature). Categorizing people and situations not only helps to organize one's environment, it helps a person to plan his/her social interactions (Snyder and Cantor, 1979). Once we have "located" a particular instance as being a member of a certain class of situations, we can imagine and often picture how exemplars of various person categories would behave, and we can use this information to guide our own behavior.

There are two principal areas of application of the principles discussed in this paper within consumer behavior. The first would be to much more fully develop the information processing characteristics of an evaluative framework approach, and the second would be to actually focus on the nature and content of categories used by consumers in particular domains or under different conditions. For example, to what degree do differences in experiences (i.e. product knowledge and satisfaction) across brands lead to differences in the number and affective aspects of the categories used by a consumer to describe a product domain and to categorize new instances? Rosch's work on natural categories would be a reasonable place to begin the latter endeavor.

The information processing differences between the present approach and models built on the premises of analytic concept identification are far from trivial. It would be crucial to know and understand the conditions under which each was used. For example, it would be quite helpful to explore such things as the nature, development and role of category exemplars, the importance of category-based imagery, differences in both processing and outcomes when single versus contrast categories are used, the effects of "priming" particular categories or exemplars and, of course, the implications of making evaluative judgments (both the process and resulting outcomes) based on particular matching or overall similarity criteria for consumers, marketers and public policy makers.

In summary, we have, for a long time, treated affect (and of course attitude) as the resultant of a set of analytical operations performed on information using one or another fairly abstract rules. It may now be important to advance the twin propositions that nonanalytic and fairly concrete processing operations may be quite prevalent and that affect is an important defining property of the cognitive categories to which we assign personally relevant environmental stimuli.

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VISUAL IMAGERY: APPLICATIONS TO ADVERTISING

John R. Rossiter, Columbia University

Abstract

This paper presents 13 broad applications of visual imagery theory to advertising. It covers guidelines for the effective use of visual content in: general advertising, print advertising, and TV advertising. The applications are well supported by psychological experiments and offer challenging extensions to advertising practice.

Introduction

Advertisers have long realized the importance of advertising that creates mental images in the buyer's mind. In psychology, on the other hand, mental imagery (notably but not confined to visual imagery) has had an uneven history. Interest in mental imagery waned during the behavioral learning theory stronghold of the 40's, 50's and 60's when, coincidentally, Madison Avenue was reaching its peak (Mayer, 1958). Mental imagery is now back to the forefront of psychology. As Bugelski (1979) observes: the "image builders" of Madison Avenue probably were right--imagery may prove to be the primary principle for the psychology of learning.

Advertisers' edicts about how to create effective advertising make many implicit references to mental imagery, especially visual imagery. Thus Claude Hopkins in the pre-TV era (1923) referred to "the power of pictures;" Leo Burnett (1947) advised copywriters to use "picture words;" and David Ogilvy (1963) became famous for the "brand image" school of advertising. However, specific recommendations by advertisers regarding the advertising stimuli that will presumably create imagery are surprisingly limited.

The purpose of this paper is to approach the topic of effective advertising through imagery from an academic perspective. Instead of turning to advertisers' experience, academic research in the area of visual imagery is used to adduce practical guidelines for advertising. The research findings hold provocative implications for advertising practice.

The scope of this paper covers visual imagery created by visual input (i.e., pictures and video). In the two following papers, Larry Percy discusses the visual imagery properties of words and copy; and Morris Holbrook emphasizes the importance of mental imagery in other modalities. To the possible disappointment of some, this paper does not discuss "right brain-left brain" theory. Hemisphere phenomena are a physiological issue, not a psychological issue, and a contentious one at that (Rossiter, 1980; Rossiter and Percy, in press; Sergent and Bindra, 1981). Hemisphere phenomena are not necessary to visual imagery theory nor to applications of visual imagery in advertising.

The applications in this paper should be regarded as hypotheses. While they appear sound from a psychological standpoint, most have not yet been tested in an advertising context. The applications are presented under three headings: general (applicable to all types of) advertising; print advertising; and TV advertising.

General Advertising

G-1 Visual content warrants relatively more advertiser attention than verbal content.

The superiority of visual content does not mean that verbal content is unimportant--far from it, as the next paper demonstrates. The advertiser has to pay attention to the planning and execution of both types of content except, obviously, in radio advertising. However, the evidence justifies relatively more emphasis on visual content than on verbal content.

Pictures have a well-known superiority over words when it comes to learning (important for brand awareness and brand beliefs). The evidence is reviewed by Eysenck (1977) and the superiority holds regardless of whether the learning task pertains to short-term or long-term memory, or to recognition responses or recall responses (McKelvie and Demers, 1979). A leading explanation of the picture superiority effect is Paivio's (1971; 1978) dual-coding theory, which holds that pictures generally result in a visual representation as well as a verbal one, whereas words are less likely to result in the former. Long-term visual memory, unlike long-term verbal memory, appears to have virtually unlimited capacity, deteriorates very slowly, if at all, and shows no primacy or recency effects (Avons and Phillips, 1980).

Evaluative (brand attitude) responses have been less studied by psychologists in relation to visual and verbal content. However, advertisers' "empirical" favoritism of TV advertising seems to support the picture superiority effect for evaluative responses too. TV is the ultimate pictorial medium in that all TV commercials (but not all print ads) contain pictures; also, TV commercials present not just one but multiple pictures to the viewer. A small-scale laboratory study (Grass and Wallace, 1974) and the several large-scale field studies that have been conducted (The Media Book, 1979) clearly support TV over magazines, newspapers and radio in effecting attitude change, purchase intentions, and purchase behavior. The "bottom line" is reflected in the higher cost-per-thousand advertisers are willing to pay for TV advertising.

Another reason why pictures may be superior to words in inducing evaluative responses is the visual channel's superiority in accurately communicating emotions (Mehrabian, 1980). Emotions drive the basic motivations that energize behavior (Rossiter and Percy, in preparation) and this may be one reason why TV, which captures the full (gestural) emotional range, is so effective in influencing purchase behavior.

G-2 Use high imagery (more concrete) visuals rather than abstract visuals.

Just as high imagery words should be used in advertising, as the next paper will discuss, so should high imagery visuals. High imagery visuals are those that themselves arouse other mental images (i.e., a mental picture, a sound, or a sensory experience) quickly and easily. Imagery value is in turn related to stimulus concreteness (both definitions here are taken from Togliola and Battig, 1978). Concrete pictures, like concrete words, refer to objects, persons, places or things that can be seen, heard, felt, smelt, or tasted; as contrasted with abstract referents that cannot be experienced by the senses.

Imagery value and concreteness are highly but not perfectly related (Richardson, 1980). Some abstract words, such as "fantasy," have high imagery values. Similarly, surrealist visuals, such as for Levi's Jeans, seem to be somewhat abstract yet to virtually encourage imagery. Imagery value is the relevant factor and this tends to be higher when the visual items are immediately interpretable in the context of the presentation.

It should be noted, also, that animation can be highly realistic. Animation, through its simplified, "line-drawing" technique, can make entities very concrete by "stripping" them to their essential denotative characteristics. Thus it is not surprising that animated TV commercials and cartoon-like print ads are highly recalled and recognized.

"Realistic" visuals are probably superior for learning for two reasons. First, people can "relate" to realistic depictions better than to abstract ones, which is in turn probably a function of their imagery value regardless of their specific content. Second, following dual-coding theory, people can more easily attach a verbal label to realistic visual material. Older children and adults automatically assign verbal labels to all but the most complex and novel pictorial stimuli (Pezdek and Evans, 1979) and thus double-code these stimuli.

Advertisers tend to use realistic visuals although there are sometimes faddish trends toward highly abstract (not merely surreal or animated) visual content. Recent campaigns for J & B Scotch and Grand Marnier Liqueur, for example, employ visuals that seem to bear a very abstract relationship to the advertised product. Corporate campaigns, too, have a tendency to favor abstract visuals, perhaps because they do not advertise a specific product. The learning research suggests that these fads are ill-advised. The audience is less likely to get any message with abstract visuals. Abstract visuals also may be tempting as a means of achieving uniqueness in a cluttered advertising environment. However, with the perhaps infinite range of visual stimuli available to the advertiser, it is quite easy to be unique as well as realistic.

G-3 Use color in visuals for emotional motivation but black & white is sufficient for "information" provision.

Some years ago, two psychologists in the research laboratories at Xerox Corporation (Dooley and Harkins, 1970) demonstrated that color's principal effect is motivational, whereas black & white is equally as effective as color as an information transmitter. Some data that Larry Percy and I have collected suggest that color visuals enhance brand attitude but have less effect on informational types of beliefs about the brand.

Advertisers, even in television, have the option of using color or black & white. For newspapers (the largest advertising medium) this is a serious and costly decision. A split-run field experiment by Sparkman and Austin (1980) showed that one-color versions of newspaper ads generated 41% more sales volume than matched black & white versions. One-color ads cost about 35% more than black & white, so if the additional revenue from the sales volume is greater than the higher cost, then color is justified. Magazine advertisers (and also for outdoor and transit) sometimes use black & white ads to provide contrast in what have virtually become color media. The preceding research suggests that attention-getting through contrast should not be the only consideration, especially if emotional values are to be communicated.

G-4 "Interact" or juxtapose the product with the user or usage context in visuals.

Interactive pictures (Bower, 1980) that show two items juxtaposed in obvious interaction promote better associative learning than pictures that show each item separately. (Sentences, of course, are the analogous means of achieving interaction in the verbal mode.) Lutz and Lutz (1978), working with advertising symbols or "logos," showed that interactive symbols combining the company or brand name with a pictorial stimulus facilitated subsequent brand name recall. McKoon (1981) has shown that interactive picture sequences, in which two or more items are shown interacting in a script (like a comic book or TV photoboard), facilitate subsequent item recognition when any of the items is used as a cue for another.

The importance of interactive visuals for advertising is seen in relating products to users or to usage contexts. Consumers often buy "status" products because they suggest a particular type of user image (e.g., Polo shirts). And they usually buy "functional" products because they are perceived as suitable for a particular need or usage context (e.g., various types of detergents). The interactive imagery results suggest that users should be shown actually interacting with the product, on the one hand; and on the other, that products should be shown in action in the usage context. Although these types of interaction are quite common in TV advertising, one still sees many "solo" sequences in commercials. Interaction is less common in print advertising. A picture of the user (frequently an endorser) often is shown next to, but not interacting with, the product. Or a usage context is mentioned in the copy but not shown visually with the product. The psychological research indicates that associative learning is better facilitated by interactive visuals than by visuals that leave the audience to infer an interaction.

G-5 High imagery visuals work far better than "instructions to imagine."

There are three basic ways to take advantage of mental imagery: (a) use high-imagery, most often highly concrete, stimuli; (b) instruct the viewer, reader or listener to form images, i.e., to "imagine"; and (c) target individuals in the audience who have differentially greater imagery ability. Of the three methods, use of high imagery stimuli is by far the most powerful. In an ANOVA comparison of the three methods applied to visual imagery, Slee (1978) found an F-value for stimulus imagery of 134.9, versus an F-value of only 6.4 for imagery instructions; also, the individual difference variable was not itself significant but there was a significant interaction between imagery instructions and individual imagery ability ($F = 7.0$). Use of high-imagery stimuli seems to offer a 20:1 advantage over the other two methods.

Stimulus imagery and visual imagery ability were examined in our beer study, reported in the original write-up (Rossiter and Percy, 1978). Consistent with Slee's results, we found a large stimulus effect for both visual and verbal advertising content, and a small but significant individual imagery ability effect. Instructions to image were tested in an advertising context by Mowen (1980). A group exposed to an advertisement that instructed them to imagine using the product, a fictitious brand of shampoo, exhibited no stronger intention to try it than a control group exposed to a non-instructional but otherwise identical ad. However, supplementary data on reactions to the ads themselves suggest that the instructions may have been "hyped" too unrealistically; there were five sentences containing exhortations to imagine in a seven-sentence ad. Subtler instructions, combined with high imagery stimuli, may be more successful.

Reliance on high imagery stimuli seems advisable for other reasons pertaining to the two alternative ways of stimulating imagery. The technique of instructing the audience to "imagine" may involve a complex process analogous to explicit versus implicit conclusion-drawing in the verbal persuasion mode (e.g., McGuire, 1969; Percy and Rossiter, 1980). Conclusion-drawing poses a risky manipulation for advertisers without careful pre-testing with particular target audiences. The other alternative of targeting individual differences in visual imagery ability poses a practical problem, too, because the target audience selected for marketing or advertising reasons may not be distinctive on the visual imagery variable. In short, then, use of high imagery visual (and verbal) stimuli is the most reliable method for advertisers.

Print Advertising

P-1 The larger the illustration, the better--except for direct-response ads of the informational variety.

Larger pictures (or in print ads, illustrations) produce larger reported visual images and these, in turn, produce better learning (Kosslyn and Alper, 1977; Kosslyn, 1980). This has long been known in advertising in the form of the "square root law" stating that recognition of print ads increases with the square of illustration size; i.e., roughly twice as much recognition, such as measured by the Starch Noted score, with four times the picture size.

Rossiter and Percy (1978; 1980) and Mitchell and Olson (1977; 1981) have demonstrated, additionally, that illustration size also has a positive impact on evaluative responses (brand attitude) and not just memory responses. The relationship between illustration size and brand attitude has since been replicated in another, as yet unreported, experiment. Our first experiment, on beer, seems to have found some application. Although the evidence is anecdotal, we have noticed a tendency toward more product close-ups in beer advertising. Pabst, for example, has been using a two-page spread that consists of a larger-than-life, brimming glass of beer.

There is only one print advertising situation where illustration size is not important: direct-response ads of the informative "long copy" variety. Direct mail and direct-response print ads fall into this category. First of all, memory is not a factor since the consumer responds, either for or against, immediately. Thus the memorial advantages of illustration size would not accrue. In the second place, the typical technique in direct-response ads is to provide the reader with as much information as possible in order to achieve a "stimulus-sufficient" decision. In informative ads, space limitations force a trade-off between long, detailed copy and the area that could be devoted to large illustrations, with the former more important in this case.

P-2 Seek attention-holding illustrations (2 seconds or more) not just attention-getting illustrations.

A number of experiments (reviewed in Rossiter and Percy, in press) have shown that recognition and recall of pictorial stimuli reach an asymptote or peak when the stimulus is attended to for at least 2 seconds; more recently, Avons and Phillips (1980) place the peak at 2.6 seconds. Going beyond memory responses, Graefe and Watkins (1980) demonstrated that pictures can be mentally rehearsed just like words (cf. "cognitive responses"). This suggests that attention-holding is important for evaluative responses as well. For evaluative responses, the longer the stimulus is attended to beyond 2 seconds, the better.

Advertisers frequently seek attention-getting illustrations but rarely consider attention-holding as an additional

consideration. Two seconds is quite a long time for a reader to pause and look at a print ad illustration, especially if the advertiser also wants people to read the headline and body copy. Many illustrations would not seem to have good attention-holding capacity. Berlyne's early work (1960) indicates that novelty gets attention. But holding attention may require stimuli that are familiar to or "relevant" to the reader. Crane (1972) has aptly called this the "first dilemma of message construction"--the necessity for the advertiser to combine the familiar and the novel. Often, as Crane points out, the solution lies in combining familiar stimuli in a novel way.

P-3 Place the illustration where it will be seen before the headline and copy are read.

A very carefully controlled experiment by Brainerd, Desrochers and Howe (1981) has demonstrated that learning is facilitated if the order is picture-word rather than word-picture. Their experiment is particularly important because they employed realistic, line drawing (high imagery) pictures and concrete nouns (the highest imagery parts of speech). Thus, subjects in the experiment could presumably "label the picture," if the picture came first, or "picture (image) the label," if the word came first. This is very similar to alternative print ad formats. The picture-then-word superiority held regardless of whether the target response was to recognize the picture (as in package recognition) or to recall the word (as in brand name recall).

The picture-then-word superiority might imply putting print ad headlines toward the bottom of the page, that is, partially or fully below the illustration so that the illustration is attended to first. However, people may be drawn to an effective illustration first (especially a large one, see P-2) regardless of where the headline is placed. Perhaps the best solution is to pre-test print ad executions to make sure the headline or other verbal copy doesn't draw attention ahead of the illustration. This recommendation applies to single-page print ads. The picture-then-word recommendation would be even more relevant for multi-page "gatefold" print ads where the advertiser can lead or "tease" with either a dominant illustration or a dominant headline.

P-4 Attitudinal "wearout" should not be a problem with illustrations but they may lose attention, suggesting use of variations on a theme for print advertising.

The phenomenon of attitudinal "wearout" has primarily been demonstrated for TV commercials, not for print ads. Attitudinal wearout seems especially likely for humorous commercials and "slice of life" commercials. The intrusive television medium draws attention to the commercial but people get tired of the scenario and begin to counter-argue with it. Print ads, on the other hand, are less intrusive because the reader can turn the page. People rarely counter-argue with print ads on later exposures after a favorable initial exposure. Rather, print ads lose attention.

This hypothesis suggests greater use of variations on a theme ("pool-outs" in TV advertising parlance) for print advertising, not just for TV advertising. Varied but related illustrations are also consistent with the novel-but-familiar principle espoused by Crane. There seems to be a recent trend toward pool-outs in print advertising, as in the campaigns by large budget whiskey advertisers (e.g., Chivas Regal, Johnny Walker) and cigaret advertisers (e.g., Barclay, Kent III). The TV strategy applied to print would appear to be useful in renewing attention.

T-1 Hold key scenes for at least 2 seconds and alternate key and redundant scenes.

TV video is composed of separate frames which are, of course, perceived as a sequence. However, evidence is emerging that people remember single pictures better than dynamic movement patterns (Hall and Buckolz, 1981).

Elsewhere we have suggested that, from a visual imagery standpoint, people encode TV commercials more as a series of "still shots" than as an entire sequence (Rossiter and Percy, in press). The resulting memory sequence is similar to Abelson's (1976) notion of "scripts." In concrete terms, the proposition is that people interpret and remember TV commercials much as they started out, as storyboards or photoboards.

Even without accepting the extreme "still shot" version of this hypothesis, it is still clear that certain scenes in TV commercials are more important than others. A fair degree of redundancy, in fact, makes for more successful communication. English text, for example, is highly redundant (Miller, 1951) and one well-known test of text comprehension is the Cloze procedure, a sort of sentence completion measure in which redundancy or predictability makes for a high score. The analogy to TV commercials is that there are key scenes and redundant scenes.

It follows that certain of the guidelines for print advertising would therefore hold for TV advertising. In particular, following P-2 above, key scenes should be held for at least 2 seconds (not necessarily "frozen," but without an essential change in visual content).

Rossiter and Percy (in press) also suggested that for elaborative, evaluative, visual imagery to occur, it is actually better if the viewer looks away from the screen, so that this self-generated visual imagery will not be interfered with by the literal images on the screen. This suggests what we might call the TV corollary to P-2; namely, to alternate key scenes with redundant or predictable scenes. These "pauses" would give the viewer time to develop visual imagery, much like cognitive responses to verbal material, where the reader can pause "to think."

T-2 Put key scenes before related audio with the audio in the "pauses."

The TV version of P-3 suggests a picture-then-word sequence to be superior. Since pictures in TV commercials are continuous, what this means operationally is to place the "labeling" audio in the redundant scene following the key scene. Abrams (1981) was perhaps the first to suggest the notion of pauses in TV commercials. However, his idea was somewhat the reverse and more limited; namely, to put the key audio in the visual pauses, and not in any particular order. The picture-word sequence superiority suggests, alternatively, that the key is in the video and that the video-audio order be followed.

The key scene followed by the labeling audio in the redundant scene has important implications for the pre-testing of TV commercials via "animatic" devices. Animatics have a continuous audio track but still-shot slides for the video. Coordination is usually attempted on a fairly rough basis. Better attention to the timing would allow testing of the preceding hypothesis and, if the hypothesis is correct, would result in more effective finished commercials.

T-3 Use atypical variations on a typical script.

The TV version of P-4 is to seek visuals that are novel yet familiar. In a way, the basic scripts or themes for many products advertised on TV are very familiar, perhaps

even more so than in print advertising. Thus we have the "problem-solution" (negative reinforcement) script, the "happy theme" (positive reinforcement) script, and the "testimonial" (endorsement) script. TV commercial executions vary somewhat in their adherence to these basic scripts, though detergent commercials (problem-solution) and cola commercials (happy theme) seem to have trouble in finding uniqueness.

A recent experiment by Graesser, Woll, Kowalski and Smith (1980) indicates that TV advertisers should continue the search for unique executions of these basic themes. Specifically, these investigators found that atypical versions of scripts are better recalled and recognized than typical or "stereotyped" versions--but only for short intervals (½-hour delay in their experiment). At longer intervals (1 week in their experiment) recall and recognition became increasingly "regressed" toward the typical versions; that is, the generic script was recalled or recognized rather than the atypical variations.

These results can be taken to imply that TV advertisers really have to fight hard to find and maintain unique executions, especially if the purchase decision is likely to be substantially delayed following commercial exposure. Otherwise, "everyone's" advertising in the category tends to get merged in the consumer's mind with time (somewhat like the episodic versus semantic memory distinction in verbal research). Intelligently varied and competitively unique pool-outs, notably for Miller Lite beer, therefore seem worth the expense if the purchase decision is delayed.

T-4 For visual-word "supers" use high imagery words in positive sentences except, perhaps, for disclaimers.

This final hypothesis merges visual input with verbal input in the form of "seen words" in TV commercials, i.e., superimposed written messages known as "supers." Words, like pictures, have visual imagery capacity (see the two following papers and also Rossiter and Percy, 1978; 1980; in press). It follows that supers that are meant to be attended to and reacted to (such as statements of product claims) should employ high imagery words and use positive sentences. Conversely, and this raises ethical questions, disclaimers that the advertiser may wish to hide should employ low imagery words or else high imagery words in negative sentences. Supporting evidence is given in Smith (1981).

Future Directions

This paper proposes 13 hypotheses for more effective visual input in advertising. They were developed from psychological research on visual imagery. The most immediate future direction is therefore to test them in applied advertising settings. My colleague Larry Percy and I have some of these tests under way. Some astute advertisers seem to have picked up on others, perhaps intuitively or by also translating the burgeoning visual imagery literature.

The expanding scope of visual imagery theory and research promises many future insights for advertisers. Visual imagery theory and research (for visual input) and psycholinguistic theory and research (for verbal input) may be the "breakthrough" perspectives for creating more effective advertising.

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PSYCHOLINGUISTIC GUIDELINES FOR ADVERTISING COPY

Larry Percy
CREAMER INC

Abstract

Clearly, for a message to be effective, it must be communicated. But what is it about a particular combination of words or phrases that tends to effect the likelihood that it will in fact be understood as the communicator desires? Evidence points to the semantic and grammatical structure of verbal communication as significant mediators of effective communication. This paper outlines some of the results of psycholinguistic research that bears directly upon advertising copy.

Introduction

While, as Percy and Rossiter (1980) have pointed out, it is almost too obvious that if one is to write effective advertising copy, it is important to use words in a manner that they will be readily understood, it is by no means obvious what words will mean in particular grammatical contexts.

The complex relationship between the linguistic or grammatical structure of sentences and the psychological effects occurring when the information contained in that message is processed by a receiver has received a great deal of attention in the psycholinguistic literature. The important impact of linguistic variables upon advertising copy has been reviewed by Percy and Rossiter (1980); and Wyer (1974) has discussed in some detail the importance of grammatical context upon effective communication. There is much to be learned by applying the principles that seem to be emerging from this literature to advertising.

As McGuire (1972) has pointed out, when it comes to communicating with people through advertising, it is not simply necessary to lead a horse to water, one must often push his head under to get him to drink. It is difficult enough to merely expose one's advertising to the desired receiver and engage him in the process of decoding the message. Having gotten this far, why risk losing a successful encoding through a cumbersome grammatical construction, or a miscommunication based solely upon semantic or grammatical context of the message? Attention to findings of psycholinguistic research can help avoid ineffective communication.

Guidelines from Psycholinguistics

The goal of any message is to be understood. Unfortunately, in advertising, as in other efforts at communication, it is possible to remember and interpret the meaning of a message, yet not understand the communicator's intent. Craik and Lockhart (1972) have suggested that the more meaningful or comprehensible something is, the better it will be remembered. With this in mind, we shall discuss the possible impact of a number of psychological variables upon a receiver's ability to accurately comprehend and remember an advertiser's message.

One of the difficulties in attempting to directly relate psycholinguistic principles to advertising effectiveness is the large number of potential interactions one must deal with; not only among conflicting psycholinguistic variables, but with executional variables as well. While a particular headline may include a difficult grammatical construction that suggests a likelihood of poor communication, the visual communication may be strong enough to

override the total negative consequence. Nevertheless, it is useful to look at some examples of how certain advertisements violate general psycholinguistic understanding, and to observe whether such standard (albeit weak or questionable) measures as Starch recognition scores reflect these problems.

There are numerous principles discussed in the psycholinguistic literature that could significantly affect verbal communication (for a review see Percy and Rossiter, 1980). For purposes of this paper, however, we shall limit ourselves to eight of the more prominent principles.

High vs. Low Frequency Words.

Advertising copywriters have an entire language from which to draw words in the creation of advertising; and often will be found to go beyond. However, within this enormous field there are many words that will be significantly better than others in facilitating message processing, and hence correct message comprehension. The frequency with which words are found in a language provides one barometer of success.

High frequency words have been described by Thorndike and Lorge (1944) as those words most commonly used as determined by their frequency of occurrence in magazines and newspapers. In tests of recognition, high frequency words were heard, read, and repeated faster and with fewer errors (Paivio, 1971). In tests of recall, a positive relationship was found between word frequency and recall in both short and long term memory tasks (Postman, 1970). Lowenthal (1969) found denotative (or explicit) meanings of high frequency words easier to decode. Also there is some evidence that word frequency is related to the connotative (or implied) meaning of words: for example, several researchers have found high frequency words to be less associated with negative feelings than low frequency words (Dixon and Dixon, 1964; Zajonc, 1968).

The obvious lesson these studies provide, is that copywriters should avoid the use of obscure and difficult words. While this is true generally, there are times when an obscure or technical word may actually enhance recognition or comprehension. For example, if brand name recognition is more important than recall, a unique name will tend to have the edge over the more familiar at the point of purchase. And as Lautman and Percy (1978) and Anderson and Jolson (1980) have shown, when addressing a better educated, technically oriented audience, technical language tends to impress. Overall, however, more familiar words should be used.

As an example of how even a subtle difference in two ads might be effected by the usage frequency of the words employed in their headlines, consider the following from two generally comparable corporate ads:

1. "Each dawn is a victory in the life of a growing plant"
2. "14 tiny magnets help this father say 'Hi' to his son"

The usage frequency of the words used in the first example is somewhat greater (as measured by Thorndike and Lorge, 1944) than those in the second, and the corresponding Starch readership scores differ in favor of the first by a factor of almost twice: Noted, 52 vs. 24; Seen Associated 43 vs. 19; and Read Most, 19 vs. 1.

Concrete vs. Abstract Words

Concrete words are generally described as those which refer to objects, persons, places, or things that can be seen, heard, felt, smelled, or tasted. Abstract words refer to those things that cannot be experienced by our senses. Concrete words are more effective than abstract words in communicating ideas. They are better remembered, tend to be more meaningful, and as a result better comprehended. (Yuille and Paivio, 1969). A hypothesized reason is that concrete words tend to excite more visual imagery, and visualization enhances recall (Paivio, 1971; Rossiter and Percy, in press).

In an early attempt at measuring the effects of concrete vs. abstract concepts in advertising Rossiter and Percy (1978) have found that more concrete vs. abstract formulation of attributes (see Table 1) for a hypothetical new imported beer generated almost twice the favorable attitude toward the new brand.

TABLE 1
CONCRETE VS. ABSTRACT HEADLINES

Concrete	Abstract
Bavaria's number 1 selling beer for the last 10 years	Bavaria's finest beer
Winner of 5 out of 5 taste tests in the U.S. against all major American beers and leading imports	Great taste
Affordably priced at \$1.79 per six-pack of 12 oz. bottles	Affordably priced

Paivio (1971), in addition to discussions of the effect of imagery and its relationship with memory comprehension, points out that both recognition and recall occur more accurately and faster for concrete words. Additionally, several studies have tended to show that concrete words are more positively associated with comprehension (Begg and Paivio, 1969; Paivio, 1971; Sheehan, 1970).

One might safely conclude from this body of literature, that the use of concrete words and more specific construction in the writing of headlines is to be desired.

Imagery Value

In the words of Togli and Battig (1978), imagery value is the extent to which a word arouses a sensory experience, such as a mental picture or sound, quickly and easily. The imagery value of words is highly correlated with a word's concreteness (Paivio, 1971); the two measures have about three-quarters of their variance in common. While it is therefore not impossible, strictly speaking, for more abstract words to evoke visual images, it is much less likely, unless learned specifically (Rossiter and Percy, in press). For example, words like "fantasy" or "dream," although abstract, will exhibit a high imagery value primarily because we have come to think about such words in that manner.

Research on the imagery value of larger verbal units such as phrases, clauses, sentences, etc., has been rare. However, the few studies that have been done strongly indicate that imagery value enhances communication. Jorgensen and Kintsch (1973), for example, have shown that high imagery sentences can be evaluated significantly faster as true or false than low imagery sentences; and Holyoak (1974) has found that sentences rated in imagery value are signifi-

cantly easier for receivers to understand than sentences rated low in image value. Williams (1979) found that high imagery syllogisms were faster and more accurately solved than the same syllogism made up of low imagery value words. This finding could have relevance for comparative advertising where claims are frequently written as syllogisms (e.g. "Here's proof we outperform the leading brand, which is better than most others; so which will you buy?"). Claims which easily arouse visual imagery of items and relationships should be more easily comprehended.

These studies would seem to suggest that, given a choice, one would be better served by high imagery value words and sentences.

Semantic Components

Another area of interest to the creators of advertising copy is the effect of using Synonyms, Homonyms, and Antonyms. All of these word-sense relations are known as semantic components, and they help to account for the meanings among words within people's vocabulary.

Synonyms. While it is true that no two words actually have exactly the same meaning, synonyms are those words that are perceived to generally have the same meaning. Inexperienced writers often reach for synonyms to avoid repeating a word; however, there is substantial research that suggests this practice could severely effect comprehension. For example, it is not unusual for receivers to "substitute" synonyms in their memory (Anisfeld and Knapp, 1968; Grossman and Eagle, 1970; Kausler and Settle, 1973). This suggests that even when synonyms are specifically used in advertising to indicate a shade of meaning, the intent may be frustrated by misinterpretation.

Homonyms. Homonyms are words with more than one meaning. It is critical to be certain that the intended meaning of a word is the familiar one, and that the context of the sentence makes the meaning very clear (Conrad, 1974; MacNamara, O'Cleirigh and Kellaghan, 1972). For example, the word "taste" has 32 meanings: 12 as a noun, 13 as a transitive verb, and 7 as an intransitive verb (according to Webster's Third). Yet used in the headline "Taste Sheraton!" the context clearly defines the usage; one is unlikely to misunderstand this as actually eating a hotel. But consider the following tag line from a PPG advertisement: "PPG: a Concern for the Future." What is the probable meaning: concern as a noun, referring to PPG as a business; or as a noun meaning interest or regard; or the most common use of concern as a noun, meaning an affair or matter. Perhaps any of these meanings would do, but why occupy a receiver's mind with something other than the business of your communication.

Perhaps the worst abuse of homonyms comes with attempts at puns, or play-on-words. Below are three examples of the genre (homonyms underlined):

1. "Lemon-aid for Menthol"
2. "An electrically controlled dye process helps put new green into Coronet's growth"
3. "We help slice the cost of bringing home the bread"

In the first example, the inclusion of a lemon flavor is meant to "aid" (i.e. help) the taste; in the second, the use of "green" as a noun rather than its more common use as an adjective is confusing and in the third, the noun "bread" (preceded as it is by the direct object "cost") is meant as a play-on-word for "money."

Because homonyms can create such confusion as to what is the intended meaning, it is best to avoid them, especially when the intended message is not the most common.

Antonyms. Research has shown that a negatively modified adjective is significantly more difficult to use and comprehend than an antonym with a different root (Salter and Haycock, 1972). It is hypothesized that the reason for this is that negatively modified words require a two-step process for comprehension (i.e., a positive word followed by a negative tag), while an antonym with a different root requires only one. As a result, there is an opportunity for the receiver to either misunderstand the root word, or to simply refuse to make the effort necessary for processing the word. Consider the following headline: "Pittsburgh-DesMoines...an uncommon ability to fully meet the engineering, fabrication and construction needs of the future." The negatively modified word "uncommon" requires the reader to first know the meaning of the word common, and then to negate. The use of an antonym such as "unique" would avoid this problem.

Negation

As a general rule, just as it was observed with negatively modified words in the discussion of antonyms, a negative sentence tends to be more difficult to process and understand than an affirmative sentence. Again, the receiver is required to take an extra step: first, to determine what the sentence means in the affirmative, then to deny it.

Other types of negatives such as "not," "never," "less than," etc. all have been shown to increase the time necessary to comprehend a sentence (Gough, 1965; Slobin, 1966). As a rule, therefore, it is generally desirable to avoid using negatives. However, there are times when the use of a negative can prove useful.

One of the problems with negative sentences is that they tend to focus attention on things you are expected to avoid or not believe. Yet occasionally this may be exactly what you want to do, as may be seen in the following headlines:

1. "Orange Juice is not just for breakfast anymore"
2. "There is nothing permanent except change"
3. "There are no simple solutions. Only intelligent choices."

Here the negative headlines serve the important task of underscoring in the receiver's mind a particular distinction for the advertiser's product. Wason (1965) and Green (1970) have both discussed this exception to the general guideline that negatives should be avoided.

Implied Quantifiers

An interesting communication problem is associated with the use of manifest vs. subjective verbs in simple unmodified sentences. This derives from a general finding that the transitive verbs tend to transfer quantitative meaning to the logical object (Abelson and Kanouse, 1966; Kanouse, 1972) by committing the proportion of the object class to which the verb applies. As a result, receivers are likely to supply the missing quantifier as detailed in Table 2.

TABLE 2
IMPLIED QUANTIFIERS

Verb Form	Implied Quantifiers
subjective verbs (e.g. "understand") negative verbs (e.g. "destroy")	most or all
manifest verbs (e.g. "buy") positive verbs (e.g. "produce")	some or few

In practice, what this means is that an advertisement with a headline that reads "Buy the Best" would be understood by the receiver to mean "Buy *some* or a few of the Best." The verb "buy" is a manifest verb that tends to lead to strong inductive generalizing (or inference), and as a result, implies a low quantifier such as "some" or "a few." On the other hand, a headline that reads "Avoid Costly Repairs" will be understood by receivers as meaning "Avoid *most* or *all* Costly Repairs." In this case the verb "avoid" is subjective, and as a result is less likely to stimulate generalized inference, leading to a stronger implied quantifier such as "all" or "most."

Without a good working knowledge of verb structure, these studies seem to suggest that when in doubt, make the quantifier explicit: e.g., "Buy Only The Best."

Active vs. Passive Sentences

A passive sentence differs from an active sentence in that the grammatical subject of the passive sentence is really the psychological object. Overall, passive constructions tend to take longer to process, and as a result, more prone to misunderstanding (Gough, 1966; Slobin, 1968). The subject, however, is far from clear. For example, Slobin (1971) has pointed out that when the subject and object are not interchangeable, the likelihood of confusion is lower. While the sentence "The girl is being hit by the boy" could be confusing, "The leaves are being raked by the boy" would not. Rarely are subject and object totally interchangeable in advertising headlines, but consider the following Johns-Manville ad: "When our asbestos is used in the manufacture of gaskets, it becomes 'locked in.'" Such a construction could well lead to processing problems. But when rewritten in the active voice, there is much less chance of confusion: e.g. "Asbestos is 'locked in' when manufacturers of gaskets use Johns-Manville."

In certain cases, some researchers have even suggested passive construction could be more effective than active; specifically, when emphasizing the participation of the logical object in an event (Carroll, 1968; Klenbort and Anisfeld, 1974; Olson and Filby, 1972). For example, consider the following headline for Grumman solar hot water systems: "In less than a minute, they'll be in hot water." Even though this sentence still takes more time to process, its congruence with the order in which events usually take place (i.e. people proceed into water when taking a bath or shower) helps minimize the chance of misunderstanding (Percy and Rossiter, 1980).

Overall, however, unless well acquainted with the logic of one's message and the difficulties of passive constructions, advertising copywriters are well advised to avoid the passive.

Headline Length

Research on the effects of sentence length and complexity on recall and comprehension generally support the common sense notion that shorter sentences are easier to remember (Wearing, 1973). One reason for this is the fact that as sentences increase in length, they also tend to increase in complexity. The addition of words generally also adds phrases and clauses, which, in turn, make it more grammatically as well as psychologically complex (Wang, 1970). As sentence length increases, recall and comprehension become less of a linear function of the number of words than of the grammatical complexity. In fact, the most difficult type of sentence to recall or comprehend is one described by grammarians as "self-embedded" (Foder and Garrett, 1967; Forester and Ryder, 1971; Wang, 1970). A "self-embedded" sentence is one containing both an independent and dependent clause.

In a recent study of 78 one page corporate advertisements, Percy (1981) compared the number of words per headline with Starch "Read Most" scores to see if there was a relationship between headline length and the likelihood of a receiver actually going on and reading the ad. The results closely paralleled Wearing's (1973) results for sentence length (see Figures 1 and 2). Wearing found that the total number of words correctly recalled from sentences rose slightly from sentences of 5 words to sentences of 7, then dropped significantly for sentences of 9 words, after which sentence length remained rather stable. Percy found "Read Most" scores for headlines of fewer than five words to be 9.0, increasing to 9.86 for headlines between five and eight words, then a significant drop to 7.95 for headlines of nine to eleven words, with similar scores for headlines of greater length.

FIGURE 1
RELATIONSHIP BETWEEN RECALL
AND SENTENCE LENGTH
(Adapted from Wearing)

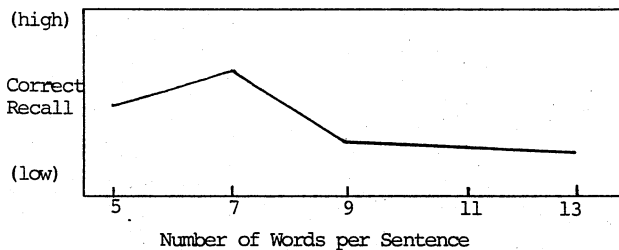
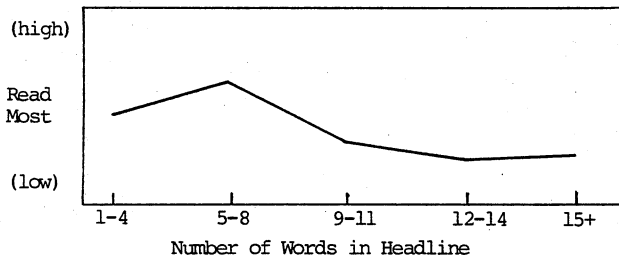


FIGURE 2
RELATIONSHIP BETWEEN READ MOST
AND NUMBER OF WORDS WITH HEADLINE



These results suggest that headlines should be kept to about 5 to 8 words. But the reader is cautioned against the notion that "smaller is always better"; it is always necessary to sufficiently make one's point, a job rarely accomplished by a word or two.

SUMMARY

Although it is certainly true that the semantic and grammatical structure of advertising are not the only variables affecting message processing and ultimate communication success, it is clear from research in psycholinguistics that they do play an important part. Deoected from this growing body of literature, there are numerous guidelines for writers of advertising; and as reviewed in this paper, eight seem particularly relevant.

1. High frequency words, those more commonly used in everyday language, are to be preferred over low frequency words.

2. The use of concrete words and concepts are more likely than abstract words to stimulate better recall and comprehension of product claims.
3. And in a similar vain, high imagery value constructions tend to lead to easier and more accurately understood communication.
4. The use of synonyms and homonyms should be avoided, unless in a well understood context.
5. Avoid negative constructions, unless special emphasis is desired; and use antonyms whenever possible, rather than negatively modified words.
6. Make quantifiers explicit.
7. Avoid the use of passive sentence constructions.
8. Limit headline length to about 5 to 8 words.

While not a guarantee to effective advertising, these guidelines should help improve advertising communication.

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SOME FURTHER DIMENSIONS OF PSYCHOLINGUISTICS, IMAGERY, AND CONSUMER RESPONSE

Morris B. Holbrook, Columbia University

Abstract

This paper discusses some aspects of psycholinguistics, imagery, and consumer response that are sometimes neglected in studies of consumption behavior. Specifically, examples from the author's research are used to illustrate the dangers of neglecting (1) the power of language to evoke visual imagery, (2) the role of nonvisual imagery modalities, and (3) the nature of emotional experience. Awareness of these pitfalls and limitations may help guide consumer research toward a better-rounded understanding of the consumption experience.

Imagination is funny;
It makes a cloudy day sunny

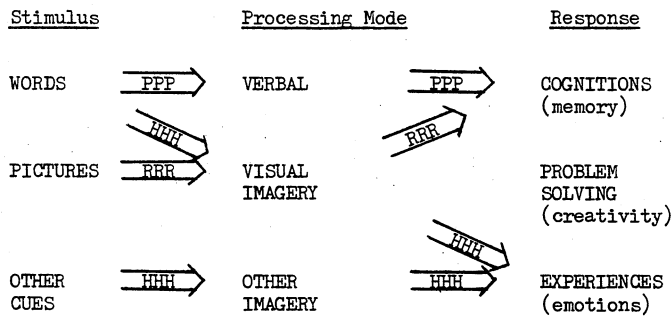
--Johnny Burke and
Jimmy Van Heusen,
"Imagination"

Introduction

In the two preceding papers, Rossiter and Percy have examined the visual and psycholinguistic components of advertising. These authors focus primarily on words and pictures as stimuli, verbal and visual modes of processing, and cognitive responses such as those involved in memory. Within these limits, they provide admirable reviews and exegeses. The present discussion is therefore directed at extending their perspective to encompass some additional types of psycholinguistic effects, some further dimensions of imagery, and some neglected aspects of consumer response.

FIGURE 1

Simplified Schema Characterizing Emphases
by Percy (PPP), Rossiter (RRR), and Holbrook (HHH)



One might extend Paivio's (1971) dual coding hypothesis to arrive at a conceptualization of information processing something like that shown in Figure 1. This schema retains the familiar verbal and visual imagery systems (center column) but adds a third category called other imagery, which is intended less as a theoretical statement about how the mind works than as a reminder concerning the many additional types of intuitively familiar but poorly understood processes that occur in mental functioning. Similarly, words and pictures are retained as key stimulus types, but the diagram also recognizes other cues (e.g., auditory, gustatory, olfactory, and tactile) as inputs worthy of consideration. Finally, the figure suggests that cognitions (e.g., memory), problem solving (e.g., creativity), and experiences (e.g., emotions) serve as major response categories of interest.

Conceptually, the aforementioned types of stimuli, processing modes, and response categories could be connected in at least $3^3 = 27$ different ways. As one adds further refinements to this simplest of schemes, the number of implicated phenomena increases geometrically. Many such complex linkages are adumbrated in Rossiter and Percy's (1980) study of beer imagery and further elucidated in the excellent review chapter by these same authors (Rossiter and Percy, in press). However, most of the relevant research, including the papers presented at this session (to judge from their titles), has been somewhat more narrow in scope. For example, Percy (1981) focused primarily on the psycholinguistic/cognitive linkages shown by the arrows labeled "PPP" in Figure 1. Rossiter (1976), meanwhile, concentrated on the visual/cognitive linkages designated "RRR." Clearly, other linkages--indicated by "HHH" for obvious reasons--might also be studied to good effect.

This discussion dwells on three aspects of the schema indicated by HHH arrows. To preview briefly, I shall focus on important aspects of the following three phenomena:

- (1) the connection between linguistic inputs (words) and processing by the visual imagery system (mental pictures);
- (2) the relationship of sensory cues to mental imagery in other modalities (e.g., auditory, gustatory, olfactory, tactile);
- (3) emotional experiences as a neglected aspect of consumption behavior.

Words and Visual Imagery

Rossiter and Percy (in press) clearly recognize the role of language in evoking visual imagery. This phenomenon relates directly to Paivio's (1971) focus on the abstractness/concreteness of words and the power of more concrete linguistic cues to produce more vivid visual imagery. In other words, colorful language calls up clear mental pictures.

This function of language is central to the art of poetry. As explained by the Bard himself:

The poet's eye, in a fine frenzy rolling,
Doth glance from heaven to earth, from earth
to heaven;
And as imagination bodies forth
The forms of things unknown, the poet's pen

The author gratefully acknowledges the support of Columbia University's Faculty Research Fund.

Turns them to shapes, and gives to airy nothing
A local habitation and a name.

--William Shakespeare,
A Midsummer-Night's Dream,
Act IV, Scene 2

In describing Shakespeare's art, Spurgeon (1935) defines poetic imagery as "the little word-picture used by a poet or prose writer to illustrate, illuminate and embellish his thought. It . . . transmits to us . . . the depth and richness of the way the writer views, conceives or has felt" (p. 9). This function of visual imagery is ubiquitous in poetic discourse. One conspicuous illustration appears in Milton's richly evocative descriptions of Eden. Consider, for example, the language used to convey Satan's first glimpse of Adam and Eve:

His fair large Front and Eye sublime declar'd
Absolute rule; and Hyacinthine Locks
Round from his parted forelock manly hung
Clust'ring, but not beneath his shoulders broad:
Shee as a veil down to the slender waist
Her unadorned golden tresses wore
Dishevell'd, but in wanton ringlets wav'd
As the Vine curls her tendrils
So hand in hand they pass'd, the loveliest pair
That ever since in love's imbraces met.

--John Milton,
Paradise Lost, Book IV

Contrast this vision with the forlorn juxtaposition that expresses Adam's reaction to Eve's announcement that she has eaten the forbidden fruit:

Thus Eve with Count'nance blithe her story told;
But in her Cheek distemper flushing glow'd.
On th'other side, Adam, soon as he heard
The fatal Trespass done by Eve, amaz'd,
Astonied stood and Blank, while horror chill
Ran through his veins, and all his joints relax'd;
From his slack hand the Garland wreath'd for Eve
Down dropp'd, and all the faded Roses shed:
Speechless he stood and pale

--John Milton,
Paradise Lost, Book IX

Here and throughout his work, Milton uses concrete language to evoke visual (and other) images that reflect emotional content. This psycholinguistic process was clearly described in Matthiessen's (1958) account of the techniques employed by T. S. Eliot: "His design is to give the exact perceived detail, without comment, and let that picture carry its own connotations . . . the images here are 'consciously concrete'; they correspond as closely as possible to something . . . actually seen and remembered" (p. 63). Matthiessen's prime example is a passage from Ash Wednesday intended to convey "the very sensation of his distraction . . . by the enchantment of the senses" (p. 64):

though I do not wish to wish these things,
From the wide window towards the granite shore
The white sails still fly seaward, seaward flying
Unbroken wings

And the lost heart stiffens and rejoices
In the lost lilac and the lost sea voices
And the weak spirit quickens to rebel
For the bent golden-rod and the lost sea smell
Quickens to recover
The cry of quail and the whirling plover
And the blind eye creates
The empty forms between the ivory gates
And smell renews the salt savor of the sandy earth

--T. S. Eliot,
Ash Wednesday

As Matthiessen remarks, "It is impossible to divorce the reflection from the imagery" (p. 64). Eliot himself spoke of this poetic property in terms of "transparency":

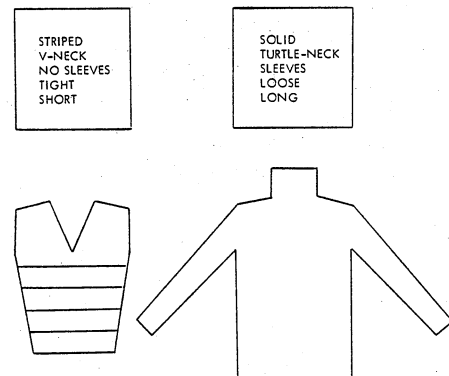
to write poetry which should be essentially . . . so transparent that we should not see the poetry, but that which we are meant to see through the poetry, poetry so transparent that in reading it we are intent on what the poem points at, and not on the poetry, this seems to me the thing to try for

--T. S. Eliot,
unpublished lecture (quoted by
Matthiessen, 1958, p. 90)

My purpose in waxing poetic is to indicate the pitfalls that await any researcher who neglects the important connection between words and visual imagery. Such pitfalls are well illustrated by some of our own work in which we compared the effects of verbal and pictorial stimuli on evaluative judgments (Holbrook and Moore, 1981a, b). Briefly, we argued that words and pictures should tend to be processed by different verbal and imagery systems (e.g., Paivio, 1971), that these tend to reflect contrasts between sequential and parallel processing (e.g., Das, Kirby, and Jarman, 1979), that these phenomena also correspond to differences between the left and right cerebral hemispheres (e.g., Galin and Ornstein, 1972), and therefore that evaluative judgments of pictures should show more cue configularity than those of words so that pictures should produce a greater number of interaction effects (Holbrook and Moore, 1981a). We tested this hypothesis by exposing subjects to verbal descriptions or pictures of sweaters like those shown in Figure 2 (Holbrook and Moore, 1981b).

FIGURE 2

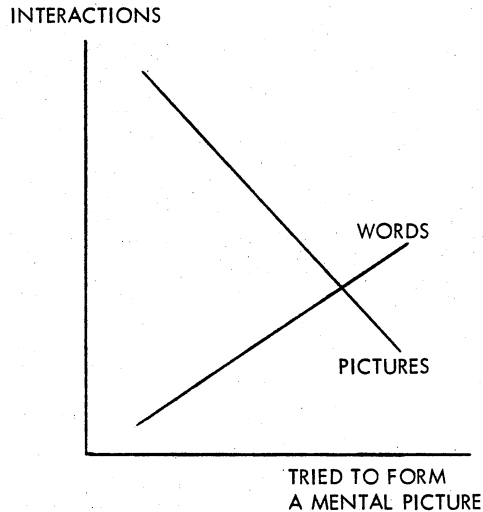
Verbal Descriptions Versus Pictorial Displays:
Examples of Contrasting Presentations



Specifically, 59 subjects rated 32 factorially designed sweaters on 20 bipolar adjectival scales that were subsequently reduced to four judgmental factors. Contrary to our hypothesis, however, we found no difference in cue configularity (as assessed by number of two-way interaction effects) between the verbal and pictorial treatments.

FIGURE 3

Moderator Effect of Visual Imagery on Cue Configurality
in Verbal Versus Pictorial Presentations



In light of the present discussion, this disappointing finding raises the possibility that our hypothesis might have failed because subjects did not process the stimulus information in the manner anticipated. For example, if subjects tended to convert verbal descriptions into visual imagery before forming evaluative judgments, this processing strategy might tend to cancel out any differences in cue configurality between the two treatments. This hypothesis (along with some others) was investigated by recontacting the subjects and asking for their degrees of agreement concerning the following statement: "When I rated the sweaters, I tried to form a mental picture of what each sweater would look like." We then found that our data showed a moderator effect consistent with the proposed explanation. As indicated in Figure 3, the hypothesized difference in cue configurality tended to appear in general ($p = .025$ for the main effect), but to disappear for those subjects who tried to convert the stimulus presentations into mental pictures ($p = .005$ for this interaction effect). In other words, the original hypothesis could be supported only when controlling for the tendency of words to evoke visual imagery more strongly in some subjects than in others. This interesting moderator effect therefore provided a lesson in the dangers of ignoring the visually evocative powers of language.

Cues and Imagery in Other Modalities

Rossiter and Percy (in press) also recognize the important, but neglected role of imagery in other modalities involving the senses of hearing, taste, smell, and touch. This multi-modality of imagery has been clearly articulated by literary critics and was illustrated in the previously cited passages by Milton and Eliot. Spurgeon (1935), for example, argues:

I use the term 'image' here as the only available word to cover every kind of simile I suggest that we divest our minds of the hint the term carries with it of visual image only, and think of it . . . as connoting any and every imaginative picture or other experience, drawn . . . through any of his senses (p. 5).

Thus, the philosophical definition of "image" as "a sensory quality reinstated by the mind in the absence of sensory stimulation" (Runes, 1980, p. 141) can apply to any of the senses. The same multi-sensory interpretation may be given to Richardson's (1969) delineation of mental imagery as

- (1) all those quasi-sensory or quasi-perceptual experiences of which (2) we are self-consciously aware, and which (3) exist for us in the absence of those stimulus conditions that are known to produce their genuine sensory or perceptual counterparts, and which (4) may be expected to have different consequences from their sensory or perceptual counterparts (pp. 2-3).

Indeed, the early psychological work on imagery (e.g., Galton, 1883) did focus on auditory, gustatory, olfactory, and tactile modalities (see the reviews by Kaufmann, 1979; Richardson, 1969). More recently, however, psychologists have tended to dwell increasingly on the visual components of imagery:

The term "imagery" . . . may be used to denote cognitive content . . . both of a sensory and a nonsensory kind. More frequently, perhaps, "imagery" refers to symbolic processes of a specific sensory kind. Usually the reference is to the visual modality . . . we shall use the term "imagery" in the latter sense, i.e., as substantially equivalent to visual symbolic processes. Such a usage of the term seems to coincide in large measure with current practice in the literature (Kaufmann, 1979, p. 9).

This preoccupation with visual imagery at the expense of other modalities appears reflected in the published work of consumer researchers (Holbrook and Moore, 1981a; Rossiter and Percy, in press). Of course, one can only speculate on the interesting, but proprietary multi-sensory research that might lurk in the secret files of advertising agencies, food processors, and perfume manufacturers. But those who consult the available literature will find few published studies on such important topics as the role of music in advertising (Wintle, 1978) or the psychophysics of taste (Huber, Holbrook, and Schiffman, in press). Yet, intuitively, one suspects that nonverbal and nonvisual modalities play a key role in consumer responses to products and related marketing efforts.

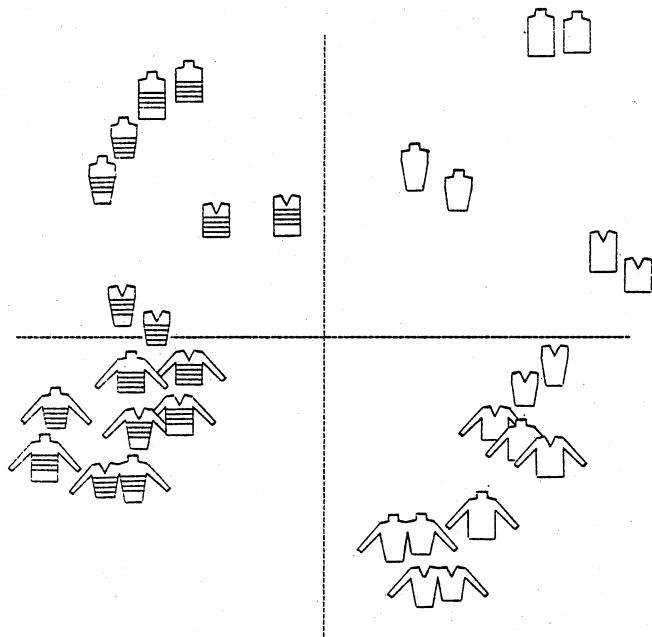
The danger of neglecting nonvisual and nonverbal modalities is again illustrated by some of our own work (Holbrook and Moore, in press). This study used the previously described data from subjects who rated sweater pictures to develop a spatial representation through the use of canonical correlation in general and discriminant analysis in particular. For example, a two-dimensional product space appears in Figure 4. Here, one can see immediately that the horizontal and vertical axes reflect the presence (absence) of stripes and sleeves, respectively. This point was confirmed by strong fits for stripes and sleeves vectors introduced into the product space ($R = .96$ and $.84$). Moreover, the vertical axis (sleeves) was closely aligned with evaluative ratings such as beautiful/ugly ($r = .84$) and displeasing/pleasing ($r = -.80$).

Notice that these dimensions are strongly visual in modality and that this property of the product space stems directly from the nature of the experimental design, which used carefully controlled but highly artificial pictures of sweaters. One might therefore wonder what would happen if subjects were exposed to real sweaters varying not only visually but also in other sensory modalities.

This question was explored in a study (Holbrook, 1981) that collected 34 adjectival ratings similar to those discussed earlier from 25 subjects of 20 real sweaters

FIGURE 4

Product Space for Sweater Pictures



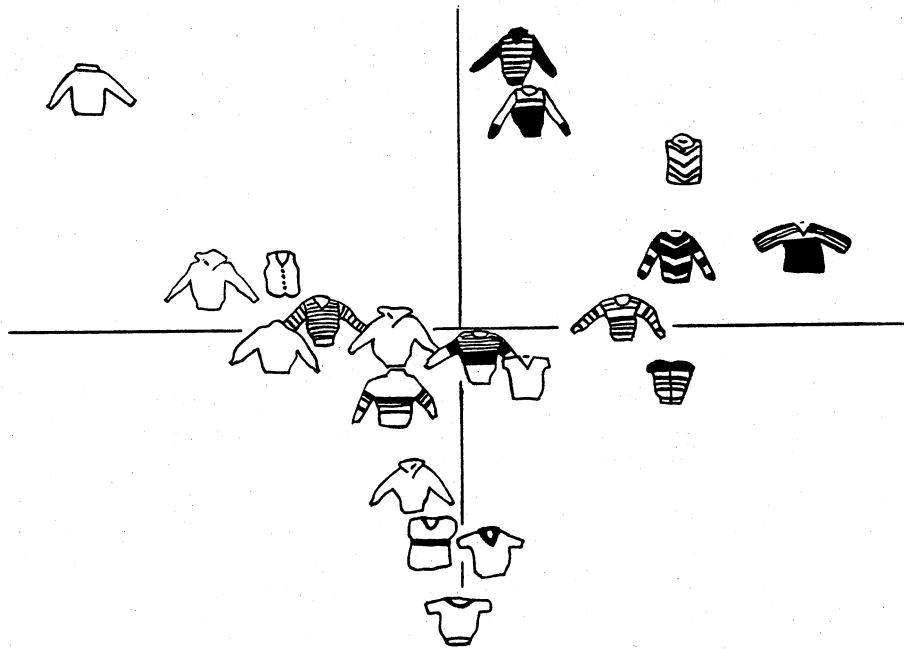
varying on some of the same visual dimensions (pattern, fit, sleeves, neck) but also on some primarily tactile dimensions: heaviness (weight divided by surface area) and stitching (number of stitches per inch). The same canonical correlation procedure was used to construct the product space shown in Figure 5. Here, one of the visual characteristics is again represented horizontally by the general drift from solid to patterned, multi-colored, and striped designs. By contrast with the earlier study, however, the vertical dimension now reflects more tactile sensations. As indicated by feature vectors introduced into the product space, sweaters toward the top are heavier and looser-knit ($R = .61$ and $.65$) while those toward the bottom are lighter and tighter-stitched with a smoother, softer finish. Moreover, this tactile dimension corresponds closely to a preference vector showing that the lighter-and-softer sweaters toward the bottom are evaluated more favorably than the heavier-and-coarser garments toward the top ($R = .50$).

These findings suggest the important role played by tactile imagery in the evaluative judgment of sweaters. More generally, they illustrate the danger of being misled by experimental paradigms that emphasize strictly visual and/or verbal processes at the expense of neglecting other modalities. In the present case, preferences appear to be driven by tactile sensations--a point that was obscured by the earlier presentation of stimuli in schematized pictorial form. This finding therefore argues for increased attention to the multi-sensory aspects of the consumption experience.

Further, one might conjecture that, for many product classes, important interactions might occur across imagery modalities. The potential importance of such cross-modality cue configuralities may be illustrated by the

FIGURE 5

Product Space for Real Sweaters



case of a liquor company that introduced a new product resembling vodka in color and bourbon in taste. This product flopped miserably on the market. Thus, with 20/20 hindsight, one concludes that this failure may have resulted from the negative synergy between its visual impression (vodka) and gustatory sensations (whiskey).

Emotional Experiences

Much of the psychological work on imagery has focused either on its cognitive effects associated with memory (e.g., Paivio, 1971) or on its relationship to creative and other aspects of problem solving (e.g., Kaufmann, 1979). In consumer research, these preoccupations have been compatible with the dominant view of buyers as information processors who seek, attend to, perceive, remember, and evaluate marketing cues as part of a decision-making task that culminates in brand choice and purchasing activity (e.g., Bettman, 1979). This prevalent information-processing view is clearly reflected in the work of both Percy (1981) and Rossiter (1976).

Recently, we have advocated greater emphasis on some relatively neglected components of consumer behavior associated with what might be called the experiential aspects of consumption (Holbrook and Hirschman, 1981). This perspective takes a more phenomenological look at the consumption experience and draws attention to its symbolic, hedonic, emotional, and esthetic components. In the present context, the experiential approach suggests that we might fruitfully pursue a more careful investigation of the emotions stirred up by visual and other kinds of imagery, especially in an era when much advertising appears to be veering toward a greater emphasis on feelings rather than facts ("Have a Coke and a smile," "Get that great G.M. feeling with genuine G. M. parts," "Marlboro Lights . . . the spirit of Marlboro in a low tar cigarette," "The Sealy Posturepedic morning . . . Feeling so good it shows," "Kodak . . . decorate your home with love."

Rossiter and Percy (in press) mention the emotive function of imagery, but refer primarily to work using the Semantic Differential and its tripartite distinction among evaluation, activity, and potency (Osgood, Suci, and Tannenbaum, 1957). Unfortunately, our own research again provides a lesson in some potential dangers to be avoided in this respect. Specifically, as previously noted, we have tended to use conventional bipolar adjectival or semantic differential scales to tap responses to esthetic and other imagery-evoking stimuli. For example, one study focused on conventional bipolar adjectival ratings of line drawings and architectural photographs (Huber and Holbrook, 1981), prompting Olson (1981) to offer the following criticism:

what is an esthetic response? . . . Are these "esthetic reactions" different from consumers' responses to the more mundane products of everyday life such as toothpaste, chewing gum, breakfast cereal, and automobiles? If so, what is it that is special or unique about them? For instance, is there some particularly distinctive combination of affective and emotional characteristics that comprise what we seem to want to call an esthetic response? (p. 71)

Of course, Olson is right. One cannot necessarily use traditional methods to measure new constructs. Moreover, his critique can be extended beyond the boundaries of consumer esthetics to cover the whole state-of-the-art in studying emotional experience. Here, measurement techniques are still in their infancy. As a field of inquiry, the emotions are just beginning to attract the sustained, systematic attention of psychologists (e.g., Plutchik, 1980). With little to draw upon in the way of established, well-validated methodology, the efforts of consumer researchers in this direction have understandably been

tentative and highly exploratory. Nevertheless, we cannot expect to plumb the depths of emotional experience with methodologies developed to test conventional multiattribute attitude models. The need to work out suitable procedures for investigating the consumer's emotional experiences must therefore be considered a challenging but fascinating task along the road toward a fuller understanding of the experiential aspects of consumption.

Conclusion

This special ACR session has provided a welcome opportunity to address the interacting roles of psycholinguistics and imagery in consumer behavior. Rossiter and Percy have performed a valuable service in calling our attention to the importance of these phenomena in advertising and, by extension, in all marketing activities. For these insights, I applaud their contribution. I can only add that, as usual, much still remains to be done. In sum, we need more work on other linkages (e.g., linguistic-visual), other sensory cues and imagery modalities (e.g., tactile), and other kinds of response (e.g., emotional experiences). As consumer research proceeds into these relatively neglected areas, we can look forward to developing a better-rounded understanding of the consumption experience where, in the words of a Nineteenth Century poet,

Thought is deeper than all speech,
Feeling deeper than all thought . . .

--Christopher Pearse Cranch,
"Thought"

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DISPLAYS AND ADVERTISING: A THEORY OF SEDUCTION

Steven M. Shugan
Graduate School of Business, University of Chicago

Abstract

Advertising plays a key role in almost every firm's marketing strategy. This paper investigates two relatively unexplored areas of advertising: (1) the optimal amount of information an ad should contain, and (2) what information an ad should contain. An application to point-of-purchase advertising (store displays) is given.

Introduction

Advertising plays a key role in almost every firm's marketing mix. Point-of-purchase advertising, also known as store displays, are one of the retailer's "most powerful sales promotion forces" (Davidson and Doody, 1966). Consequently, the literature (e.g., Aaker and Myers, 1975; Roman and Maas, 1976) on advertising continues to progress in many directions. Models have been constructed to determine optimal advertising expenditures (Nerlove and Arrow, 1962; Horsky, 1977), optimal amount of copy testing (Gross, 1972), and proper media allocation (Little and Lodish, 1969; Gensch, 1973). However, despite pioneering studies discussing advertising strategies (Boyd et al., 1972; Nelson, 1974), many important aspects of advertising copy are left unexplored. For example, to this author's knowledge no model exists that optimizes both the amount and nature of information the ad should contain.

Why do consumers read or view advertisements? Well, they must expect some benefit. Perhaps they receive some information. But what information do these consumers receive and how does it affect consumer choice? The purpose of this paper is to address these important issues. The paper first discusses an objective of advertising, i.e., seduction. Once seduction is understood, the paper continues to show how to maximize the probability the ad will seduce the user of a competitive brand. Finally, the paper concludes with an illustrative example dealing with the design of point-of-purchase advertising.

A Theory of Seduction

The Process of Seduction

When someone attempts to persuade someone else to purchase some merchandise, either at the point of purchase or before the point of purchase, the mechanism used can be construed as a process of providing information. The information can be concrete, factual, and very straightforward. For example, in a cigarette ad an advertiser may state that their brand contains only 5 mg. of tar. The informed reader or viewer of this ad now has more information. This information may persuade the reader to switch to the advertised brand. The information can also be abstract, subjective, and less obvious. For example, a pantyhose ad portrays a woman using the advertiser's brand at a party. The other women at the party are using competitive brands or have legs that are not visible. From the positions of those involved, and the interest of the male participants, the message of the ad becomes clear. The informed reader of the ad now is aware of a hidden quality of the product; that is, the product's ability to attract members of the male gender. In any case, whether information is hidden or not, the ad attempts to provide information that will tend to favorably influence the reader's choice process.

However, there is a difference between enlightenment and seduction. With enlightenment, the consumer (decisionmaker) is given information to enable better decisionmaking. With seduction, information must be provided so as to have a desirable and predictable outcome on the consumer's decision process. Clearly, seduction may not be easy. First, consumers may realize that advertisers have the incentive to provide biased information. Second, consumers may have very little incentive to read or view advertisements and may thereby circumvent enticement completely. We therefore require some understanding of the consumer choice process, including information acquisition and information processing (Simon and Newell, 1971; Bettman, 1977; Lehmann, 1977), before we can determine the optimal enticing strategy.

Let us assume that consumer choices are determined (directly or as a cue) by the product's characteristics as defined by Lancaster (1966) and the product's price. Then, a consumer who wishes to choose between two products may proceed by comparing the two products on their characteristics. For example, a consumer choosing between two household cleaning products may first compare them on ammonia content. Second, a comparison on drying speed may take place. Next, the products could be compared on the attractiveness of their respective colors. These comparisons could then proceed until all characteristics of the product are exhausted, uniquely defining each product. Undoubtedly, this process can be lengthy. The two products may be compared on a multitude of characteristics (possibly infinite) before choosing, with certainty, the product that is most preferred. The process can, therefore, be rather tiresome and likely to end before all characteristics are exhausted.

Of course, this representation of the consumer-choice process would be void of implications without a methodology to describe and classify choice situations with respect to the number of necessary comparisons to resolve the conflict. Fortunately, this representation can be interpreted as a sampling problem (Wald, 1947; Mood et al., 1974). The consumer can be viewed as sampling product-pair differences by characteristic. For example, consider the household cleaning product comparison. The consumer first compares the products on ammonia content. This comparison is basically sampling from the population of product differences. The first observation chosen was difference in ammonia content. Again, the second comparison on drying speed can be viewed as an observation on drying-speed difference. It is then possible to show, given some unrestrictive assumptions, that the consumer must balance expected benefits against decisionmaking costs. As a result, each consumer will seek some n^* amount of information about a product before making a decision. Even if a product has been previously purchased, many times the consumer may still seek a minimal amount of information to reinforce existing beliefs and possibly seek disconfirming evidence to enable better future decisions. We would, then, expect to find a heterogeneous population with each member conceivably having a different value for n^* . We will now explore a specific implication of this descriptive theory toward explaining seduction. General implications, in addition to the strengths and weaknesses of the theory, are discussed elsewhere (Shugan, 1980).

The Advertiser's Seduction Problem

In reality, we seldom find companies whose brands dominate their competitors on every characteristic. Hence, it would not be prudent for most advertisers to reveal to the consumer every last detail of their brand. For example, enticing the consumer to purchase a brand would seldom involve the revealing of the characteristics on which the brand is weak. The retailer or advertiser must be concerned with exactly how much and what, if any, information should be provided to the potential buyer through the ad.

Let us begin by looking at only that segment of the market that can be seduced by the advertisement. This market segment is defined so that if any member of the segment was exposed to all the brand's favorable characteristics, that member would purchase the brand. The advertiser need only consider this segment because, by definition, the advertisement cannot entice others to buy despite the effectiveness of the ad.

Each member of the seduceable segment seeks information about some nonnegative number of product characteristics. Define $P(n^*)$ for $n^* \geq 0$ as the proportion of seduceable individuals who are seeking information on n^* product characteristics. Then $P(n^*)$ represents the probability of a randomly chosen member of the segment desiring information on n^* characteristics. Consequently, if an ad (or display) contains information on N characteristics, individuals seeking $n^* < N$ information will sample the ad rather than spend the time and effort to read the ad in its entirety. Individuals with $n^* \geq N$ will read the ad in its entirety and may, if left unconvinced, continue to seek information about the product. Let L_N be the probability an individual will look, or be exposed to, any one characteristic in the ad given the ad contains information on N characteristics. This probability can be computed by using equation (1).

$$L_N = \sum_{X=0}^N \left(\frac{X}{N}\right) P(n^* = X) + \sum_{X=N+1}^{\infty} P(n^* = X) ; \quad (1)$$

where $P(n^* = X)$ is the probability a randomly selected individual is seeking information on X characteristics. Now, we wish to maximize the probability a seduceable individual is seduced. That probability can now be expressed as shown in equation (2)

$$S_N = \sum_{j=1}^N L_N E_{jN} ; \quad (2)$$

where S_N is the probability of seducing a randomly chosen individual, L_N is the probability the individual will perceive any one characteristic as given by equation (1), and E_{jN} is the probability the individual will be enticed to purchase the product by characteristic j .

To make the theory more concrete, make two simplifying assumptions, which are later relaxed. Assume: (1) If the advertiser listed all of the brand's characteristics in order of their convincing power (i.e., the superiority over competitive products), the probability of a particular characteristic convincing a randomly chosen member of the population decreases at a constant rate λ as we go down the list. (2) The proportion of people seeking information on n^* characteristics decreases at a constant rate r as n^* increases.

Finally, assume E_{jN} is not a function of the number of characteristics in the ad. This, for example, assumes no synergism (the convincing power of two characteristics is the sum of their respective powers). Assumptions (1) and (2) lead to equations (3) and (4) (e.g., see Mood et al.,

1974).

$$P(n^* = X) = r(1 - r)^X \quad (3)$$

$$E_j = \lambda(1 - \lambda)^j \quad (4)$$

Recall that the characteristics are ordered from $j = 1$ to $j = \infty$ in terms of their convincing power. Later, measurement of these parameters will be discussed.

In order to make the following development less awkward and the optimization less clumsy, the discrete geometric distributions (equations (3) and (4)) for $P(n^*)$ and E_j will be replaced by their continuous analogues, i.e., exponential distributions. The continuous analogue to the discrete problem is then given by equation (5).

$$S_N = \int_0^N \left[\int_0^X \frac{Xr}{N} e^{-rX} dX + \int_X^{\infty} r e^{-rX} \right] \lambda e^{-\lambda y} dy \quad (5)$$

To find the optimal amount of information the advertiser should provide, we must maximize S_N with respect to N . Then, using Leibnitz's rule for differentiating an integral--integrating by parts, setting dS_N/dN equal to zero, and rearranging--yields equation (6).

$$\frac{1}{N^*} = \left[\frac{r}{e^{rN^*} - 1} \right] + \left[\frac{\lambda}{e^{\lambda N^*} - 1} \right] ; \quad (6)$$

where N^* is the optimal amount of ad information. This equation has no nice closed-form solution for N^* , and must be solved iteratively for N^* .

Using the iterative method shown in the appendix, Table 1 was generated. This table shows the optimal ad information content N^* as a function of r and λ .

TABLE 1
OPTIMAL AD INFORMATION CONTENT
(N^* as a function of r and λ)

$\lambda \backslash r$	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	1.1	1.2
.1	12.6	8.7	6.8	5.7	4.9	4.4	4.0	3.6	3.3	3.1	2.9	2.7
.2	8.7	6.3	5.1	4.3	3.8	3.4	3.1	2.9	2.6	2.5	2.3	2.2
.3	6.8	5.1	4.2	3.6	3.2	2.9	2.6	2.4	2.3	2.1	2.0	1.9
.4	5.7	4.3	3.6	3.1	2.8	2.5	2.3	2.2	2.0	1.9	1.8	1.7
.5	4.9	3.8	3.2	2.8	2.5	2.3	2.1	2.0	1.8	1.7	1.6	1.6
.6	4.4	3.4	2.9	2.5	2.3	2.1	1.9	1.8	1.7	1.6	1.5	1.4
.7	4.0	3.1	2.6	2.3	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.4
.8	3.6	2.9	2.4	2.2	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3
.9	3.3	2.6	2.3	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2
1.0	3.1	2.5	2.1	1.9	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.2
1.1	2.9	2.3	2.0	1.8	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.1
1.2	2.7	2.2	1.9	1.7	1.6	1.4	1.4	1.3	1.2	1.2	1.1	1.0

We find N^* provides the proper balance between revealing too much about the brand and not revealing enough. If the advertisement does not reveal a sufficient number of the

brand's attractive characteristics, the ad viewer may remain unconvinced and not purchase the brand. The ad would not be sufficiently revealing to entice the consumer. If the advertisement reveals too many of the brand's characteristics, the viewer may not notice all of the brand's characteristics. In this case, there is the danger the viewer may focus on some of the brand's less attractive characteristics and ignore some of the more convincing characteristics.

Some Qualitative Implications

The probability a consumer will buy our brand with exposure to less than one characteristic is $\int_0^1 \lambda \exp(-\lambda x) dx$ or

$1 - \exp(-\lambda)$. However, this quantity represents our current market share computed as a percentage of our total potential market share. Hence, if we let ms denote our current share, then $\lambda = -\log(1 - ms)$. Consequently, new products or products that are being repositioned will have smaller λ 's (because ms is smaller). Therefore, new product ads should contain relatively more information than mature product ads. Further, brands that have been well managed require less ad information than brands that are far from their potential.

Similar analysis applies to r . In this case, we find that ads should contain relatively more information when products show greater variability on important characteristics, products serve different markets, product prices are high relative to total income, and consumers have very different tastes (Shugan, 1980).

Measuring the Relevant Parameters

For the advertiser or retailer to actually apply the preceding analysis and solve for the optimal N^* , that advertiser must ascertain how to measure the parameters r and λ . It would also be convenient if the advertiser could determine these parameters using existing market research techniques and possibly from existing data bases. We will, therefore, try to find measurements of r and λ available from established techniques rather than develop new untested measurement instruments. However, better measurement methodology may be a desirable goal for future research.

Consider for a moment consumers who tend to look at only a few product characteristics. These consumers may infer the values of other characteristics based on what they find for the few characteristics they observe. Suppose we ask these consumers to state their perceptions by rating a familiar brand. If we then analyze the consumers' perceptions for all characteristics, we should find the majority of their perceptions should be highly correlated and be explained by only a few underlying factors. Further, if we ask a respondent "M" perceptual rating questions and assume a linear relationship between n^* and the respondent's perceptual variability (for $n^* < M$), then equation (7) expresses the distribution of response variability.

$$f(\sigma_j^2 = X_j; V, r) = \begin{cases} re^{-rMX/V} & \text{for } X < V \\ re^{-rM} & \text{for } X = V \\ 0 & \text{for } X > V \end{cases} \quad (7)$$

where σ_j^2 is the variability in respondent j 's answers and V is the true characteristic variability. The maximum-likelihood estimator for r , denoted \hat{r} , is given by equation (8).

$$\hat{r} = J / \left[\frac{M}{V} \sum_{j=1}^J \sigma_j^2 \right]; \quad (8)$$

where $V = \text{maximum } \sigma_j$ and J is the number of respondents.

Interestingly, this procedure is related to the measurement of halo effects (Thorndike, 1920; Beckwith and Lehmann, 1975). Now, given a method for estimating r , we require a method for estimating λ . We have postulated that an individual is convinced to buy one brand over another by sampling product characteristic differences. That is, the individual would have observations z_j where z_j is defined as follows:

$$z_j = U_{Aj} - U_{Bj};$$

where $U_{Aj} = U_j(A)$ is the utility of characteristic j for brand A, and $U_{Bj} = U_j(B)$ is the utility of characteristic j for brand B.

There exists intensity measures for U_{ij} (Hauser and Shugan, 1980). Unfortunately, most other more well-known market research techniques, such as conjoint analysis (Luce and Tukey, 1964; Green and Srinivasan, 1978) and direct assessment (Hauser and Urban, 1979), yield functions that are only unique to a positive linear transformation. However, we note:

$$\lambda e^{-\lambda k} / \lambda e^{-\lambda(k+1)} = z_j / z_{j+1};$$

and, therefore, because

$$\lambda = \log(z_j / z_{j+1}), \quad (9)$$

we can use (z_j / z_{j+1}) to estimate r . Then, one estimator for λ that is robust to the arbitrary scaling for U_{ij} is given by equation (10):

$$\hat{\lambda} = \frac{1}{M-1} \sum_{j=1}^{M-1} \log(z_j / z_{j+1}), \quad (10)$$

which minimizes the mean squared error in equation (9).

Finally, before proceeding, we should note that no attempt has been made to find the distribution of these estimators. It would, therefore, be inappropriate to attempt to do any statistical testing.

Now that we have a method for measuring both r and λ , as given by equations (8) and (10), we can proceed to an illustrative application of the theory.

Illustrative Example

The model developed in the preceding analysis can be used to either design traditional advertisements or help a retailer construct more effective product displays. One major supermarket wanted to encourage customers to switch from lower-margin brands to higher-margin brands. The following example illustrates how the optimal display can be determined. Respondent data are simulated and the example is hypothetical. However, the example parallels analysis currently being performed.

Let us consider three product categories: eggs, coffee, and soup. A focus group (see Alpert (1971) for alternatives) was used to determine the relevant discriminating product characteristics. Table 2 lists the characteristics identified by focus groups for each product category.

TABLE 2
PRODUCT CHARACTERISTICS

No.	Eggs	Soup	Coffee
1	Absolute price	Brand name	Aroma
2	Age	Can defects	Bitterness
3	Appearance	Can size	Blend
4	Brand name	Chunkiness	Brand name
5	Box color	Creaminess	Caffein content
6	Cleanliness	Form	Color
7	Container size	Ingredients	Coupons
8	Egg color	Label picture	Ease of preparation
9	Egg size	Label recipes	Flavor (mocha, etc.)
10	Freshness	Meat content	Form (instant, etc.)
11	Govt. inspected	Nutrition	Mildness
12	Grade	Price	Price
13	Quality	Saltiness	Pungent quality
14	Recipes on box	Servings	Size of jar
15	Relative price	Soup color	Specials
16	Specials	Sweetness	Stimulating ability
17	Shell condition	Tartness	Strength
18	Shell shape	Texture	Unit price

After determining the product characteristics consumers use for discriminating among brands, the following methodology can be employed.

Methodology

(1) Determine how the consumer perceives each competitive brand on each characteristic. In this example, agree/disagree questions were used, as illustrated in Table 3.

TABLE 3
SAMPLE AGREE/DISAGREE QUESTIONS
FOR MEASURING PERCEPTIONS

	Strongly Agree		Neither Agree nor Disagree		Strongly Disagree	
	a	b	c	d	e	f
1. Brand A eggs provide the highest possible quality.	a	b	c	d	e	f
2. Brand B soup is too salty.	a	b	c	d	e	f
3. Brand A coffee has a bitter taste.	a	b	c	d	e	f

(2) Determine how the consumer perceives our brand on each characteristic.

(3) Determine the utility the consumer derives from each characteristic at each level. For example preference regression (Urban and Hauser, 1980), conjoint analysis (Luce and Tukey, 1964; Green and Srinivasan, 1978), or intensity measures (Hauser and Shugan, 1980) could be used.

(4) From steps (2) and (3), calculate the utility the consumer derives from each of our brand's characteristics.

(5) From steps (1) and (3), calculate the utility the consumer derives from each competitive brand's characteristics.

(6) From steps (4) and (5), find the difference in utility between our brand and each competitive brand on each characteristic.

(7) Take the competitor's brand we wish to position our brand against. Rank the characteristics according to the magnitude of the differences determined in step (6). Table 4 shows these ranked differences for our brand's best four characteristics. For example, our soup's best competitive characteristic is our super ingredients when competing with brand 2 (a difference of 1.4); our second best competitive characteristic is our extra-large can size (a difference of 1.3).

TABLE 4
DIFFERENCE IN UTILITY WITH OUR
BRAND ON CHARACTERISTIC j
(ordered from largest Z_j to smallest Z_j)

	Z_7	Z_1	Z_5	Z_{14}
Eggs				
Brand 1	$Z_7 = 1.2$	$Z_1 = .9$	$Z_5 = .1$	$Z_{14} = .1$
Soup				
Brand 1	$Z_7 = 1.7$	$Z_4 = 1.3$	$Z_3 = .7$	$Z_{10} = .2$
Brand 2	$Z_7 = 1.4$	$Z_3 = 1.3$	$Z_{10} = .6$	$Z_4 = .1$
Brand 3	$Z_4 = 1.1$	$Z_7 = .8$	$Z_3 = .4$	$Z_{10} = .2$
Coffee				
Brand 1	$Z_7 = 1.6$	$Z_9 = 1.1$	$Z_3 = .8$	$Z_{12} = .3$
Brand 2	$Z_7 = 1.7$	$Z_9 = .9$	$Z_{18} = .7$	$Z_3 = .7$

(8) From data found in step (7), use equation (10) to estimate λ . Results are summarized in Table 5.

(9) Compute the variance of the data in step (1) and use equation (8) to estimate r . Estimates for r are shown in Table 5.

TABLE 5
ESTIMATED r AND λ

	Eggs	Soup	Coffee
Estimated r	.91	.20	.59
Estimated λ			
Brand 1	.83	.71	.56
Brand 2	--	.88	.30
Brand 3	--	.57	--

(10) From steps (8) and (9), use Table 1 (or equation (6)) to find the optimal ad information content. Results are summarized in Table 6.

TABLE 6
OPTIMAL AD INFORMATION CONTENT

	Eggs	Soup	Coffee
Brand 1	1.4	3.0	2.2
Brand 2	--	2.5	2.9
Brand 3	--	3.5	--

Discussion

From the preceding analysis, we see that r , and, hence, the optimal ad information, depends on our product positioning. Depending on what brand we position against, our optimal advertising strategy varies. The positioning decision, however, depends on a host of factors whose discussion is beyond the scope of this paper. Other sources exist on optimal product positioning (Streffle, 1968; Hauser and Urban, 1973; Silk and Urban, 1978; Hauser and Urban, 1979; Hauser and Shugan, 1980; Urban and Hauser, 1980). We will, therefore, take product positioning as given.

In this example, the positioning strategy depends on the relative profit margins for the brands involved. Table 6 implies the optimal display strategy for each positioning strategy. For example, if our coffee is positioned against Brand 1, then our display should stress three of our product's characteristics: 7--our super ingredients; 4--our chunkiness; and 3--our extra ounce (can size). If, however, we seek to position our soup against Brand 2, our display should discuss only 2-1/2 of our product's characteristics. Perhaps 4/5 of our display (2/2.5) should be devoted to characteristics 7 and 3, while 1/5 of our display (.5/2.5) should be devoted to characteristic 10--i.e., our meat content. Similar strategies are implied for coffee and eggs.

It is important to remember this discussion says nothing concerning display size or the effectiveness of its presentation. The former problem involves optimal advertising budgets, and the latter problem requires copy testing.

Summary and Conclusions

This paper has made an attempt to rigorously examine the problem of optimal ad information content. We found the advertiser must tradeoff too much information content against too little. By making some simple assumptions, the theory became operational. An illustrative example showed how the theory could be applied in practice to help solve one important problem for retailers--i.e., display design. Of course, the model presented was only a first step. However, it demonstrated that complex and apparently extremely qualitative factors, such as the difficulty of decisionmaking, the effort expended in reading an ad, the amount of information content in an ad, and the seductive power of an ad, were not beyond the grasp of rigorous analysis.

Much work still needs to be done. Better measurements must be found. Effectiveness of the communication needs to be explored. Multibrand positioning problems must be attacked. A system for defining characteristics must be developed. The model must be extended so to allow one characteristic to provide information about other characteristics. Finally, competitive actions should be considered

Appendix

Algorithm to Determine N^*

As shown in the text,

$$\frac{1}{N^*} = \left[\frac{r}{e^{rN^*} - 1} \right] + \left[\frac{\lambda}{e^{\lambda N^*} - 1} \right]; \tag{11}$$

where N^* is the optimal amount of ad information. This equation has no nice closed-form solution for N^* , and must be solved iteratively for N^* .

We can substitute the Taylor series expansion about zero

for e^x . Performing this substitution and rearranging, we find the optimal N^* must satisfy equation (12).

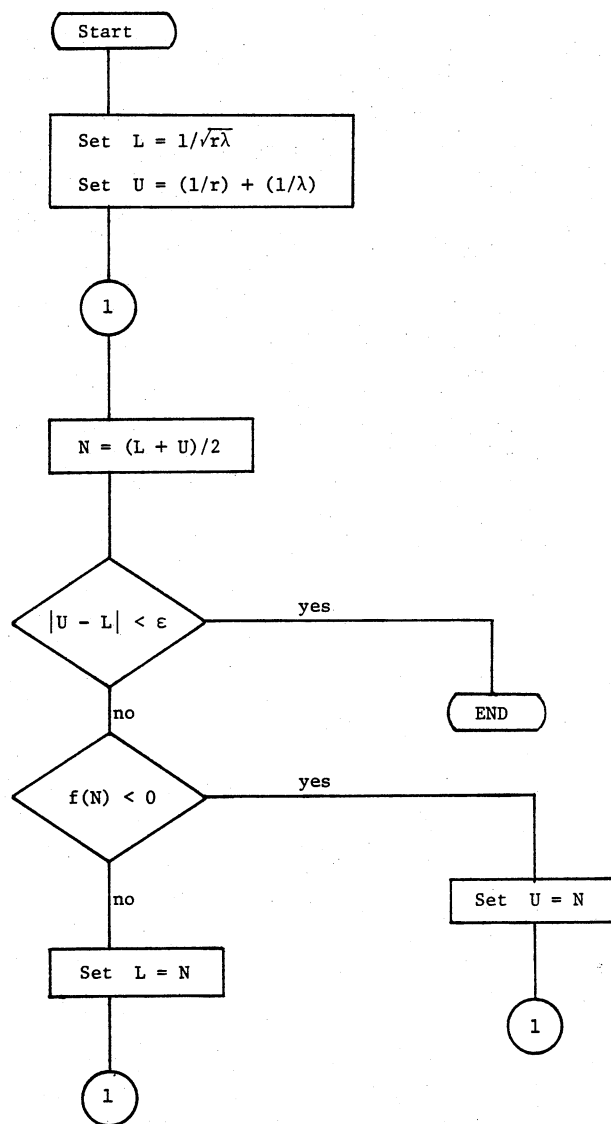
$$[(rN/2!) + ((rN)^2/3!) + \dots][(\lambda N/2!) + ((\lambda N)^2/3!) + \dots] = 1; \tag{12}$$

where $x! = 1 \cdot 2 \cdot 3 \dots x$. Equation (12) reveals that the value of N^* is unique because both terms in equation (12) are monotonic in N . Moreover, equation (12) allows us to find approximate solutions for N^* . For example, a first-order approximation solution for N^* is given by $(rN^*/2!)(\lambda N^*/2!) = 1$, which implies

$$N^* = 2/\sqrt{r\lambda}. \tag{13}$$

The expression shown in equation (13) provides a starting solution for N^* when solving the problem iteratively.

To obtain a solution for N within $\frac{\epsilon}{2}$ of the true N , use the following algorithm. Let $f(x) = [r/(e^{rx} - 1)] + [\lambda/(e^{\lambda x} - 1)] - [1/N]$.



The General Problem of Seduction

Despite the convenience of assumptions (1) and (2) in the text, for some situations these assumptions may be unreasonable. For example, the advertiser may feel the brand's best characteristics are equally convincing. In this case, a uniform distribution should be used rather than an exponential distribution. In the general case, we can assume:

(1) If the advertiser listed all of the brand's characteristics in order of their convincing power, the probability of the Xth characteristic convincing a randomly chosen member of the population is described by the density function $f(X)$.

(2) The proportion of people seeking information on X characteristics is described by the density function $g(X)$.

Then the probability of seducing any given member of the seduceable segment is given by equation (14).

$$S_N = \int_0^{\infty} \left[\int_0^X \frac{N}{N} f(X) dX \int_0^{\infty} \frac{N}{N} f(X) dX \right] g(Y) dY \quad (14)$$

The advertiser wishes to maximize S_N with respect to N.

Therefore, we set $dS_N/dN = 0$. Define $\sigma(X)$, $F(X)$, and $G(X)$ so that:

$$\frac{d^2\sigma(X)}{dx^2} = \frac{dF(X)}{dx} = f(X) \quad (15)$$

and

$$\frac{dG(X)}{dx} = g(X) \quad (16)$$

Then, using Leibnitz's rule, integrating by parts, rearranging, and setting $dS_N/dN = 0$, we find the optimal N^* must satisfy equation (17).

$$\frac{N^*F(N^*) - [\sigma(N^*) - \sigma(0)]}{N^*[1 + F(0)] - [\sigma(N^*) - \sigma(0)]} = \frac{g(N^*)}{G(N^*) - G(0)} \quad (17)$$

If N^* satisfies this equation, then N^* will maximize the seductive power (i.e., probability of seduction) of the advertisement. Intuitively, we find N^* provides the proper balance between revealing too much about the brand and not revealing enough. If the advertisement does not reveal a sufficient number of the brand's attractive characteristics, the ad viewer may remain unconvinced and not purchase the brand. The ad would not be sufficiently revealing to entice the consumer. If the advertisement reveals too many of the brand's characteristics, the viewer may not notice all of the brand characteristics. In this case, there is the danger the viewer may focus on some of the brand's less attractive characteristics and ignore some of the more convincing characteristics. In this latter situation, the consumer samples the ad for product characteristics, and in doing so may infer the brand as being less attractive than in the situation where the ad only contained the more convincing attributes.

Maximum-Likelihood Estimators for r

If σ^2 and n^* are linearly related, then for some α and β , $\sigma^2 = \alpha + \beta n^*$. Further, $\alpha = 0$ and $\beta = V/M$ because $V = \alpha + \beta M$ and $0 = \alpha + \beta 0$ when n^* equals M and 0, respectively. (Remember, V is the actual characteristic variability in the M attributes in the perceptual rating questions.) Then:

$$f(\sigma^2 = X; r, V) = \begin{cases} P[(V/M)n^* = X] & \text{for } X < V \\ P[n^* \geq M] & \text{for } X = V \\ 0 & \text{for } X > V \end{cases} \quad (18)$$

and

$$f(\sigma^2 = X; r, V) = \begin{cases} re^{-rX(M/V)} & \text{for } X < V \\ e^{-rM} & \text{for } X = V \\ 0 & \text{for } X > V \end{cases} \quad (19)$$

so we maximize

$$\prod_{j=1}^J f(\sigma^2 = X_j; r, V) \quad (20)$$

where X_j is the variance for respondent j.

Given our distributional assumptions, this operation is equivalent to maximizing expression (21).

$$\prod_{j=1}^I re^{-rX_j(M/V)} \prod_{j=I}^J e^{-rM} \quad (21)$$

where I is the number of respondents for which $n^* \geq M$. Expression (21) is maximized when $I = J$, yielding the estimate for V given by expression (22).

$$V = \text{maximum}_j \sigma_j^2 \quad (22)$$

So, we must maximize expression (23).

$$\prod_{j=1}^J re^{-rX_j(M/V)} \quad (23)$$

Taking logs, we obtain expression (24).

$$J \log r - r(M/V) \sum_{j=1}^J X_j \quad (24)$$

The estimate for r, given by expression (25), follows.

$$\hat{r} = J/(M/V) \sum_{j=1}^J X_j \quad (25)$$

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THE APPLICABILITY OF COMPUTATIONAL PROCESS MODELS
FOR REPRESENTING CONSUMER BEHAVIOR

Andrew A. Mitchell, Carnegie-Mellon University
and
Terrence R. Smith, University of California,
Santa Barbara

Abstract

This paper presents an overview of computational process models. The first section of the paper reviews the use of these models in cognitive psychology and artificial intelligence and discusses the many benefits of using this methodology to understand human information processing. The next section reviews different areas of human cognition where these models have been developed, and then issues in developing and testing computational process models are discussed. Finally, three different computational process models of consumer behavior are presented.

Introduction

The building of computational process (CP) models to represent and understand cognitive processes has become a standard methodological approach in cognitive science. In these models, cognitive processes are represented by a computer program which is generally written in a list processing language such as LISP (e.g., Winston and Horn, 1981). The use of this approach is based on the premise that both humans and computers are manipulators of symbols and that both can be described as a physical symbol system (e.g., Newell and Simon, 1976; Newell, 1980a). These systems are defined by a set of symbols and a set of rules defined over these symbols (e.g. Haugeland, 1981; Newell, 1980a).

Although this logic seems rather straightforward, there are many issues concerning the construction and use of these models. In the next section, we discuss two different approaches for developing CP models. We then present the benefits of using CP models and describe research areas where they have been applied. Finally, we discuss issues in using CP models as well as examples of their use in consumer behavior research.

Artificial Intelligence and Cognitive Psychology

Computational process models are constructed and implemented in both artificial intelligence and cognitive psychology, although the approaches and goals characterizing the two areas differ. The goal in artificial intelligence is to develop programs that exhibit "intelligence" behavior, although the exact definition of intelligence is left vague. A loftier

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goal that is frequently stated, is the understanding of intelligent behavior in general (e.g., Winston, 1981). In this area, a problem is defined, (e.g., to develop a computer system that will beat a chess master), and then one or more researchers work to develop a working computer program that will solve the problem. No pretence is made that the resulting system is necessarily a representation of how humans solve the problem, although, in many cases, an examination of how humans solve the problem represents a first approximation to the resulting procedure. Consequently, some empirical studies are done but rarely do they involve tightly controlled experiments to test hypotheses. Instead, the purpose of the empirical studies is to give the researcher an indication of how humans solve the problem and then to use these ideas to develop a computer program.

In cognitive psychology, the goal is to understand aspects of human information processing activities such as the retrieval of information from long term memory or problem solving. Computational process models are used here as a theoretical representation of human cognitive processes. Tightly controlled experiments are used to build and test the resulting models.

Although the two approaches have different goals and employ different means for constructing models, they are closely related and ideas flow freely between them. For instance, Schank and Abelson's notion of a script, which evolved from artificial intelligence (Schank and Abelson, 1977), has been used as a hypothetical construct by psychologists (e.g., Bower, Black and Turner, 1980; Abelson, 1981).

Since researchers in artificial intelligence and cognitive psychology employ fundamentally different approaches, there have been numerous arguments concerning the validity of each approach (e.g., Miller, 1978). Research in psychology is criticized because it generally examines only subsets of the human information processing system. Mini theories are developed to explain these subsets; however, little effort is directed at integrating the mini-theories into a coherent understanding of the system. Research in psychology is also criticized because the resulting theories are never made sufficiently explicit for a computer program to be written representation of the theory. For instance, the research on visual imagery (e.g., Kosslyn, 1976; Kosslyn and Pomerantz, 1977) was originally criticized by researchers in artificial intelligence because Kosslyn never explained exactly how individuals construct a visual image (e.g., Pylyshyn, 1973). Later, however, Kosslyn developed a CP model of these processes (Kosslyn and Schwartz, 1977).

On the other hand, researchers in psychology criticize research in artificial intelligence because the resulting models are rarely tested empirically. Instead they tend to rely on tests of face validity and on the Turing test. This latter test involves having an outside observer monitor the output from the computer program to determine whether or not it can be distinguished from the behavior of a human. Colby (1973), for instance, developed a computer program that emulates the response of a paranoid individual and trained psychoanalysts were unable to distinguish these responses from the responses of an actual paranoid patient.

In general, research which involves the development of computational models can be divided into three general areas. The first area is represented by the work of cognitive psychologists who use CP models to understand human behavior and employ tightly controlled experiments to develop and test these models. The ACT model of memory developed by Anderson (1976) is an example of this approach. In the second area, a claim is made that the resulting models are representations of human behavior, although little or no effort is made to test the models empirically. The models developed by Schank (1980,1981) are examples from this area. The third area is the development of computer models for performing a particular task where no pretence is made that the resulting model is a model of human behavior. Examples of this research include DENDRAL (Buchanan, Sutherland, and Feigenbaum, 1969) a program for analyzing mass spectrogram data and MYCIN (Davis, Buchanan and Shortliffe, 1975) a program for aiding physicians in diagnosing and treating certain bacterial infections.

Benefits of Approach

The benefits of using CP models for understanding human behavior are numerous. First, they provide an explicit representation of our understanding of a particular cognitive phenomenon. As such, they provide a means for communicating and testing this understanding. The only other currently available means for representing this understanding are natural language and mathematical models. Natural language is very ambiguous and does not provide precise predictions of particular outcomes. Although mathematical models provide precise predictions, the use of algebra or calculus currently appears to be an inefficient way of representing this knowledge, since the resulting models are generally so complex as to be intractable.

Second, the use of a CP model forces one to be precise in thinking about a particular phenomenon. Usually, there are large gaps in our understanding of a particular phenomenon and frequently we are unaware of these gaps. It is only when we attempt to create an explicit representation of this knowledge, such as in constructing a CP model, do we become aware of these gaps.

Third, building CP models forces one into a more deductive mode of thinking. Our natural mode of learning is essentially inductive, and this carries over into research. There is always a tendency to gather data and to allow the data to guide our thinking, as opposed to thinking through the problem first and then designing an experiment to test specific hypotheses. In general, our understanding of a particular phenomenon will increase much faster if we adopt the latter approach.

Finally, we believe that many aspects of consumer behavior, such as decision making, involves many complex cognitive processes that are highly interactive. Any given study will provide only a limited number of data points for understanding these processes. Consequently, programmatic research is required and the building of CP models provides a way for representing and testing the accumulated knowledge of this research. Failure to use this approach may result in studies which either examine only the outcome of these processes or which do not provide an understanding of the cognitive processes which cause the behavior measured in the study.

In summary, we believe that CP models will prove useful in understanding a number of different aspects of consumer behavior. In addition, we believe that it is necessary to adopt this approach if we are to move from the very descriptive approach that characterizes most information processing research to one that provides an understanding of the causal relationships underlying the generation of the data we observe. (e.g., Brucks and Mitchell, 1981).

Areas of Application for CP Models

In this section, we discuss four general areas of human cognition where CP models have been applied. These are perception and pattern matching, language and text comprehension, memory structures and processes, and decision making and problem solving.

In the area of perception and pattern matching, the goal has been to develop computer systems that are able to interpret information from the environment. Primary emphasis has been placed on interpreting visual information and identifying objects in the environment based on two dimensional patterns of light and dark. Research in this area and on animal vision indicates that considerable computation is involved in interpreting objects in our environment. Most objects, such as telephones, will look very different when examined from different perspectives and under different lighting conditions. Consequently, considerable knowledge about the objects to be identified is required by the system. Examples of procedures and models developed in this area are by Horn (1974,1975), Marr (1975) and Waltz (1975).

Developing computer systems that understand natural language or language comprehension is another important area of research. Originally it was thought that these systems could be developed using only lexical and syntactic knowledge. It was soon found that general knowledge was also required, since much of our language is very content specific. Consequently, considerable attention has been directed at the different types of knowledge structures that are required in natural language processing. Some of these proposed knowledge structures include scripts (Schank and Abelson, 1977), memory organization packets (MOP's) and thematic organizational packets (TOP's) (Schank, 1981), schemata (Rumelhart and Ortony, 1977) and frames (Minsky, 1975). Examples of language comprehension systems include SHRDLU (Winograd, 1972) for written text and HEARSAY II (Lesser, Fennell, Erman and Reddy, 1975; and HARPY (Newell, 1980b) for spoken text.

Computational process models of memory structures and processes have been developed primarily by cognitive psychologists. Most of these models are based on the verbal learning tradition and have been concerned with how individuals process, store, and retrieve semantic information. In these models, this information is generally organized in networks and is represented by propositions. The work of Anderson and Bower (1973), Norman, et. al. (1975), and Anderson (1976) are examples of these types of models.

Finally, a number of CP models have been developed to represent decision making and problem solving. An early model in this area was the General Problem Solver of Newell, Shaw and Simon (1963). The construction of CP models in this area has provided an understanding of how individuals solve different types of problems and a general framework for understanding problem solving (Newell and Simon, 1972). Various problem solving procedures have been identified (i.e., means-ends analysis) and important concepts critical in understanding problem solving (i.e., problem space) have been identified. Recently, there has been much effort directed at understanding the differences between experts and novices in problem solving (e.g., Larkin, 1981) and developing CP models to represent learning in problem solving (e.g., Neves and Anderson, 1981).

Issues Concerning CP Models.

In this section we will consider five basic issues concerning computational process models. Although the issues are treated separately, they are clearly interrelated.

The first issue concerns the level at which cognitive processes are represented. Any cognitive activity occurs at a number of different levels simultaneously. These levels may range from the physiological level, the firing of neurons, to the level of conscious thought processes. CP models have been developed at a number of different levels. Examples of CP models at the level of conscious thought processes include the problem solving models of Newell and Simon, (1972), while examples of CP models at a lower level are the models of perception and pattern matching (e.g., Marr, 1975). Models of memory and retrieval processes lie between these two levels. To date, little modelling is performed at the physiological level, although it has recently been argued that more attention should be paid to actual physiological processes in developing CP models (e.g., Hinton and Anderson, 1981).

An important question concerns the level at which CP models are most valid and what interactions between levels must be taken into account. Marr (1976) essentially argues that CP models are valid primarily at the levels of physiological processes. At higher levels, he argues, there are too many interactions between processes, and these interactions make it difficult to construct valid models. Pylyshyn (1980) takes a similar position in arguing that effort should be directed primarily at understanding human information processing at low levels. Anderson and Hinton (1981), on the other hand, argue that since most of the processes at lower levels are essentially parallel, it is not valid to represent such processes with serial CP models. Since higher level thought processes are essentially serial, however, CP models are valid at this level.

The second issue concerns the type of equivalence between computational process models and the human information processing system. Pylyshyn (1980), for

instance, has argued for a strong equivalence between the two. Only when we do this, he argues, will we be able to make the greatest scientific advances. He suggests that there is a "functional architecture" of the mind which is equivalent to the notion of a virtual machine. This "functional architecture" lies between the physical and the representational level, is biologically based and is not affected by cognitive factors such as beliefs and goals. It is at this level, according to Pylyshyn, that we are most likely to discover causal relationships that provide an understanding of human behavior. Therefore, effort should be directed primarily at understanding the computational processes of this level and when we do this the resulting algorithms of the models will be equivalent to those cognitive processes.

This view of strong equivalence is not shared by most researchers in the area (e.g., see Colby, 1980; Grossman 1980; Haugeland 1980). Most would prefer to stay at a level of functional equivalence where the resulting model is a representation of cognitive processes.

A third issue concerns the scientific status of a computational process model. Here the argument centers on whether a computational process model is a theory. Moor (1978) has argued that a computational process model is not equivalent to a theory. He argues that theories must be stated in terms that are independent of the computer program. Schank (1980), on the other hand, argues that theories may not be able to exist independent of a computer program because the phenomena modelled are generally too complex.

The fourth issue concerns the testing of CP models. The problem arises because in most situations there are only a limited number of data points available for fitting the model. Consequently, the resulting model will have many more parameters than data points, and because of this, it will be theoretically possible for a number of different models to fit a given set of data well. For instance, Newell (1973), Anderson and Bower (1973), and Anderson (1976) have developed alternative models that provide a good fit to the data from Sternberg's scanning experiment (Sternberg, 1966).

Given this situation, Simon (1979) makes a distinction between necessary and sufficient conditions in model testing. If a computational process model is operational and is able to reproduce the available data, then it is a sufficient model. Recently, Newell (1980) has added that the structure of the model must also conform to what we know about the structure of the human processing system. For instance, it is well known that individuals can only attend to nine or fewer chunks of information at a time (e.g., Miller, 1956; Simon, 1958). Consequently, any CP model of human behavior requiring more than nine chunks of information to be attended to in active or short term memory would not be a sufficient model. In order for a model to satisfy the necessary conditions, it must be shown that no alternative model could fit the data. At present, it is probably impossible for any model to satisfy the necessary condition.

There seems to be two possible ways out of this dilemma. The first is to discover as much as possible about the human information processing system and use this knowledge as constraints to reduce the number of possible CP models that will explain a given set of data. The second is to build general models that will explain human behavior in a number of different situations and then use tightly controlled experiments to test different aspects of the model. This is the approach used by Anderson (1976) in the development of the ACT model.

The final issue concerns the ability of CP models to explain all aspects of human behavior. For instance, these models have been criticized because they do not include emotional and motivational factors. Simon (1969), however, has discussed ways in which CP models might include such factors. He suggests, for instance, that motivational factors might be integrated into these models through the use of goal structures and that some emotional reactions occur because the occurrence of a particular event does not conform to expectations. Recently, Bower and Cohen (1982), Bower (1981), and Smith, Mitchell and Meyer, 1982) have developed the designs for CP models which include emotion and affect, while other researchers have discussed the cognitive bases of emotion (e.g., Roseman, 1979; Weiner, 1952). As of yet, however, there are no implemented models of which we are aware that include motivation. Although it is too early to know if motivation and emotion can be successfully incorporated in CP models we do not believe that CP models should be discarded because implemented models have not been developed which include these factors.

Many of these issues are clearly interrelated and center on the equivalency between the model and the human information processing system. As long as we do not demand strong equivalency from the model, many of these issues disappear. Any model of a physical process will be valid in some respects, but not in others (Pylyshyn, 1978, 1981). The type of equivalency must be stated explicitly, however, in developing procedures for testing the model. For instance, if a particular cognitive process occurs in parallel it can be represented on a serial machine, although a comparison of the amount of time for subjects and the model to complete the execution of this process will probably not provide a valid test of the model.

Constructing and Testing CP Models

In developing a computational process model, two critical questions involve the selection of a particular architecture and the methods used for testing the model. The architecture of the model refers to the basic structure used in the model. Examples of different computational architectures are production systems (e.g., Davis and King, 1977; Newell, 1973), distributed processing systems (e.g., Minsky, 1980; Chandraseharan, 1981) and memory activation (Anderson, 1976; McClelland and Rumelhart, 1981). The type of architecture selected will, of course, depend on the particular phenomena to be modelled.

Production systems use a series of condition-act statements. When a particular condition is recognized (e.g., green light), a particular action is executed (e.g., cross the street). Consequently, this architecture is most appropriate for situations when the resultant cognitive processes are serial in nature. Examples of tasks where production system models have been applied are the solution of algebra problems (Neves and Anderson, 1972) and the Tower of Hanoi problem (Auzai and Simon, 1979).

In distributed processing systems a number of different processes occur in parallel. In developing these systems, the critical problem is to develop procedures by which the different subsystems may communicate with each other (e.g., Anderson and Hinton, 1981). This architecture is most appropriate for complex tasks that require rapid execution. Examples of problems where this architecture has been applied are planning (Hayes-Roth and Hayes-Roth, 1978) and speech understanding (Lesser, Fennel, Erman and Reddy, 1975).

Memory activation architectures are used in situations involving stored knowledge. Here external or internal cues activate portions of memory. This architecture has been used to examine the processing and retrieving of information (Anderson, 1976) and processes involved in reading (McClelland and Rumelhart, 1981).

Once the architecture for a problem has been selected and a model constructed, procedures are required to test the model. Four types of data are generally used for testing the model: protocols, response times, recall information and error rates. When building models of high level processes, such as those occurring in problem solving, protocols are generally used. These protocols can be analyzed to determine what type of strategy is used by the subject and whether the strategy that is used is the one predicted by the model.

When examining lower level processes, such as memory retrieval, other measures need to be used since subjects generally do not have access to these processes. Hence response times, error rates and recall measures are the most useful. Generally, subjects are given a number of different conditions that will yield different response times, error rates and recall measures and then the model is run under these same conditions to determine if it yields the same pattern of differences.

Computational Process Models and Consumer Behavior

In a previous paper (Brucks and Mitchell, 1981), two criticisms were directed at much of the current information processing research in consumer behavior. First, it was argued that much of this research was directed at describing processes instead of explaining them. For instance, research using the information board paradigm has found that information search strategies are very heterogeneous across individuals. Effort should now be directed at developing theories that will explain such differences.

Second, not enough research has been directed at understanding consumer behavior in "real world" situations. For instance, much of our research has examined information search and integration processes from information boards where verbal attribute information is presented for a number of different alternatives simultaneously. However, the presentation of information in this form rarely occurs in the environment.

Understanding consumer information processing activities in more "real world" environments will require a shift in focus to internal processes and memory structures. This shift in focus will probably require the use of CP models for understanding and representing internal processes and memory structures.

The papers that follow in this session represent examples of CP models for examining consumer behavior. Each paper examines a different aspect of consumer behavior and each model has a different structure or architecture. The first paper by Eric Johnson (1982) examines information search and integration processes within the information board paradigm. Since these processes are frequently constructive, he uses a production system architecture which consists of a series of condition-act statements. Here a specific action is executed (e.g., a specific search pattern) whenever a specific condition is recognized. As an individual searches for information, his or her knowledge about the alternatives change which, in turn,

triggers a different production system which causes a different search pattern. A nice feature of his model is that it is not just a model of information search, but it also predicts what information will be recalled from memory after the search process.

The second paper is by Barbara Hayes-Roth (1982). In this paper she describes the cognitive processes involved in a purchase of a set of dishes. The processes that she described, which are probably very typical for many types of consumer purchases, take place over a period of months and are essentially opportunistic or constructive. The consumer acquires information about alternatives over time and formulates a new strategy for either more information search or for making a decision. This type of process has been modelled with the planning model that she has developed which uses a distributed processing architecture (Hayes-Roth and Hayes-Roth, 1980). Within this system there are different "experts" which, when called upon, make decisions based on the currently available information provided by other "experts."

The third paper, by Smith, Mitchell, and Meyer (1982), presents the structure of a model of the evaluation process. Within this model, the individual experiences a series of events and generalizations from these events may be formed into higher order memory structures. Each memory trace of an event has an emotional node (e.g., positive, negative or neutral affect) attached to it. If higher order structures are formed, evaluative nodes may also be attached to these structures. Evaluations, then, are formed by either activating the memory traces of the events or the higher order structures. Consequently, an activated memory structure architecture is used.

These papers all represent some initial work in using CP models to understand and represent different aspects of consumer behavior. The range of behavior that are explained by these models is very broad--ranging from information search strategies within the information board paradigm to constructive processes in planning a purchase. Obviously, CP models are also applicable in other areas of consumer behavior. For instance, we are currently working on a model of the cognitive processes that occur during exposure to an advertisement.

Summary

In this paper, we have presented an overview of computational process models. We have provided examples of a number of different CP models and discussed their use in cognitive psychology and artificial intelligence. The benefits of using these models seems to be great. For instance, they are an explicit representation of cognitive processes and structures that yield empirical tests of the representation. They also are a way of identifying the gaps in our understanding of these processes and structures. Finally, they provide a means of accumulating and testing our knowledge of a particular cognitive phenomenon over a series of empirical experiments.

Even though there are clear benefits from using these models, there are also a number of philosophical issues surrounding them. These include the scientific status of the model, the equivalency between the model and the human information processing system and methods of model testing.

Finally, we provided a brief overview of three different computational process models of consumer behavior and discussed different areas in consumer research where these models might be useful.

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OPPORTUNISM IN CONSUMER BEHAVIOR

Barbara Hayes-Roth, The Rand Corporation

Abstract

Consumers decide where to shop and what to buy. A complex, highly opportunistic cognitive process produces these simple behavioral actions. This paper presents a case study in product choice to illustrate consumer opportunism. It discusses the problem characteristics that demand opportunism and several manifestations of opportunism in consumer behavior.

Introduction

Consumers make several general categories of decisions, including where to shop, what categories of products to buy, and which particular products to buy within each category. Many of these decisions appear deceptively simple. For example, a consumer might decide to shop at Robinson's Department Store, to buy a new set of dishes, or to buy a service for ten in the pattern Imari Bouquet. Although each decision describes a simple behavioral action, the underlying cognitive process is a complex, sometimes chaotic interaction among many competing mental actions. I refer to this characterization of the decisionmaking process as the "opportunistic model." Several colleagues and I have formalized the model and investigated its implications for the first two categories of consumer decisions (Hayes-Roth, 1980a; 1980b; Hayes-Roth and Hayes-Roth, 1979; Hayes-Roth, Hayes-Roth, Rosenschein, and Cammarata, 1979; Hayes-Roth and Thorndyke, 1980). In the present paper, I apply the basic principles of the opportunistic model to the third category of decisions, product choice.

Buying Dishes: A Case Study in Opportunism

I will use a recent experience to make several points about the process of choosing among alternative products. While a single anecdote is not in any sense a proof of these points, I hope it will be a perspicuous and intuitively persuasive illustration. The process described below breaks down into a series of episodes, each comprising receipt or generation of relevant information, analysis of the problem in light of the information, and generation of either a product choice or a plan for choosing a product.

Episode 1

Information. During the the third week in September, I decided to have a dinner party for ten people on October 17. Because people in Los Angeles plan their social calendars in advance, I immediately called and invited all of the guests. I knew at the time that I had to deal with one small preliminary problem: I did not have enough dishes to serve ten people dinner. In fact I had two "sets" of dishes, Wedgewood stoneware and Lenox china. However, over the last ten years, twenty assorted pieces of my stoneware had broken and my china had grown to only seven place settings. In addition, I was operating under budget restrictions.

Analysis. I'll have to buy some new dishes. I frequently wish to use my stoneware for parties of varying sizes, but rarely wish to use my china, especially for large parties. Also, the stoneware is less expensive than the china. So, it makes more sense to replace the missing stoneware than to buy more china.

Plan 1. Replace the missing stoneware.

Episode 2

Information. On Friday, October 2, I began to execute Plan 1. Calling several department stores, I discovered that none had my stoneware pattern in stock, that my pattern was available only on an import basis (taking two to six months), and that Wedgewood would probably discontinue the pattern soon.

Analysis. I really love my Wedgewood stoneware. It is a distinctive pattern that attracts many compliments. It has sentimental value since I bought it eleven years ago while on my honeymoon in Europe. Also, if I ever want to complete the set, I should do it before Wedgewood discontinues the pattern. I can probably borrow dishes for the party.

Plan 2.

Order the stoneware and borrow dishes for the party.

Episode 3

Information. On Friday afternoon, October 2, I reviewed Plan 2 with my husband. He pointed out that British products are very expensive right now and that the new pieces of Wedgewood stoneware might cost as much as a whole new set of dishes from some other company or even as much as three new place settings of my china. He did not feel sentimental and preferred to complete the china. He also reminded me that much of our existing stoneware is chipped or scratched. Finally, he argued that a two to six month wait is also a considerable cost. I replied that several of the department stores had sent out sale announcements recently and that, if dishes were among the sale items, new stoneware or additional china place settings might well be a better bargain.

Analysis. I should be willing to pay as much, or a little more, to have a whole new set of dishes than simply to replace my broken stoneware. I should be willing to pay an additional premium to complete my china set.

Plan 3. If the china costs less than \$200 more than the stoneware replacements, buy the china. Otherwise, if new stoneware costs less than \$100 more than the replacements, buy new stoneware. Otherwise, replace the Wedgewood stoneware pieces.

Episode 4

Information. I immediately began to execute Plan 3,

calling department stores to find out about the sales. I discovered that the sales covered all dishes in stock and provided a 25% discount. I also learned that on Wednesday, October 7, one of the stores would be selling forty-five piece sets (service for eight plus serving dishes) of Chinese porcelain for \$100. The saleswoman on the telephone said the porcelain is very beautiful.

Analysis. The Chinese porcelain is extremely inexpensive. I could probably buy two sets (service for sixteen) of that for less than the cost of any alternative. It probably has an Oriental pattern, which I would like. With the sales, I could also probably do better buying either new stoneware or additional china than by replacing my Wedgewood stoneware pieces.

Plan 4. If the Chinese porcelain is nice, get that. Otherwise, revert to Plan 3.

Episode 5

Information. On Saturday morning, my mother-in-law called and I reviewed the problem with her and asked her advice. She said to forget the Chinese porcelain because it is too thin and fragile. She said bone china is much stronger and I should either get that or some kind of stoneware. She also told me that my sister-in-law had recently mentioned something to her about a Mikasa factory outlet that had a large inventory and exceptional prices, but she couldn't remember where it is. She said my sister-in-law was out of town, but would return sometime on Monday, October 5.

Analysis. It's silly to get fragile dishes for frequent use, so the Chinese porcelain is inappropriate. Mikasa makes both china and stoneware. Also, they probably have dishes with an Oriental pattern--which is what I am looking for. By shopping at the Mikasa outlet, I could probably get a good price on stoneware and maybe even afford their china.

Plan 5. Return to Plan 3, with special consideration for the Mikasa outlet.

Episode 6

Information. On Saturday afternoon, I began executing Plan 5 and visited several department stores. I discovered that replacing the Wedgewood stoneware pieces would cost several hundred dollars--close to the criterion for preferring the other alternatives. I was informed that an import order could take six to twelve, rather than two to six, months to fill and that the British might not even have my pattern in stock. It was suggested that I might find it in some of the Canadian stores and that a friend in Canada might be able to find it and send it. I also discussed the relative merits of porcelain, bone china, and stoneware with the saleswoman. She informed me that porcelain and bone china are equally strong and that both are stronger than stoneware. I observed that both porcelain and bone china, even on sale, were outside of my budget. I saw a Mikasa stoneware pattern that I liked (Imari Bouquet) and the sale price was within budget.

Analysis. I don't have a close friend in Canada and regret not having bought the Wedgewood stoneware when I was in Vancouver last month. The Chinese porcelain may be OK after all. Mikasa's Imari Bouquet would also be acceptable. I could probably get it for a better price at the Mikasa outlet, but taking the time to investigate this possibility might mean that the department stores run through their existing stock. It's also possible that the outlet won't have Imari Bouquet in stock. Nonetheless, I might save a considerable amount of money by buying it there if I can.

Plan 6. Find out about the Mikasa outlet on Tuesday: Do they have Imari Bouquet? Do they sell it at a lower price

than the sale price in the department stores? Is the difference large enough to warrant the hour and a half round-trip drive to the warehouse? Investigate the Chinese porcelain on Wednesday. Use the information gained to decide among: Imari Bouquet from the Mikasa outlet, Imari Bouquet from the department store, Chinese porcelain.

Episode 7

Information. On Tuesday morning, I began executing Plan 6. I got the telephone number of the Mikasa outlet from my sister-in-law and called. I learned that the outlet did not have Imari Bouquet on the floor or even in the warehouse. It would take two months to order it from Japan. However, they did have a large inventory of other patterns. They could not give me prices over the telephone, but assured me that people come considerable distances to buy dishes at the outlet.

Analysis. Going to the Mikasa outlet offers a considerable advantage (a very low price), but considerable uncertainty. It is also a long drive and I cannot go until the weekend. By then the department stores will probably run out of Imari Bouquet and I may not find anything I like at the Mikasa outlet. However, if they really do have a large inventory, there is a good chance they'll have something else I like.

Plan 7. Investigate the Chinese porcelain on Wednesday. If it is nice, buy it. Otherwise, go to the Mikasa outlet this weekend and buy something.

Episode 8

Information. On Wednesday morning, I went to see the Chinese porcelain. Although it was very pretty, it came only in delicate flower patterns, which I did not want.

Analysis. I should go to the Mikasa outlet right away just in case they don't have anything. That way, I can still go back to the department store sales if necessary.

Plan. Go to the Mikasa outlet. If they do not have something satisfactory, go back to the department stores.

Episode 9

Information. I immediately went to the Mikasa outlet. They had a large variety of dishes at excellent prices--much less than the sale prices in the department stores. I still could not afford the china, but there were many stoneware patterns from which to choose. Unfortunately, none of them was very Oriental. They were all delicate flower patterns, which I didn't want. I decided to call the department stores to see if they still had Imari Bouquet on sale--they did, but they didn't have ten place settings. I had nearly resigned myself to getting one of the flower patterns at the Mikasa outlet, but decided first to ask the saleswoman again about Imari Bouquet. She said that although it wasn't on the floor, it was in the warehouse and she could sell it to me for a 25% discount for pick-up in seven to ten days.

Analysis. I am happy to have found a complete set of Imari Bouquet at an acceptable price. I am only concerned about getting it in time for my dinner party--exactly ten days away. I'll take the chance.

Plan. Order the Imari Bouquet. Call next week and arrange to pick up the dishes before Saturday, October 17.

Postscript

The Mikasa outlet had such a variety of things at such

excellent prices that I decided to do some of my Christmas shopping early. I bought gifts for eight of the people on my list at prices 50% lower than what I had budgeted. I also took advantage of a special sale they were having to buy crystal wine and champagne glasses at a remarkable savings. And, I picked up my dishes on Friday, October 16, in plenty of time for my dinner party, which was a great success.

Functions of Consumer Opportunism

The most obvious characteristic of the process described above and, I believe, of consumer behavior in general, is its pervasive opportunism. In fact, the problems facing the consumer, where to shop and what to buy, virtually demand an opportunistic approach. Thus, what may appear to be a haphazard and disorderly problem-solving method is actually a functional and highly adaptive method. Consider the following problem characteristics and the consumer's response.

1. Goal Definition

Problem Characteristic. The problems facing consumers usually do not specify an operational goal. For example, in the case study presented above, the initial goal was to acquire enough dishes to serve dinner to ten people. This goal did not specify whether the dishes should be stoneware or china, what brand or pattern the dishes should be, or which particular pieces (dinner plate, soup bowl, etc.) were needed.

Consumer Response. The consumer operationalizes the goal. Because of the vagueness of the initial goal, the consumer can and frequently does operationalize it in alternative ways. The operationalization may include many informal component goals and constraints, some compatible and some conflicting. Some goals are formulated at the start of problem-solving activity; others develop along the way. For example, at various times in the process described above, I had the following component goals: get enough dishes to serve ten people dinner; stay within budget; keep the current dishes; complete the china.

2. Problem-Solving Method

Problem Characteristic. There is no operational space of alternative steps for solving the problem. The consumer has no hard and fast rules for discriminating among goals or resolving conflicts among them. For example, there was no sequence of steps that would enable me to systematically explore alternative dish-buying opportunities while guaranteeing a satisfactory final result.

Consumer Response. The consumer generates heuristics for achieving formulated goals. Just as goals may conflict, some of the associated heuristics may also conflict. Similarly, the consumer generates some heuristics at the start of problem-solving activity, but may generate others along the way. For example, in buying my dishes, I used heuristics such as: spend a little more money for three place settings of china than for a new set of stoneware; consider ordering stoneware replacements from Wedgewood in England; risk losing the Imari Bouquet stoneware for the chance to get a better price at the Mikasa outlet; buy sturdy dishes for frequent use; prefer dishes that are attractive and distinctive and have an Oriental look.

3. Control Regime

Problem Characteristic. Like most problem-solving tasks, the consumer's task presents itself as a goal to be achieved (e.g., obtain dishes to serve dinner for ten).

However, because consumer behavior is so constrained by economic and other constraints (e.g., stay within budget, get attractive dishes), it is not feasible to follow well-defined, goal-driven problem-solving strategies such as divide-and-conquer or successive-refinement.

Consumer Response. The consumer responds with a combination of goal-driven and data-driven problem-solving activities. For example, in pursuit of the goal to replace my missing stoneware, I called and visited several department stores, calculated costs, etc. On the other hand, information about the cost of replacing the stoneware and the time required to get it lead me to revise my goal.

4. Information Flow

Problem Characteristic. All of the information useful in choosing among goals and heuristics may not be available at the start of problem-solving activity. Instead, information arrives over time, sometimes throughout the course of the problem-solving activity. For example, the case study described above shows useful new information arriving in each episode, extending over a period of several days.

Consumer Response. The consumer responds to the flow of information either by ignoring it or by incorporating it in the decisionmaking process as it arrives. For example, in buying my dishes, I might have simply pursued my original goal, replacing the stoneware and disregarding information about the relative cost or availability of other kinds of dishes. Instead, I was extremely opportunistic, responding to each new piece of information as it arrived. Further, the information collection process itself may be opportunistic. For example, early in the dish-buying process, I ruled out porcelain for fragility. Later, when I was discussing Wedgewood stoneware with a saleswoman, I took advantage of the opportunity to solicit her opinion about porcelain. The new information lead me to revise my plan.

5. Opportunity Flow

Problem Characteristic. Just as relevant information arrives over time, various opportunities for solving the problem arrive over time. They also disappear over time. For example, the opportunity to buy dishes at one of the department store sales disappeared midway in my decisionmaking process when the stores exhausted their supplies of Imari Bouquet. Conversely, the opportunity to buy Chinese porcelain became available only after I had already engaged in a fair amount of problem-solving activity.

Consumer Response. Again as in the case of information flow, the consumer responds to the flow of opportunities either by ignoring them or by accommodating the decisionmaking process to attractive opportunities. My dish-buying behavior showed an extreme accommodation to interesting new opportunities.

Conclusions

I would like to anticipate possible reservations about the case study "method" used in this paper. As discussed above, I intend it primarily as a pedagogical device. However, the example may appear to some to be exaggerated or otherwise unrealistic. In response, I point out that the case study is an accurate account of my experience and behavior and that Episodes 1-7 occurred before I even conceived the approach I would take in this paper. (In fact, my design for this paper was an opportunistic response to the need to write it and the salience of an obviously relevant on-going experience.) Episodes 8-9 did occur during the writing of the paper, but I certainly did

not deliberately contrive the problematic events in those episodes and I wish I could contrive more of the fortunate ones!

Thorndyke, P. W., and Hayes-Roth, B. (1980), Decision-Making During the Planning Process, N-1213-ONR.

Doubters aside, the extremity of my opportunism in choosing and buying dishes raises an interesting question: What determines the degree of opportunism in a consumer's behavior? I think there are two factors: individual differences and specific task demands. Some of my previous research on planning shopping trips revealed substantial individual differences in planning style. Subjects were given a list of desirable items, some contextual information about why each item was needed, and a map showing the locations of stores, parking lots, etc. Because of time constraints, subjects had to decide which items to buy as well as where to buy them and how to travel between successive stores. Some subjects attended to only a small number of immediately obvious factors and quickly generated a plan. Other subjects attended to a greater variety of factors, sometimes noticing and incorporating new factors after the planning process was well underway. Although these subjects expended more time and cognitive effort than the former subjects, they also produced better (more efficient, more sensitive to time constraints, more realistic, and more comprehensive) plans (Goldin and Hayes-Roth, 1980). Specific task demands are also important. In the case study, I was trying to make a decision involving a substantial amount of money, while honoring a tight budget. In this kind of situation, it makes sense to spend time and energy in order to buy a satisfactory product at an acceptable price. There are also probably interactions among these two factors; some people are more sensitive to certain kinds of task demands than others.

I have tried to illustrate the prevalence and functionality of opportunism in one type of consumer behavior, product choice. As mentioned above, some of my other research has shown that opportunism is similarly important in other types of consumer behavior, such as deciding which categories of products to buy (dishes, a car, a suit, etc.), or deciding where to shop. That research, as well as the case study presented above, also revealed interactions among these different types of decision processes. For example, in trying to decide which dishes to buy, I discovered the existence of the Mikasa outlet and opportunistically decided to shop there. Later, while choosing among alternative dishes at the Mikasa outlet, I discovered that the outlet also sold several other categories of products at good prices and opportunistically decided to buy some of them. These observations suggest that, cognitive opportunism may characterize the larger constellation of consumer behaviors.

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A COMPUTATIONAL PROCESS MODEL OF EVALUATION
BASED ON THE COGNITIVE STRUCTURING
OF EPISODIC KNOWLEDGE¹

Terrence R. Smith, University of California,
Santa Barbara
Andrew A. Mitchell, Carnegie-Mellon University
and
Robert Meyer, Carnegie-Mellon University

Abstract

An overview of the architecture of a computational process model of evaluation and judgment is presented. The model consists of three components: declarative memory, working memory and production systems. Declarative memory contains both episodic and semantic knowledge and a goal structure. The production systems form generalized knowledge from episodic knowledge and define a number of different processes used in forming evaluations and judgments.

Introduction

In consumer behavior, as in most other behavioral sciences, it is of critical importance to understand how humans make evaluations and judgments. Although a number of different theoretical and methodological approaches have been used to study evaluation and judgment, it is safe to say that we do not possess a clear understanding of how they are formed. We know, for instance, that human judgments are frequently subject to bias (e.g., Kahneman and Tversky, 1973) and context effects (e.g., Tversky and Kahneman, 1981), however, we do not understand the reasons for such bias and context effects.

In order to understand how humans make evaluations and judgments, we believe that it is important to understand the cognitive processes that underlie the formation of evaluation and judgment. Since these cognitive processes and their interactions are likely to be complex, we believe that it is necessary to construct a computational process (CP) model of them (e.g., Mitchell and Smith, 1982). In constructing such a CP model, there are several elements that must be included in the model that appear critical to the evaluation process. First, the evaluation process is clearly dependent on the content and structure of an individual's knowledge. In particular, we believe that the knowledge structure should contain both episodic knowledge as well as general or semantic knowledge, since we believe that episodic knowledge both underlies many cases of evaluation and judgment and provides a basis for

semantic knowledge. For example, the availability heuristic (Kahneman and Tversky, 1973) suggests that individuals may search for specific instances of events when comparing how frequently two objects or events occur. In addition, evaluations based on episodic and semantic information may differ (e.g. Tybout, Calder and Sternthal, 1981).

Second, it is important to specify the processes by which an individual's knowledge structure is accessed, modified or structured during the processes of evaluation and judgment. In particular, evaluations may be viewed as resulting from processes by which a knowledge structure is searched for the most appropriate information given the current context. Third, we believe that the CP model must represent the affective feelings of the individual. In most situations, we believe that affective feelings or emotion play an important role in forming evaluations or judgments. Finally, we believe that the model must also represent the formation of expectations and inferences. In evaluating an object, for example, we believe that individuals form expectations about the object and its performance and that these expectations guide much of the evaluative processing that occurs.

We are currently developing a CP model of evaluation and judgmental processes. In this paper, we present a basic overview of the model. Our modelling strategy is to explain the results of a number of empirical studies using our current knowledge concerning memory and cognitive processes. The empirical results and theories of cognitive psychology provide the constraints on our model. We realize that these constraints do not completely specify the model and that additional empirical studies are necessary. We hope, however, that these constraints will allow us to make considerable progress in formulating the model. We emphasize that this paper represents an initial formulation of the model structure. We view the building of the CP model as taking a number of years with many different model-test-modify cycles. Hence, future versions of the model may be quite different from the model presented here.

In the remainder of the paper, we first discuss the empirical constraints and the theoretical basis for our CP model. We then present an overview of our model of evaluation.

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Empirical Constraints

Our initial empirical constraints derive from three general areas of research. The first area of research is attitude theory, and more specifically the attitude theory of Fishbein (e.g., Fishbein and Ajzen, 1975) and self perception theory (e.g., Bem, 1972). According to the theory proposed by Fishbein, attitudes have an informational basis. In particular, Fishbein assumes that individuals have a number of concepts associated with the attitudinal object. These concepts are generally assumed to be verbal generalization formed about the attitudinal object. The individual's attitude toward an object is the product of the strength of the associations between the attitudinal object and the concept and the evaluation associated with the concept summed over all the salient concepts or associations. In addition, attitude change can only occur by changing the strength of these associations, the evaluation of the concepts or the salience of the concepts.

In self-perception theory, it is assumed that individuals do not base their attitudes on generalized beliefs concerning an object, but rather search their memory for instances of their behavior toward the object. For instance, when individuals are asked whether they like rye bread, they search their memory to determine whether they have purchased rye bread. If they find such instances and cannot attribute an external cause to the instance, they will probably reply that they like rye bread, while if they cannot find such instances, they will reply in the negative. The main difference between Fishbein's attitude theory and self-perception theory seems to be that Fishbein's theory assumes that attitudes are based on generalized knowledge while self perception theory assumes that attitudes are based on episodic knowledge. It should be noted, however, that Fishbein has never stated specifically that his theory is based only on generalized knowledge. Hence his theory may be interpreted to include episodic information (e.g., see Mitchell and Olson, 1981).

A partial resolution to these conflicting approaches may be based on the research of Chaiken and Baldwin (1981). They found that when subjects exhibited a weak relationship between their attitudes toward a concept and the cognitive base of this attitude, they were more influenced by the recall of their past behaviors concerning the concept than subjects who exhibited a strong relationship between the affective component and the cognitive component. These results suggest that when individuals have generalized knowledge about an object and when this information is integrated in a tightly knit knowledge structure, attitudes may be primarily based on generalized knowledge. When they lack such generalized knowledge or when such knowledge is not well integrated, attitudes may be primarily based on the recall of their behavior with respect to the object.

The second area of research is behavioral decision theory which has examined judgmental biases. This research indicates that individuals use a number of heuristics in forming judgments and that these judgments are subject to a number of specific biases. Among the biases are availability, concreteness, and representativeness (Kahneman and Tversky, 1973; Tversky, 1973; Nesbitt and Ross, 1980). The availability heuristic occurs when individuals make judgments about the frequency of the occurrence of an event. With these types of judgments it is suggested that individuals search their memory for instances of that event and make judgments based on the recall of these events. Since the recall of certain types of events may be biased, the resulting judgments will also be biased.

When individuals rely on both abstract information and information about specific events, the concreteness heuristic suggests that they will tend to emphasize the latter. For example, knowledge that a neighbor had a bad experience with a particular brand of automobile may be weighted more heavily in evaluating that brand of automobile than the results of a survey of a large number of owners indicating a low repair rate. The empirical evidence for these effects, however, are not consistent (Taylor and Thompson, 1982).

Finally, with representativeness, judgments are based on how close the fit is between the instance and previous instances or generalizations of a class of objects. In these situations, individuals frequently ignore base rate information. The representativeness bias often occurs when subjects are given a description of an individual and are asked to judge whether that individual is a member of a particular class of individuals (e.g., engineer or professor of Chinese history). Under these conditions, individuals behave as though they only consider the match between the target individual and the stereotypes of the two classes. They tend to ignore the fact that one class of individual occurs with greater frequency in the population.

The third area of research is person memory. Recent research in this area has examined the recall of events involving a particular person (e.g., Hastie and Kumar, 1970; Hastie, 1981; Srull, 1981). In this research, subjects are provided with information about a target individual and are then given a series of descriptions of the target individual's behavior which are either congruent or incongruent with the original information. The findings indicate that subjects have better recall for the incongruent information. Hastie (1981) has proposed an associative network model of memory to explain these results. In the model, the behavior of the target individual is linked to a subject node for that individual, while links are formed between the different behavioral manifestations. More links, however, are formed for the incongruent behavior because the individuals spend more time trying to interpret incongruent behavior.

The significance of the three sets of empirically based constraints lies both in the behavior that the CP model should exhibit and in the architecture of the CP model. In particular, the model should exhibit behavior that depends on access to episodic knowledge in some contexts and more general or semantic knowledge in other contexts. The output of the CP model should also exhibit the biases characterizing heuristic judgment, as well as having a tendency to recall incongruent rather than congruent behavior. Hence the architecture of the CP model should be designed to allow the elicitation of such behavior. In particular, this involves considerations of how an individual's knowledge structure is organized and how it is accessed in contexts requiring evaluations and/or judgments.

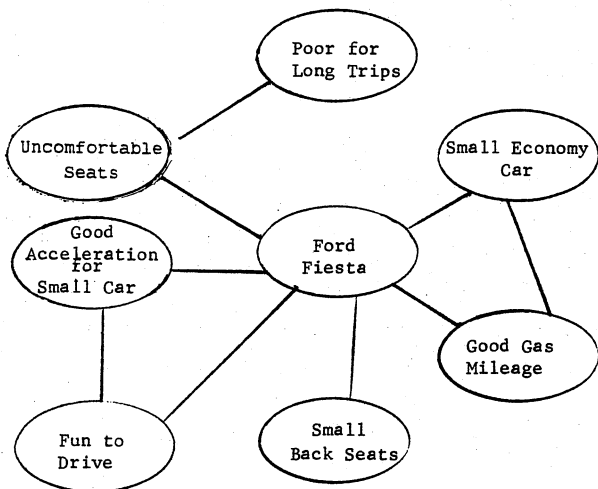
Theoretical Basis

While the theoretical basis for the model is provided by a large body of research in both artificial intelligence and cognitive psychology, three specific areas of research have a special significance. The first area of research concerns network models of semantic knowledge (e.g., Anderson, 1976). Within these models, generalized knowledge is organized and stored in memory in the form of propositions. The links between the concepts represent the relationships between concepts in

the propositions and the strengths of these relationships (Figure 1). The retrieval of information from the semantic network occurs through spreading activation. One or more nodes in the network are activated and activation spreads through the network according to the strength of the associations in the linkages. When a node achieves a sufficient level of activation, it too becomes activated. The stronger the associations between two nodes, the more likely that one node will be activated when the other one is activated.

FIGURE 1

Associative Network Model of Memory



The probability of recalling a particular proposition is a function of the strength of association between the subject of the proposition and the object of the proposition and the strength of the associations linked to that subject from other propositions (e.g., Anderson, 1976). Consequently, the other propositions linked to the same subject interfere with the retrieval of a particular propositional link to that subject. Recently, it has been suggested that propositions with the same general topic may be linked together in subdivisions of the structure so that interference occurs only within a specific topic pertaining to that subject (Smith, 1981).

Activating two nodes in a memory structure may result in the activation of a different set of nodes than activating only one of the nodes. This may occur if the strength of the association between one of the activated nodes and other nodes is relatively weak and the other activated node is linked to these other nodes. If only one node is activated, activation may not spread to the second node because the link is relatively weak. However, when both nodes are activated, the node will receive activation from both nodes which may push the activation over the threshold level.

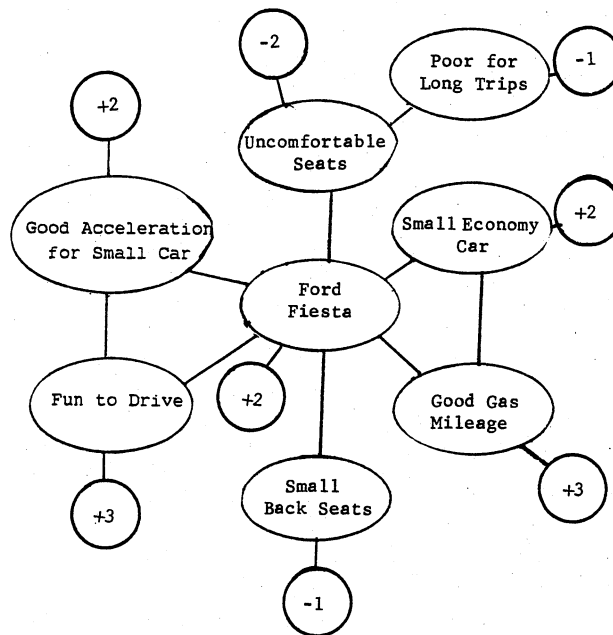
A second area of research is exemplified in the work of Schank and his colleagues on memory organization. In their earlier research on "understanding" (Schank and Abelson, 1977), they emphasized the importance of the episodic basis of human knowledge structures. In more recent research (Schank, 1981a, 1981b), they have

emphasized the importance of two distinct knowledge structures: Memory Organizational packets (MOPs) and Thematic Organizational packets (TOPs). MOPs contain knowledge about events and objects, while TOPs contain generalized knowledge about abstract concepts (e.g., justice). The general knowledge about events and objects contained in MOPs guide our everyday interactions with people and objects and are used to form our expectations. For instance, when we go to a store to purchase clothing, we have a general knowledge of what happens in such situations, and this knowledge forms the basis for our expectations. When a particular event does not conform to our expectations, however, it becomes linked to the appropriate MOP. In this respect, the model is somewhat similar to the one proposed by Hastie (1981). Recently, Abelson (1981) has suggested that emotions occur primarily when a particular event does not meet our expectations. A similar proposal was made by Simon (1967) a number of years ago.

The final area of research is represented by the recent work of Bower and Cohen (1982) in which emotion is represented as nodes in a semantic network model of memory. The model was developed to explain the results of a series of experiments in which it was found that mood can both facilitate and impede learning. Subjects who learned word pairs were able to recall more associations when they were in the same mood at both learning and recall (Bower, 1981). In the model proposed by Bower and Cohen (1982), emotion can be treated as a node in memory, although the resulting link will not be defined by a particular relationship (Figure 2). When an individual is in a happy mood and given the first word of a learned associated pair of words, the activation spreads from the provided word and from the emotional node which increases the amount of activation that spreads to the target word.

FIGURE 2

Associative Network Model With Evaluative Nodes



The significance of this theoretical research lies in the computational structures and processes that it suggests as a basis for our CP model of evaluation. In particular, the research indicates that both episodic and semantic knowledge structures may be important in models of cognitive process, while activation spread is an important mechanism for accessing such structures. Furthermore, the work of Bower and Cohen suggests how affect may be incorporated into both episodic and semantic structures.

Domain of Applicability

There are two basic evaluation and judgment processes that we would like to model. The first is the formation of judgments and evaluations that are based only on internal knowledge. Examples of these judgments are "How many deaths are due to automobile accidents annually in the United States?" and "What do you think of the new Chevrolet Cavalier?" In both of these instances, individuals must rely on information stored in long term memory in making these judgments. The important questions in modeling these processes are what information is activated and what cognitive processes are used in forming these judgments or evaluations.

The second type of evaluation and judgment involves the presentation of new information. This information may be about a new object, such as a new brand of beer, or it may be new information about a known object. In the former case, the information about the new object is evaluated using previously stored information while in the latter case the new information is integrated with the previous information. If an evaluation had previously been formed, then this evaluation may be changed based on the interpretation of the new information.

Assumptions of the Model

There are a number of assumptions that we have used in our initial formulation of the model. Most of these assumptions are derived from models and theories from cognitive psychology and artificial intelligence. These assumptions are:

1. The basic unit of the model is an episode which is the representation of an event experienced by the individual.
2. Generalized information may be extracted from episodes and this information is represented by propositions.
3. Controlled processing is required to generate this information from episodes.
4. Recall of information from long-term memory occurs through spreading activation.
5. Affect and evaluation are represented by nodes in memory. Each affective and evaluative node has a valence associated with it.
6. Affective nodes are only linked to episodes. Evaluations are linked to structures of generalized knowledge. Affective nodes may be linked in memory.
7. Information decays from declarative memory. Episodic knowledge decays at a faster rate than semantic knowledge.

8. There are a number of goal states that the individual would like to achieve or avoid. An evaluation is connected to each goal state.

Evaluation Processes

Currently we are considering four general processes involved in evaluation. The first involves pattern matching (Hayes-Roth, 1978). Here information about a new object triggers a particular structure in memory that has an affective node attached to it and the value of this node is then transferred to the new object. Mitchell (1980, 1982), for instance, has suggested that these processes may explain the results of the Mitchell and Olson (1981) experiment. Here subjects were shown advertisements for new brands of facial tissue which contained positively evaluated photographs. The results of the study indicated that products featured in advertisements with positively evaluated photographs had more favorable attitudes than could be predicted from the beliefs that were formed.

The second process involves the activation of the knowledge (either generalized or episodic knowledge) associated with a particular brand. This activation process activates the affective or evaluative nodes associated with the object and these evaluations are combined to form an evaluation of the object. Note that this process occurs only when the evaluation is based on internal information and there are evaluative or affective nodes attached to each association with the object.

The third process occurs when the individual acquires new information about an object and must form an evaluation of this information in order to evaluate the object. Initially, the individual may make inferences about the object and generate counterarguments and support arguments. Then, if the information is accepted, we assume that the individual attempts to link the new information to a particular goal state. For instance, if the individual learns that a new brand of toothpaste has flouride, he or she might link this information to a goal state of preventing tooth decay. Since this goal state has a positive evaluation, the individual would evaluate the knowledge that the new brand of toothpaste has flouride positively. In some cases, these processes may be based on the activation of knowledge structures for classes of objects (Fiske, 1982).

The final process is mental simulation. If an individual has difficulty linking information about a new object to goals, he or she may produce a mental simulation of using the object. For instance, an individual may mentally simulate driving a particular automobile, wearing a particular coat or cooking a meal in a particular kitchen. This may help the individual determine if the object will be useful in obtaining a particular goal state.

Overview of Knowledge Representation

As discussed previously, we hypothesize that episodic and semantic knowledge occur in the same knowledge structure; that much of our semantic knowledge is derived from episodic knowledge by inferential processes; and that semantic knowledge guides the acquisition of further episodic knowledge. We exemplify such structures in Figure 3, in which there is a node for Budweiser beer and a number of generalized concepts linked to the central node. There are also a number of episodes linked to the central node and related nodes at the semantic level. These episodes include product usage experience, advertisements and other events associated with Budweiser.

In the model, the individual experiences a number of events that involve the object (e.g., product usage). While experiencing these events, the individual may form linkages between the event and the object and may extract generalized knowledge from these events which then gets stored at a higher level, although this does not necessarily happen. For example, an individual may drink Budweiser beer at a party, but because of the excitement of the party, may not link the consumption experience to Budweiser. Instead, the event may be linked to an entirely different node (e.g., fun party node). Even if the linkage is made, the individual may or may not extract generalizable knowledge from the event.

Based on this model, we would expect to find different individuals possessing very different knowledge structures concerning a particular object. Some individuals might have structures containing both episodic and generalized knowledge (Figure 3); others

may only have linkages only to episodic knowledge (Figure 4); while still others may have very little episodic knowledge linked to an object (Figure 5).

FIGURE 4

Knowledge Structure Containing Only Episodic Knowledge

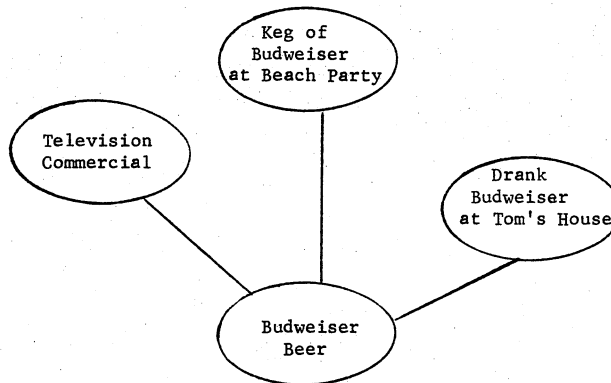


FIGURE 3

Knowledge Structure for Budweiser Beer

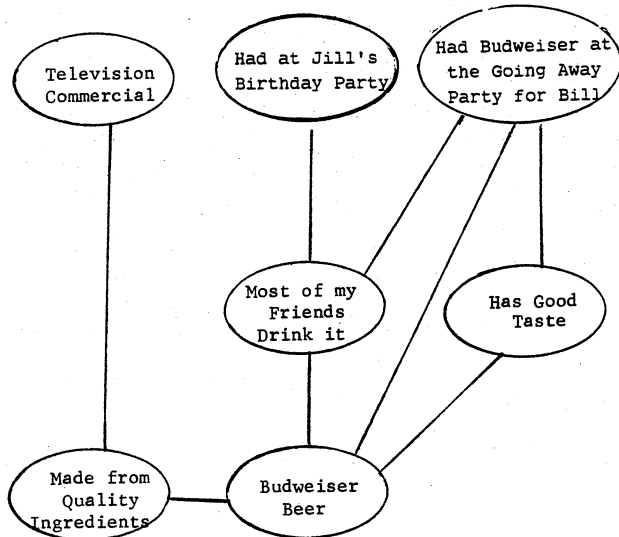
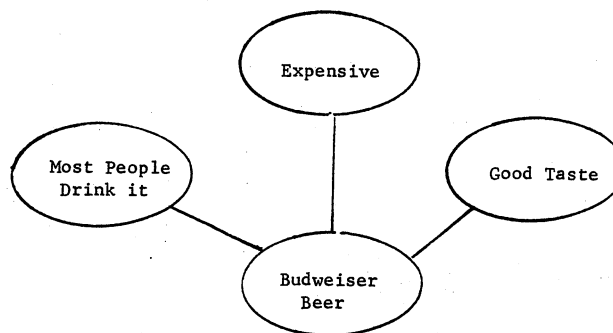


FIGURE 5

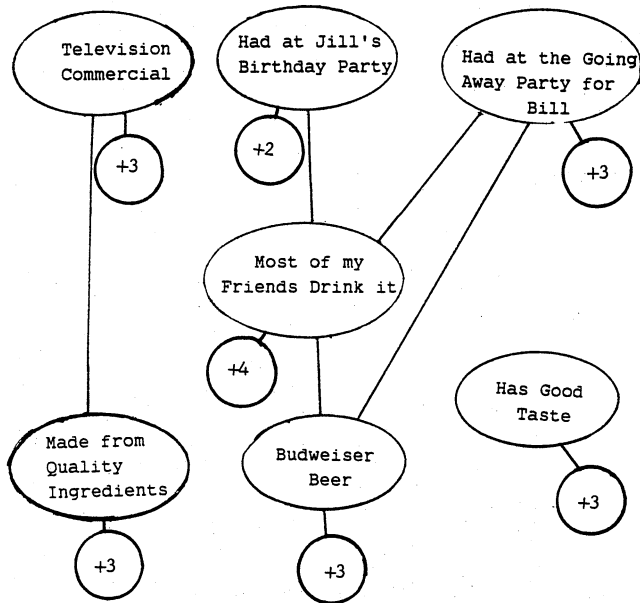
Knowledge Structure Containing Only Generalized Knowledge



After Bower and Cohen (1982), we represent affect with nodes in the knowledge structure. These nodes may take on positive, neutral or negative values. Each episode in memory has an associated affective node, which becomes activated when the episode is recalled. In addition, these episodes may also be connected to the object and to the concepts associated to the object. In Figure 6, for example, there are affective nodes connected to each of the episodes linked to Budweiser beer, there is an evaluative node connected directly to Budweiser beer and two of the generalized concepts linked to the Budweiser node (e.g., tastes good and malty taste). The affective node attached to the representation of the television commercial might be conceptualized as the attitude toward the advertisement (Mitchell and Olson, 1981).

FIGURE 6

Knowledge Structure with Evaluative and Affective Nodes



An individual who possesses little generalized knowledge about an object and is asked to evaluate it might activate the episodes linked to the object which would in turn activate the affective nodes associated with the episodes. An individual having both generalized knowledge and episodic knowledge might form an evaluation based on both types of knowledge. We hypothesize that the relative impact of each type of information will depend on the strength of the associative links. In some cases, a particular episode may be strongly linked to the central node (e.g., a bad usage experience) and this episode will be activated whenever the central node is activated. In this case we would expect the evaluation connected with this episode to have a strong impact on the resulting evaluation. In other cases, no episode will be strongly linked to the central node and the evaluation will be based almost entirely on the generalized knowledge. Finally, if an evaluation of the object is stored at the central node, this evaluation may be used.

Components of the Model

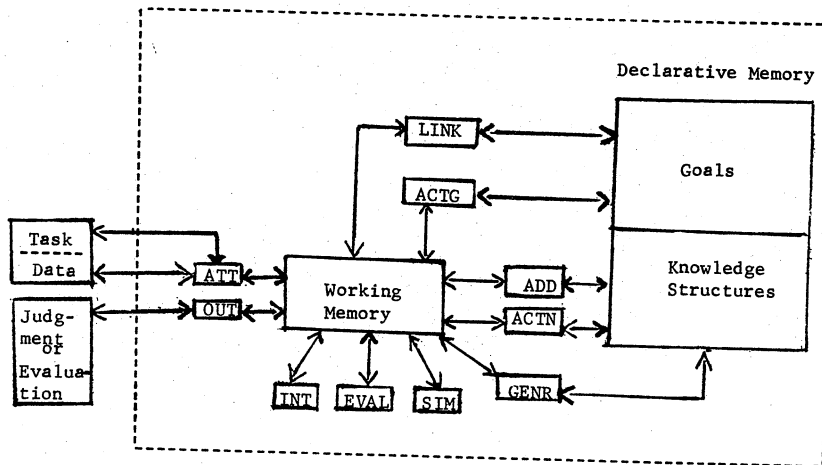
The model consists of three basic components--a declarative memory, working memory and production systems (e.g. Brucks and Mitchell, 1981) and is shown in Figure 7. The declarative memory contains both episodic and semantic knowledge linked in a network structure. In addition, declarative memory contains a goal structure. Working memory includes both activated information from declarative memory and information that is attended to from the environment. The production systems consist of a series of condition-act statements where the condition portion of the statement matches on the contents of working memory.

Our current conceptualization of the model contains the following production systems:

- GENR: Uses current goals to create generalized knowledge in the form of propositions from activated episodes.
- ADD: Uses current goals to add new episodes and generalized knowledge from working memory to declarative memory.
- ACTG: Uses the contents on working memory to activate goal structures and makes these structures available in working memory.
- ACTN: Uses the contents of working memory to activate episodic and semantic knowledge in declarative memory and makes this knowledge available in working memory.
- LINK: Uses current goals to link generalized knowledge from working memory to a goal.
- INT: Interprets information in working memory and generates inferences, counterarguments and support arguments using knowledge from declarative memory and current goals.
- EVAL: Integrates activated affective and evaluative nodes to form an overall evaluation of a concept or forms a judgment.
- SIM: Uses the contents of working memory to simulate an episode based on current goals and the task.
- ATT: Attends to information in the environment based on the task and current goal structures and makes this information available in working memory.
- OUT: Outputs the judgment or evaluation.

FIGURE 7

Conceptual Model



With these production systems and our conceptualization of declarative memory, we believe that we will be able to represent the cognitive processes involved in evaluation and judgment. For instance, when asked to make an evaluation of an object using only the information in declarative memory, ACTG would activate the appropriate goal structures and ACTN would activate the appropriate knowledge structures and evaluative or affective nodes and make this information available in working memory. Based on the goals and the information in working memory, INT, GENR or LINK may be used to form inferences or link generalized knowledge to goals to form an evaluation of that knowledge. Finally, EVAL would take the affective and evaluative information in working memory and form an evaluation of the object. Further experiments will be required to specify these production systems and the different types of knowledge structures that are required.

Summary

In this paper we have discussed the basic structure of a CP model of evaluation and judgment. The model has been developed to provide an understanding of the mental processes involved in forming judgments and evaluations based on information stored in long term memory, information about a new object and new information about a known object. The model contains three components: declarative memory, working memory and production systems. Declarative memory contains the goal states of the individual and episodic and generalized knowledge. Affective and evaluative nodes may be attached to each of these structures.

As discussed in the introduction, this structure represents over initial thinking on the model. We fully expect that it will undergo many changes after a more thorough review of the literature and after some initial experiments to test aspects of the model.

It is our hope that the construction of this model will provide a better understanding of the cognitive

processes underlying judgment and evaluation and will result in the identification of general principles which underlie these processes. We also hope that the model will provide a better understanding of the evolution of knowledge structure over time and provide insights into when and why current models of judgment and evaluation (e.g. conjoint measurement) may fail to provide good predictions. For instance, we would predict that evaluations based primarily on episodic knowledge would be relatively unstable over time since episodic knowledge decays at a faster rate than semantic knowledge and the activation of episodic knowledge is probably more context dependent.

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Changing Conceptual Views of Children's Consumer Information Processing

Ellen Wartella, University of Illinois

Abstract

This paper will consider several conceptual distinctions for further conceptualization of children's consumer information processing. Two particular concerns are addressed: (1) the issue of the appropriateness of competence vs. performance models of children's abilities and (2) the implications of such models for understanding children's processing of television advertising under varying task situations.

This paper will examine several conceptual issues regarding models of children's consumer information processing of television advertisements. It will discuss findings which have been accumulating in the past several years which suggest that we may need to develop some conceptual distinctions regarding the nature of how children perform the task of processing television advertising information. I especially want to address two kinds of concerns in this literature: (1) the issue of competence vs. performance models of children's cognitive ability as appropriate models of children's consumer information processing; (2) in light of this discussion, the paper will comment on what we know about watching television advertising under varying conditions of viewing.

Let's consider the first issue. Models of children's consumer processing have been wedded to theories of cognitive development, particularly Piaget's theory of intellectual functioning. Similarly, most of the critiques of this literature have questioned the assumptions of Piaget's theory as a way of criticising the body of children's consumer studies. For instance, Chestnut's (1979) concerns about research on children's consumer information processing rests on his critique of Piaget's theory on methodological and conceptual grounds. Methodologically, he points to criticism of the confounding of effects of task design in Piaget's studies and the inappropriateness of using verbal response as a test of the young child's abilities. When tasks are improved and nonverbal methods employed, cognitive skills are no longer identified with specific stages (of development) he argues. Similarly, conceptual criticism focuses on the Piagetian assumption that cognitive structures are invariant with stage descriptions of development. As Siegel and Brainerd (1978) have pointed out, training studies indicate that children can be trained to solve conceptual problems and perform Piagetian tasks earlier than Piaget's stage theory would predict. This leads critics of the children's consumer information processing research to conclude that young children are both trainable and individual in their development. Knowing a child's age or stage level is not an adequate basis for predicting their behavior. Rather, appropriate measures can tap children's abilities and their abilities are greater than we think on the basis of global theories.

My reason for raising this critique is to place one body of criticism of consumer information processing more clearly into focus as a criticism within developmental psychology between competence models of development and performance models of development. Whether or not one is a Piagetian, the issue is how do we describe the course of human development and how best do we develop models of children's functioning. Competence models are theoretical descriptions of abstract systems of the form

or structures of children's ways of thinking in various cognitive domains, such as Piaget's theory of cognitive development, or Werner's orthogenetic principle, or Kohlberg's stage theory of moral development. Competence models tend to describe the idealized limits of children's abilities at different ages or stages of development, and they tend to be at a relatively high level of abstraction. They are wholistic or global. Moreover, as Overton and Newman (1981) point out, competence models aim to provide formal explanations of human development, that is, explanation of the necessary and universal features of cognitive development. Such theories attempt to describe and explain the constancy of behavior across various experimental conditions, situations and other sorts of environmental contingencies.

In contrast to such global theories which ignore variability in performance stand performance models of human development which examine the application of competence in actual thought or behavior--that is they examine the ways in which children actually perform in specific task situations. The difference between competence and performance models of human development have been widely acknowledged in the developmental literature, e.g. Flavell's (1970) notion of competence and performance differences in memory tasks; Werner's (1961) distinction of process/achievement and even Bandura (1977) in the area of social behavior makes a distinction between an acquisition phase (competence) and a performance phase in his theory of social learning. More recently Overton and Newman (1981) make a distinction between competence and activation utilization models of human development.

What are we to make of this distinction between competence and performance? Is it as some critics would have us believe that arguments which suggest that when the age guidelines of a competence model are not met then we should do away with all competence models? Is it that such models have neither heuristic value nor are appropriate models of theorising in an area? I reject this notion. Competence models provide by and large a description of the necessary and universal features of development--performance models are better for addressing the variability that appears in behavior. It is this variability either expressed as elasticity of age-related effects, or changing performance under difference task conditions, which is addressed by performance models. Since we measure children's abilities in specific tasks - its likely we will find variations in their performance at given age levels.

My argument is similarly, that when we examine the specific domain of theorizing surrounding children's consumer information processing, we can see clearly the competence/performance distinction. Early research sketched out the likely competence of children for understanding television advertising; subsequent studies have modified the global predictions to better specify under what conditions children elicit what sort of understanding of television. Two kinds of evidence from the performance studies suggest that young children, those four and five years old, do have some understanding of television advertising and furthermore, that even when their understanding is relatively minimal they can be trained to understand advertising purpose (Wackman, Wartella and Ward, 1979; Roberts et al., 1980).

For instance, estimates of the number of children who can verbalize an understanding of the purpose of advertising have variously been reviewed by myself and others (Wartella, 1980, 1981; Adler et al. 1977; Roberts et al. 1980) and indicate that age variations across studies in the percentage of children judged to understand the purpose of commercials are attributable to such factors as the backgrounds of the children interviewed, the context within which the measures were taken (survey or laboratory) and wording of questions. For instance, in my own research on kindergarten through sixth grade children, estimates vary as follows: When asked "what do commercials try to do?", 22% reported that commercials try to get them to buy products. Where kindergartners were shown commercials and then interviewed about the factual information in the commercials, even higher percentages understood selling intent. In response to the question, "What does this commercial for (product X) want you to do?" approximately half of the kindergartners in various viewing conditions (and 62% in one condition) said that the commercial wanted them to buy or try the product (Wackman, Wartella and Ward, 1979). Other researchers report similar results.

Similarly training programs developed to teach kindergarten grade school children by Roberts (1980) and Wackman, Wartella and Ward (1979) indicate that with appropriate procedures even kindergartners can be taught to understand TV commercials persuasive function and to focus attention on specific product claims in commercials.

However, that does not mean that no age differences exist in children's consumer information processing. Young children do less well at both memory and comprehension tasks about specific advertising information and, in general, they understand the implications of "the persuasive aspect of TV" ads less well. These sorts of studies suggest then that one must examine the conditions under which children perform varying cognitive tasks, such as the task of processing television advertising information.

Competence models of development have often been presented as fixed and unchanging descriptions of how children of certain ages think and primarily the deficits of their ways of thinking. The age/stage guidelines are not fixed, children can be taught to acquire certain notions earlier than a given theory's age limit. Nevertheless, I do not believe that competence models are fruitless. Nor do I subscribe to the equally extreme notion that younger children can perform just like adults. The implications of the competence/performance distinction raised here is that greater specification of the task of processing advertising information and specifically of the type of influence process presumed to occur can only arise by examining children's varying performance in a variety of specific situations. Here I find some recent evidence on children's memory for specific commercial messages instructive. Similarly, research in those few cases which have attempted to examine the relationship between processing of the advertisements and subsequent outcome measures such as purchase requests are useful.

For instance, Ross *et al.* (1981) recently examined how celebrity endorsement in toy commercials influences children's perceptual and cognitive responses to the advertisements in two separate experiments with 8 to 14 year old boys. Celebrity endorsement appeared to affect the boys product choice and the effect was at least as strong for older boys as for younger ones. Most importantly, the endorsement techniques influenced preference independently of cognitive and affective response to the commercials. Indeed even for the older boys, understanding that an endorsement was used, that the events on the endorsed product commercials were staged, and being

less deceived about the physical characteristics of the "endorsed" racers did not lead to less preference for the "endorsed" model racer over other brands. That is the older boys wanted the endorsed brand in spite of their presumed "cognitive defenses".

Other studies similarly are equivocal about the relationship among children's (1) ability to understand the specific purpose of advertising; (2) memory for the attribute messages or product claims made in the commercials; and (3) brand preference for the product advertised. A second interesting finding which has less to do with the relationship among these components of information processing, but more to do with the children's motivations for watching advertising is reported by Galst and White (1976). They found that the harder a preschool child worked to maintain TV commercials on a TV monitor, as compared to the program narrative, in an experimental situation, and the more commercial TV s/he was exposed to at home, the greater the number of purchase requests directed to mothers in a supermarket observation after viewing. Differential motivation for attending to TV advertisements and for handling TV advertising information, then, seem to create individual differences in the conditions under which processing activities are performed and measured across children.

Performance based models of cognitive development suggest very strongly that the task being set for the child be well understood. These recent studies call into question several assumptions common in global models of the relationship between cognitive ability and children's memory for and response to television advertising. In particular, the assumptions that young children are highly involved in watching TV advertising and are actively trying to abstract meaning/messages/information from the advertisement which leads to positive or negative evaluations of the product and product choices, need to be more clearly examined. Here I would like to suggest that the more general literature on children's processing of television *per se* might be instructive. In particular, two notions are of interest: (1) evidence from this literature indicates the importance of understanding the symbolic structure of the message in order to model and predict learning, memory and other outcomes; and (2) there is evidence that TV as a medium of communication may engage cognitive activities at a less than optimum level.

We know very little regarding the nature of the structural aspects of television advertising narratives on television. As Brewer (1981) has argued in discussing general models of memory based on narrative studies, models of memory for a given type of discourse, such as a book, television program, film, or a television commercial contain both an underlying discourse structure and a particular type of discourse force. The structure of commercials, for instance, may be narrative, that is tell about a series of events in linguistic and visual form which are related in a casual chain, that is tell a story. Commercial structures may be expository, that is attempt to illustrate some logical abstract processes, such as explicitly making comparisons between two brands of the same product groups and comparing the worth of one brand over another. Lastly, they may be descriptive discourse, such as describing both visually and linguistically a given product and its attributes. However, all advertisements have the discourse force of trying to persuade. As Roberts *et al.* (1980) remind us trying to persuade is different from just giving information.

What is the structure of most commercials directed to children: are they narrative, expository or descriptive? Does memory for these different types of discourse structures vary? What is the structure of these types of expositions and how is memory for a given structure

related to the discourse force of that structure? These are questions which need to be addressed to describe the "stimuli" of television advertising. In our training program (Wackman, Wartella and Ward, 1979) for instance, we found that training children on types of information ordinarily included in commercial messages such as concrete information about product elements improved kindergarteners recognition of such product information in a subsequent experimental test of the effects of the training program. However, such training on the notion that commercials show products and attributes of products did not improve children's memory for the commercial/plot related elements in the story. Similarly Roberts *et al.* (1980) report that a series of instructional films which were produced to teach children about television commercials persuasive intent were effective at increasing 7 year old childrens' verbally reported skepticism about commercials. The effect was particularly strong when the children were asked about their trust in specific product claims and specific techniques such as endorsement techniques, as opposed to items measuring the children's overall trust in commercials. Moreover, the films were most effective with the heaviest television viewers, those who watched more than three and one half hours per day. Thus, children's knowledge of both discourse structures and the discourse force of advertising would appear to affect both memory for the advertising and belief in the claims. We don't know much about the different types of commercials studied in the variety of consumer processing literature. Are they comparable processing tasks or not? An analysis of discourse structures would help answer these questions.

Secondly, variations in the conditions under which exposure to advertising increases children preference for the advertised product lead to the question of the conditions under which children are or are not motivated to abstract information and evaluate the product claims. Work by Salomon (1979) on children's processing of television codes and messages indicates that American children engage in less "literate viewing" at relatively shallow levels of processing. He found that grade school children may "frame" television such that they tend to invest little mental effort into trying to abstract information from television content; and consequently, he argues that when little mental effort is invested, shallow information is abstracted. This sounds much like a "low involvement" condition for processing advertisements (Krugman 1965). By and large, however, research on children's consumer information processing of advertising have assumed television advertising to be highly involving for grade school children. To what extent are children engaging in shallow or depth processing of television advertisements? This is a question which should be addressed.

In conclusion, changing conceptual views of children's consumer information processing suggest that we pay closer attention to the task conditions of watching television. Children watch television for a variety of reasons and under a variety of conditions. In order to understand better what consumer information processing takes place, we need to describe better the nature of the children's interaction with this medium. What are the structural aspects of the discourse children are asked to process? How do children perform this task under different conditions of processing? Addressing such questions should lead to understanding better TV advertising for child consumers.

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DIFFERENTIAL EFFECTS OF LABELLING
ON THE PROCESSING OF AMBIGUOUS STIMULI

Trudy Kehret, Northwestern University
Richard Yalch, University of Washington

Abstract

Two strategies are available to the marketer whose product may transfer to its possessor either a favorable or an unfavorable image: 1) direct the potential consumer's thoughts to positive attributes of the product; 2) direct thoughts to choice-consistent aspects of the consumer's self-image. The study reported investigated the second strategy.

Overview of the Study

Consumption symbolism -- the study of how consumers use products to communicate aspects of their identity -- has attracted such marketing scholars as Belk, Calder, Hirschman, Holbrook, Holman, and Levy. Our study investigated a situation in which product choice is problematic because the symbolism of making a particular choice is ambiguous on the dimension of favorability: the message it communicates about the consumer may be favorable or unfavorable.

Acquisition of a unique product in the presence of desirous others may be interpreted as the act of either a unique or a selfish person. The investigators predicted that subjects would be significantly more likely to choose a unique product if their thoughts at the time of choice were focused on their own uniqueness, and that this effect would be significant for females but not for males, and for children under 11, but not for children over 11.

These predictions were based on 1) the association in consumer information processing theory between choice and the availability and favorableness of meanings in memory and 2) the association in human development theory between tasks requiring metacommunicative awareness and perspective-taking skill, an ability differentially distributed, and differentially cued, by age and sex.

The labelling manipulation used to focus thoughts on uniqueness was predicted to be more effective with children under 11 whose less well developed perspective taking skills make them more likely than older children to accept adult evaluations. Similarly, this manipulation was predicted to be more effective with females, who are more sensitive than males to the tone of evaluative labels, and for whom the determination of sex-appropriate behavior is an important goal of perspective-taking.

The study bore out the predictions.

UNDERSTANDING AND OVERCOMING CHILDREN'S PROCESSING DEFICITS

Deborah L. Roedder, University of California, Los Angeles

Abstract

Previous work has established the existence of young children's processing deficits in a variety of consumer tasks. The purpose of this paper is to suggest strategies for alleviating children's deficits. Considered first are the mechanisms responsible for children's deficits and the task factors affecting children's processing abilities. This is followed by a discussion of methods for reducing children's deficits.

Introduction

During the past decade, considerable attention has been directed toward children's limited cognitive abilities in a variety of consumer tasks. Based upon evidence that children of different ages display different levels of cognitive skills, investigators have focused on young children's limited abilities relative to those of older children and adults. Evidence has accumulated supporting the view that young children exhibit deficits in understanding advertising, evaluating product claims, and comparing products in making choices (for a review, see Adler, et al., 1980).

While the existence of young children's deficits is well-established, the explanation for these limitations is less unequivocal. One view is that young children are inherently incapable of certain processing skills. Proponents of this viewpoint cite Piaget's extensive demonstrations of young children's difficulties in a variety of situations. In Piagetian research, young children are seldom able to solve problems that require the utilization of logical rules, comparative skills, and causal reasoning. For example, young children perform poorly in comparing groups of items in terms of number (Piaget, 1952), classifying objects into categories (Inhelder and Piaget, 1964), and comparing the motives and consequences of other people's behavior in making moral judgments (Piaget, 1948).

An alternative viewpoint describes the existence of young children's deficits as contingent upon the processing demands of the task. According to this interpretation, young children have difficulty in situations that require a great deal of processing effort. Advocates of this position cite young children's abilities in Piagetian tasks when given special training, less complex stimuli, or information formats that render processing less difficult (Gelman, 1978). For example, young children can compare the physical attributes of objects if they are given small object sets (Baron, Lawson, and Siegel, 1975), can make comparative judgments if they are given help in remembering object pairings (Bryant and Trabasso, 1971), and can make moral judgments based upon people's motives if motive information is made salient (Feldman, et al., 1975).

Despite the importance of this distinction, little effort has been directed toward examining the source of young children's deficits and assessing children's abilities under different task conditions in consumer settings. Past efforts have investigated children's responses to marketing stimuli without considering the potential influence of task factors such as the quantity of information involved and the way in which information is presented. The focus has been on demonstrating young

children's limitations rather than exploring ways to facilitate their abilities.

The purpose of this paper is to clarify the causes of young children's deficits and suggest strategies for overcoming these deficits. In pursuing these aims, the mechanisms responsible for children's processing deficits are considered first. The next section identifies factors that influence children's processing deficits by affecting the processing demands of tasks. Based upon this discussion, the final section suggests strategies for alleviating children's deficits and facilitating their processing abilities.

Explaining Children's Deficits

Evidence from a number of developmental investigations points to memorial factors as the source of young children's deficits (Brown, 1975). Young children exhibit limitations in several memory functions -- in organizing, interpreting, integrating, and retaining information. Because many learning and problem-solving situations depend upon these memory functions, young children do not display the same skills as do older children and adults.

Despite a common focus on memorial deficits, researchers disagree regarding which aspect of memory is most responsible for children's limitations. Primary emphasis is typically given to either procedural knowledge or declarative knowledge. Procedural knowledge consists of information regarding strategies for encoding, grouping, and retrieving information. Declarative knowledge consists of information regarding facts, concepts, and relationships between concepts. Both are discussed in more detail below.

Declarative Knowledge

Because learning is viewed as a constructive process, what has been learned in the past directly affects what can be learned in the future. The extent and organization of prior knowledge influences the interpretation, retention, and integration of new information with previously stored information. Declarative knowledge can also affect the retrieval of information by providing cues for searching memory (Ceci and Howe, 1978). Because young children have not yet accumulated an extensive knowledge base, they face limitations in a variety of processing situations (Chi, 1976, 1978).

The importance of declarative knowledge in understanding children's deficits has been demonstrated in several recent studies comparing the learning abilities of children and adults. Both age groups are typically presented with two sets of stimuli to remember. One set has been selected to be most familiar to adults, whereas the other set has been selected to be most familiar to children. For example, the stimulus materials might consist of categorized word lists, with some word categories more familiar to adults and some more familiar to children (see Lindberg, 1980). When participants are asked to recall the stimuli, children exhibit better recall than adults with child-oriented materials. The opposite effect occurs with adult-oriented material. In addition, the pattern of recall is much more organized or clustered for adults remembering adult-oriented material and for children remembering child-oriented material.

Procedural Knowledge

Young children fail to use a variety of procedures aimed at promoting information processing. Strategies for encoding and grouping information facilitate the permanent storage of incoming information. Strategies for searching permanent memory facilitate the retrieval of previously stored information. Younger children are at a disadvantage because they have not yet acquired these strategies (Hagen, Jongeward, and Kail, 1975), do not yet know how to apply these strategies (Paris, 1978), or do not recognize that a particular situation warrants the use of these strategies (Flavell and Wellman, 1977). Limitations with respect to strategy utilization can be further identified as production or mediational deficits. A production deficit exists when a child does not spontaneously produce a strategy but can use the strategy to improve performance when prompted to do so. Children with mediational deficits can also use a strategy when prompted but the strategy fails to enhance performance. Mediational deficits are common in preschoolers, whereas production deficits are more characteristic of children in the early elementary school grades (Flavell, 1970).

Both types of deficits have been demonstrated with a number of mnemonic strategies (Brown, 1975). Examinations of children's rehearsal abilities provide a good example of this approach. Children are typically presented with lists of words or other stimuli, one word or stimulus at a time. Children are given either specific rehearsal instructions (practice each word with as many preceding words as possible) or no special instructions. After presentation of the material, children are asked to recall as much information as possible.

In studies such as these, only older children spontaneously use a rehearsal strategy; therefore, they exhibit better recall than younger children. With instructions to rehearse, younger children with a production deficit also use a rehearsal strategy, resulting in levels of recall similar to those of older children (see Ornstein, Naus, and Stone, 1977). However, rehearsal instructions fail to enhance the poor performance of children with mediational deficits (see Naus, Ornstein, and Aivano, 1977).

Declarative Knowledge v. Procedural Knowledge

The evidence reported here supports the role of limitations in declarative knowledge and procedural knowledge as contributors to young children's processing deficits. Declarative knowledge provides conceptual and contextual guidelines for processing, whereas procedural knowledge provides strategic guidance.

An issue is which type of limitation is most important in explaining children's deficits. The available evidence indicates different relative importances in different situations. Procedural knowledge limitations totally explain young children's deficits in some situations (Ornstein, Naus, and Stone, 1977) but not in others (Butterfield, Wambold, and Belmont, 1973). Declarative knowledge limitations totally account for young children's deficits in some situations (Lindberg, 1980) but not in others (Kobasigawa, 1977).

Affecting Children's Deficits

Young children's deficits have been traced to limitations in declarative knowledge regarding facts and conceptual relationships and procedural knowledge regarding the use of memory strategies. Limited procedural knowledge affects children's abilities to execute plans for encoding, organizing, and retrieving information. These deficiencies are heightened by the possibility that young children may have little declarative knowledge needed to

guide the encoding, organization, and retrieval of information.

However, the emergence of these deficits is not invariant across all situations or all tasks. The extent to which young children exhibit deficits depends on the processing demands of the task. The more difficult the task, the more likely it is to overwhelm children's limited processing abilities.

Processing demands are affected by a number of quantitative and qualitative factors. Quantitative factors affect the amount of task-related information to be processed. Qualitative factors affect the effort required to process task-related information. Both types are discussed in more detail below.

Quantitative Factors

Quantitative factors can reduce processing demands by reducing the amount of task-related information that needs to be processed. This is typically achieved by reducing the total amount of information in a task (see Case, 1978). Reducing the total amount of information increases children's abilities in a variety of situations such as problem-solving (Baron, Lawson, and Siegel, 1975) and choice (Capon and Kuhn, 1980).

Processing demands can also be reduced by reducing the amount of information that must be processed at one point in time. A processing task is separated into its component parts and the information relevant to each part is presented sequentially. This approach appears to be particularly successful in problem-solving tasks (Bryant and Trabasso, 1971).

Qualitative Factors

Qualitative factors can reduce processing demands by reducing the effort required to process task-related information. Encoding, organization, and retrieval operations can be facilitated in three different ways -- by varying stimulus familiarity, information format, and instruction set.

Stimulus Familiarity. Familiarity with stimulus materials affects the ease with which children can encode and organize information (Chi, 1978; Lindberg, 1980). As a result, children exhibit greater abilities when faced with familiar stimuli. With familiar stimuli on familiar topics, children remember more information (Lindberg, 1980; Ornstein and Corsale, 1979), can better understand other people's feelings and emotions (Rothenberg, 1970), and are more able to construct causal explanations (Berzonsky, 1971).

Information Format. The manner in which information is presented also influences the effort required to process information (Bettman, 1979). Among those format factors that might be considered, organization and mode of presentation appear to have the strongest and most consistent effects on children's processing abilities.

Mode of presentation can facilitate processing by promoting multiple associations to single items of information in memory (Kieras, 1978). Children remember information conveyed in a pictorial form better than written (Cole, Frankel, and Sharp, 1971) or spoken words (Kee, 1976). The addition of pictures to spoken words enables children to remember more information than words presented alone (Kee, Bell, and Davis, 1981; Nelson, 1980). Mode effects are also evident in narratives. The addition of pictures to written texts increases recall over that obtained with the written text alone (Rusted and Coltheart, 1979).

Information organization, in contrast to presentation mode, facilitates processing by promoting associations

between discrete items in memory. Children remember related pieces of information far better than unrelated pieces. In particular, children can recall more material when information is organized according to taxonomic categories (Cole, Frankel, and Sharp, 1971; Yoshimura, Moely, and Shapiro, 1971) or, in the case of narratives, organized with respect to temporal order (Brown and Murphy, 1975; Collins, et al., 1978).

Instruction Set. Instruction sets can reduce processing demand by reducing the effort required to use certain mnemonic strategies. Instructions can be used to inform children when to use a strategy, how to use a strategy, or both. As such, instructions can reduce the amount of processing effort that might otherwise be needed in deciding what strategy to use or in producing the correct strategy.

Two types of instructions have proven useful in guiding the encoding and storage of incoming information: rehearsal instructions and imagery instructions. Rehearsal instructions, which typically involve telling children to practice sequentially-presented pieces of information together, enhance young children's ability to remember information (Bray, et al., 1977; Hagen, Hargrave, and Ross 1973; Ornstein, Naus, and Stone, 1977). Imagery instructions, which typically entail asking children to create mental pictures or to imagine how objects "go together," also have a facilitating effect on young children's memory for information (Jusczyk, Kemler, and Bubis, 1975; Kemler and Jusczyk, 1975; Yarmey and Bowen, 1972).

Instructions can also be useful in guiding the organization of incoming information. Children are typically told to sort items into groups of items that are similar. Instructions to sort in this manner are thought to be helpful because young children may otherwise fail to use their knowledge of relationships as a means for organizing incoming information. By increasing the saliency of organizational strategies, sorting instructions do increase young children's ability to remember information (Bjorklund, Ornstein, and Haig, 1977; Lange and Griffith, 1977; Worden, 1975).

Alleviating Children's Deficits

The degree to which young children exhibit processing deficits depends upon a variety of task factors. Deficits are less apparent under task conditions which reduce the processing demands placed upon children -- conditions which either simplify or facilitate the processing of task-related information.

These findings suggests general strategies for alleviating children's deficits. The amount of task-related information can be reduced. Information can be presented in the context of familiar situations with familiar characters. Information can be presented in an organized manner or with the aid of pictorial stimuli. Or, instructional guidance with respect to the use of memory strategies can be provided.

These general strategies can be tailored to fit particular tasks. For example, specific strategies can be developed to alleviate children's deficits in a number of consumer tasks. The usefulness of this approach is illustrated below for two consumer tasks: processing advertising messages and selecting products.

Advertising Strategies

Young children exhibit deficits in comprehending several aspects of commercial messages and remembering product-related information (Adler, 1980). Both comprehension and retention can be important for product evaluation.

Comprehension of advertising claims is a necessary prerequisite for evaluating the merits of new products. Retention of product-related information facilitates the comparison of alternative products on important attributes.

Several strategies are available to advertisers for enhancing children's processing of advertising messages. The first is to reduce the amount of information included in the commercial message. This can be easily achieved by reducing the amount of attribute information. Presentation of a limited amount of information is particularly important in the case of externally-paced media such as television and radio.

Processing can also be furthered by varying the way in which information is presented. The simplest method is to present attribute or product-related information in words accompanied by pictorial stimuli. Particular care must be exercised in implementing this strategy to insure that the pictorial stimuli communicates the same information as the written or spoken text. Otherwise, the pictorial stimuli will increase the total amount of commercial information or will distract attention from the written or spoken text.

The organizational structure of the message can be varied to promote children's processing. Because children are particularly sensitive to temporal order, information should be presented in the proper time sequence. For example, a product demonstration should present the steps in using the product in logical order. Techniques such as flashbacks and quick cuts should be avoided.

The final strategy for advertisers is to present product information in concepts and language familiar to children. For example, product disclosures such as "requires assembly" could be framed in terms more familiar to children -- "you have to put it together." In addition to familiar concepts and terminology, children's processing might also be furthered by using familiar characters (in terms of age/sex) in familiar situations.

Choice Strategies

Young children exhibit deficits in choice situations as a result of limited comparative skills. These children experience difficulties in comparing multiple objects on the basis of multiple criteria (Capon and Kuhn, 1980). Young children tend to make judgments and choices based upon a single attribute or few salient attributes (Wartella, et al., 1979).

The obvious strategy for facilitating children's comparative skills is to reduce the quantity of information by reducing the number of products or number of attributes to be considered. This approach is likely to be effective but unlikely to be practical. Neither advertisers, educators, nor regulators have control over the products and attributes children elect to consider in making a choice.

The only alternative is to teach children strategies for simplifying the choice situation. One way to achieve this is teaching children to break the selection process into several steps. For example, a choice situation could be broken into the following steps: (1) selecting all products that are "acceptable" (2) rating or ranking each of the acceptable products (3) selecting the best of these products. Partitioning the selection process into its component parts should reduce the amount of information to be considered at a particular time.

In addition to partitioning the selection process, children might also be taught choice strategies that simplify the selection process. Lexicographic, conjunctive, and disjunctive rules are representative of the strategies

often used to simplify choices. Although simplifying rules may not provide children with the means to make "optimal" choices, their use can reduce the scope of the comparative task to one within the capability of younger children.

Summary

Young children exhibit deficits as a result of limitations in procedural and declarative knowledge. Deficits are more or less evident depending upon the processing demands of tasks. Processing demands, in turn, depend upon a variety of factors such as the quantity of information and the manner in which information is presented. Children's deficits can be alleviated by devising strategies to reduce the amount of information to be processed or the effort required to process a particular amount of information.

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PUTTING HUMPTY DUMPTY BACK TOGETHER: COGNITION, EMOTION AND MOTIVATION RECONSIDERED

James C. Coyne, University of California, Berkeley

Abstract

There is a tendency to narrowly define cognition in terms of what is conscious, rational, and deliberative, and a reaction against uncreative "thinking ads" can be noted. Whatever merits there may be to alternative "feelings ads" should be evaluated empirically and without inappropriate appeals to psychobiology or faculty psychology.

Unspoken assumptions about the relations among cognition, emotion and motivation have a profound impact on the kind and quality of consumer research that is conducted, as well as the fads, fashions, and genuine progress that characterize the field. Few would still seriously subscribe to the nineteenth century notion that the three concepts refer to fundamental faculties capable of independent development. Yet even when we believe we have dispensed with faculty psychology, it maintains a hold on our thinking, and we are continually being surprised by the many guises in which it reappears (Candland, 1977). Likewise, phrenological maps disappeared long ago, and no one now attempts to relate psychological functions to skull bumps, but the hope remains of resolving our confusion about the relations among cognition, emotion, and motivation by identifying them with distinct neuropsychological centers.

Elsewhere, the task of integrating the three concepts has been referred to as the Humpty Dumpty problem (Coyne, in press; Lazarus, Coyne, & Folkman, in press). As a succession of theories demonstrate, once cognition, emotion, and motivation have been recognized as distinct influences on human behavior, it can become extremely difficult to put back together a picture of the person functioning as a whole. Too often the problem has been settled by the accession of one of the three, banishment of another, and denial of any evidence that might embarrass this arrangement.

In the now dominant view, cognition is in ascendancy. With talk of a return to the heart and the primacy of feelings, there is a growing challenge from emotion, but generally it is treated as a result of cognition. It is not clear where motivation fits in the current picture, and many of the critical issues it once subsumed are ignored. At various times in the past thirty years, emotion has been assimilated into drive; motivation and emotion have been denuded of thought or taken over altogether by cognition; and cognition has been disembodied with the body given over to emotion. The view of the person that emerges from such efforts is inevitably fragmented, distorted, and incomplete.

We should not lose sight of the fact that cognition, emotion, and motivation are inferential processes, not entities, each with a separate and independent existence. It is appropriate and usually necessary to distinguish among them for the purposes of conceptual analysis, but we should not forget that in the actual phenomena of human experience and action, they are difficult to separate and even fused. Taking the distinctions among them too seriously, we can get into all sorts of hopeless muddles about emotionless thought, thoughtless emotion, or people being thoughtlessly driven by some motivational force. With some regularity the field of consumer research, along with the rest of psychology, has fallen prey to this.

Recent History: From Motivation to the Cognitive Revolution

In the fifties and early sixties consumer research reflected the then dominant solution to the Humpty Dumpty problem with an emphasis on motivation. The consumer was examined in terms of needs, drives, motives, and conflicts. At its best, such a focus generated useful notions such as brand image, it identified some of the diverse motives influencing consumer choice, and it recognized the importance of social class on buying behavior. At its worst, it produced an assortment of psychoanalytic hypotheses about symbolic conflicts that proved to be untestable, even if intriguing (Dichter, 1964). The field at the time also gave too little attention to the role of deliberative thought in consumer behavior, and missed the virtues of straightforward presentation of the attributes of a product. An unrealistic picture of consumers as wracked by inner conflict or easily manipulated contrary to their stated preferences was promoted, and there was the false promise of advertising techniques from which the consumer could not escape.

The cognitive revolution of the sixties and early seventies corrected a number of these distortions and imbalances, and it opened new areas of research and suggested new advertising strategies. Yet, taken to the extreme, a narrowly defined emphasis on cognition brings with it a whole new set of problems.

At its best, a cognitive approach calls attention to the processes by which information is picked up, transformed, reduced, elaborated, stored, and recovered. It identifies measurable aspects of information processing including beliefs, perceptions, comprehension, memory, and recall. Within a cognitive approach there have been possibilities for quantification of variables and precise testing of hypotheses far beyond what was realized when motivation was dominant.

However, there is an uncomfortable vagueness about the notion of cognition, and when we attempt to be clearer as to what we mean, nineteenth century assumptions begin to appear. Too often cognition is reduced to processes that are rational, deliberative and conscious. Thought often has all of these qualities, but at other times it decidedly does not, and it is a frustrating but vital task to describe the personal and situational variables influencing how information is processed and even whether it is processed at all.

The term "cognition" encompasses a wide range of processes. While there are connections among the various forms of thinking, we are unlikely to find an essential nature to thinking or that a single process underlies thought. When we focus on rational, deliberative, conscious thought, we miss the important situations in which consumers do not seem to be interested in maximizing their self-interest, when they are irrational in that sense, as well as when they are mindlessly undeliberative or outright impulsive.

In the last century researchers found convincing evidence that many complex judgments occur without subjects being able to access the processes that led up to them (Humphrey, 1951). More recently, Olshavsky and Granbois (1979) have provided a provocative review of the consumer behavior literature in which they conclude that for many purchases, a conscious, deliberative decision process never occurs, not even on the first purchase. Their review

poses a threat to the various theories and advertising strategies that assume that consumer behavior is the result of elaborate deliberations and it is a threat to the restricted view of cognition that has become dominant.

Yet we do not have to limit our notion of cognition to conscious, reportable reasoning. We would do better to rephrase the question of cognition. That is, consumer behavior can be seen as a decision process rather than as the result of a decision process (Nicosia, 1966). Behavior can always be construed as a choice in the sense that we can ask "Why not something else?" or "What led to this as opposed to another outcome?" When we phrase our question this way we are using decision or cognition in a hypothetical sense, not as something conscious or unconscious. We are defining an empirical program that seeks the individual and situational determinants of information processing, and that requires we ask when and whether elaborate deliberations occur, rather than accepting them as a basic underlying assumption of our models.

Narrow views of cognition lead to narrow research strategies and also uncreative and unsuccessful advertising strategies. There is growing dissatisfaction with cognitive or "thinking ads". There is a sense that advertisements need to do more than appeal to reason, and that one cannot place too much faith in the persuasiveness of cold facts as opposed to personally relevant information. Do consumers really have an irrational passion for dispassionate rationality? The new consensus seems to be "No."

The Eighties: A Return to the Heart?

It would be premature to pronounce the demise of the cognitive orientation, but at least as it is currently being defined, it appears to be in trouble. Given the history of attempts to resolve the Humpty Dumpty problem, it is not surprising that the emerging logic seems to be that if cognition is not the answer, hope lies with its (apparent) opposite, emotion. "I believe that in the 80's we will see a return of the heart, feelings and emotions will be as important as logic and facts", proclaims a headlined article in the Marketing News (Light, 1980).

The new "feeling ads" make use of the legitimate idea that often our first and enduring response to something is in terms of its tone, ambience or mood, and that this will have a powerful impact on later expectations and reactions. Presumably, creation of a warm, positive sense of a product may be as important or even more important than communicating its specific features. For instance, if a soft drink is of a quality comparable to its competitors, it may be more crucial to establish positive associations with its consumption than to point out that it cost pennies less per glass.

One can readily note the difference between a "thinking" and a "feeling" advertisement, and in that sense the labels prove useful. However, there is considerable potential for misunderstanding. Affect or feelings have objects and intrinsic cognitive components. Elsewhere we have summarized studies in which emotional and even physiological responses to movies of bloody industrial accidents could be dampened or amplified with cognitive interventions (Lazarus, Coyne & Folkman, in press). Also, cognitive processes have intrinsic affective components, and numerous studies have shown that manipulations of mood can have significant effects on social perceptions, memories, free associations and snap judgments (Bower, 1981). Cognition and affect are fuzzily defined, complex phenomena, and neither can be totally explained without invoking the other. The considerable usefulness in making a distinction between the two has to be balanced by a sense that in many instances they are fused strands of the

person's total functioning. "Thinking ads" elicit feelings and "feeling ads" elicit cognitive processes. Problems arise when the distinction is made absolute, and we compound these problems when we try to justify the distinction by grounding it in anatomy.

The Misuse of Anatomy and Psychobiology

An unfortunate confusion seems to be gripping certain areas of advertising and consumer research. In planning an advertising strategy, it is often useful to conceptualize it in terms of contrasting themes or thrusts such as: thought versus feelings; rational versus intuitive; realistic versus impulsive; digital versus analog; verbal versus nonverbal; analytic versus holistic. It is an empirical question as to which is going to be the most effective approach in a given situation, and there is undoubtedly no single, general answer. Yet the question can be confused and our efforts diverted when the themes become associated with anatomical sites, particularly--as is now being done--the left and right cerebral hemispheres.

Taking advantage of the current dissatisfaction with overly rationalistic "thinking ads", the logic seems to be (a) Rational appeals are ineffective, and so appeal must be made to feelings. (b) Rational appeals are processed in the left hemisphere, emotional appeals in the right. (c) By direct communication to the right hemisphere, one can circumvent the thoughtfulness of consumers in a way that they cannot resist. Hansen (1981) presented this speculative hypothesis more tentatively than many writers:

This may be a kind of long-run, secondary effect of advertising, the existence of which could support the proposition that the value structure of the message more or less unconsciously is adopted by the receiver, and that this is done almost automatically by consumers, as the defense mechanisms are passive in the low-involvement situations in which exposure occurs.

Extravagant claims about the effects of repeated low-involvement appeals to the right hemisphere are based on a number of misconceptions and a play on words. First, there are indeed differences in the processing style of the cerebral hemispheres, and, based on observations of the effects of anaesthesia or selective destruction of the left and right hemisphere, it can be argued that the two hemispheres differ in their emotional reactivity (Bradshaw & Nettleton, 1981). However, differences in cerebral specialization cannot be accurately summarized by the contrasting themes that have been attributed to them; and the distinction between "thinking ads" and "feeling ads" do not correspond to differences in hemisphere lateralization. As I have noted, the complex symbolization involved in "feeling ads" probably elicits considerable cognitive processing between the time of exposure and opportunities to make purchases, and, at any rate, processing in both hemispheres. The notion that without the person's awareness, the right cerebral hemisphere picks up the imagery of a "feeling ad", stores it holistically, and then controls buying behavior without the involvement of the left hemisphere is at best a science fiction account. Proponents of it inappropriately cite studies of brain damaged patients, and neglect the fact that most consumers have intact corpus callosa, and that their complex buying behavior reflects a rich integration of functions in both hemispheres.

Activation theory is being inappropriately used to bolster a competing set of claims being made about "gripping" advertising strategies and the precise assessment of consumers' psychological tendencies using psychobiological

techniques. Interestingly, these claims contradict those based on cerebral lateralization by calling for high involvement advertising strategies. Nonetheless, the approaches are similar in asserting that they can produce robotlike behavior in consumers. "The consumer often reacts to activating stimuli without being able to control his behavior. Activation is a means of manipulation from which the consumer is not able to escape" (Kroeber-Riel, 1979, p. 248). Assessment strategies are based on the related argument that "Since activation expresses the intensity of affective processes, psychobiological activation measures can be used to measure the strength of emotions, motives, and attitudes. These can replace less valid measures" (Kroeber-Riel, 1979, p. 248).

These arguments are based on a play on words in which multiple uses of the terms "arousal" and "activation" are treated as equivalent. First, there is the now discredited notion from the fifties that psychophysiological arousal falls along a continuum from sleep to agitated behavioral tendencies. It is now recognized that "arousal" as description of the organism's state on a continuum from sleep to wakefulness is distinct from "arousal" as a description of the organism's emotional intensity, and that one can be manipulated independently of the other (Sprague, Chambers, & Stellar, 1961). Further, it is now recognized that the reticular formation is not a homogeneous activating center, as these proposals assume, but rather an area mediating many functions (Ranck, 1981).

Reticulo-cortical activity is related in a weak and uncertain fashion to the various pupillary, electrodermal and heartrate measurements that proponents of a psychobiological approach advocate, and none of the measurements being made are likely to be strongly related to buying behavior. In a colloquial sense, we can talk of a consumer being "roused" to make a purchase, but we are falling into another play on words if we attempt to equate this with reticulo-cortical activity or autonomic measurements.

Krugman (1981), has suggested that although autonomic measures have some utility in monitoring momentary responses to advertising stimuli, "Physiological research is not good at predicting the success of advertising. It's certainly not better than verbal data, although perhaps no worse" (p. 1). Bandura and Adams (1977) have made the more general point that "there exists little empirical justification for revering autonomic reactions or muscular contractions more highly than cognitive judgments" (p. 305).

Summary

In summary, trends in consumer research and advertising often reflect attempts to solve the Humpty Dumpty problem. We are in a period in which cognition is considered the most important piece of the egg, but there is growing dissatisfaction with a narrow definition of cognition in terms of what is rational, deliberative, and conscious. There is now a confused call for a refocusing on emotion, and it is accompanied by extravagant claims about possibilities of circumventing the thoughtfulness of consumers. Psychobiology is being used inappropriately to bolster their claims. One cannot separate emotion from cognition or detach the consumer from his or her critical abilities in the way these claims suggest. Neither can we communicate only with the right hemisphere, reticular formation or emotions. Consumers are cognitive, affective, and conative beings, and efforts are better directed to taking this into account than to pursuing elusive surefire ways of getting around it.

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THE RELATIONSHIP BETWEEN DIFFERENTIAL HEMISPHERIC ALPHA ABUNDANCE AND
THE AFFECTIVE POLARIZATION OF THOUGHTS ABOUT AN ATTITUDE ISSUE

John T. Cacioppo, University of Iowa
Richard E. Petty, University of Missouri-Columbia

Abstract

Three studies were designed examining individual differences in responding to persuasive communications. Results indicated that people who evinced relative left hemispheric EEG activity when thinking about an attitudinal recommendation also generated less stereotypic or affectively polarized thoughts about the issue. Strategic implications are discussed.

The general field out of which our research has developed can be called social psychophysiology and warrants comment to set the context for the three studies that we are reporting here. Social psychophysiology is characterized by the use of noninvasive procedures to study the relationships between actual and perceived physiological events and the reportable and conative effects of human association, whether real or imagined. This field of research, which has evolved from the disciplines of social psychology and psychophysiology, has advanced our understanding of a number of issues bearing upon consumer behavior. For instance, social psychophysiological research has yielded information about the effects of mass media (e.g., Zillmann, 1979, 1980), persuasive communications (e.g., Cacioppo & Petty, 1981a), induced compliance situations (e.g., Fazio & Cooper, in press), and individual differences in focus of attention (Scheier, Carver, & Matthews, in press).

There are a variety of reasons for this recent increase in interest in and use of psychophysiological procedures by social scientists. As with any research endeavor, the value of a methodological approach is a function of the expected value of the research information that is gained (e.g., the value of the theoretical insight garnered or of the convergent validity obtained) and the cost of conducting the research. The standardization of psychophysiological recording procedures (e.g., see Basmajian, Clifford, McLeod, & Nunnally, 1975 for discussions of EMG; Jennings, Berg, Hutcheson, Obrist, Porges, & Turpin, 1981 and Tursky & Janner, in press for discussions of HR) and the quantification of the complex analog bioelectrical signals now possible using the analog-to-digital (A/D) capabilities of low-cost laboratory computers (see Cacioppo, Marshall-Goodell, Gormezano, & Scandrett, in press; Martin & Venables, 1980) have certainly lowered the cost of conducting this type of research. Perhaps more importantly, though, is the recognition of the gains in research information that investigators can now reap using a social psychophysiological approach to complement a research program on an issue. For example, we have identified six distinct benefits that have been realized in the area of social psychology (Cacioppo & Petty, in press). At the simplest level, social psychophysiological research can help to advance our understanding of the determinants of people's physiological mechanisms by expanding the set of independent and dependent variables to include powerful social factors. Second, psychophysiological procedures can provide a means of assessing the construct validity of theoretical concepts, such as attention, cognitive responses, or attitudes. Indeed, it is possible that ultimately more valid measures of attitudes can be developed since an individual may not always be willing or able to report verbally his or her global and enduring positive or negative regard for a stimulus.

Third, this approach reminds us that people in the course of their daily lives respond to bodily sensations and perceptions; hence, this viewpoint can lead to the discovery and ultimately to the explanation of instances of complex human motivation and behavior that are shaped by a combination of social, dispositional, and physiological factors. Fourth, a cognizance of social psychophysiological influences can lead to refinements in existing theories of social and consumer behavior when the extant abstract formulations and "conceptual nervous systems" within these areas are found to be incompatible with the present state of knowledge about the structure and function of the human organism. Fifth, the practical demands and ecological validity of social (and consumer) research can lead to the discovery of new effects (or psychophysiological relationships) that will force refinements in or developments of psychophysiological theories. Finally, this field of research potentiates important discoveries in applied areas such as consumer behavior and behavioral medicine since the regulation (or deregulation) of the human organism is viewed within a broader social context.

In the present paper, we would like to illustrate one of these benefits: How the formulations that exist within psychophysiology can serve as a guide to alternative ways of conceiving a person's characteristics, wants, and preferences. We have drawn from the brain lateralization research to direct us to a new and reliable individual difference in relative hemispheric alpha abundance that relates to the affective polarization of a person's cognitive responses to persuasive communications (Cacioppo, Petty, & Quintanar, in press). The results of this work are discussed in terms of what we may have learned about consumer behavior and what other kinds of new effects might be derived by employing a similar approach.

Experimental Rationale

Research on functional cerebral asymmetry has taken many forms and has yielded almost as many results and controversies. Briefly, there have been numerous refinements over the years, but the early gross observations of the effects on behavior of severing the massive tract connecting the two cerebral hemispheres (the corpus callosum) have been found in a much less noticeable form in normal individuals (e.g., see reviews by Corballis, 1980; Gazzaniga, 1970; Hansen, 1981; Tucker, 1981). People perform more accurately and more quickly when spatial tasks are presented to the right than left hemisphere, whereas the opposite effect tends to be found when linguistic tasks are presented. Similar patterns of results are found when electroencephalographic (EEG) data are examined. Schwartz, Davidson, and Pugash (1976), for instance, found that operantly training individuals to reduce the amount of alpha (8-13 Hz) brain wave activity over the left parietal (associative) area of the brain increases the likelihood that the individuals will report semantic thoughts, whereas conditioning individuals to reduce the amount of alpha activity over the right parietal area increases the chances that subjects will report imagery or spatial thoughts. (A decrease of alpha activity during a waking state is assumed to reflect increased activation of the underlying area of the brain.)

In a recent review of the literature on cerebral asymmetry and human emotion, Tucker (1981) argued that there are different forms of cognitive organization in the two hemispheres that are possibly attributable to neuroanatomical factors. Tucker suggested that the right hemisphere's "global ideation" may lead to a diffuse and expansive emotional experience, whereas the left hemisphere's "analytic" orientation may incline an individual toward a less diffuse emotional experience in response to the same stimulus. Hansen's (1981) characterization of the right and left hemispheres is similar. According to Hansen, the left hemisphere is more associated with traditional verbal, symbolic problem-solving processes than the right, whereas the right hemisphere is more associated with imaginative, spatial, and pictorial processes than the left. Corballis (1980) has characterized the psychology of the two hemispheres quite differently, arguing that the left hemisphere is more specialized for abstract representation, whereas the right hemisphere tends to maintain "representations that are isomorphic with reality itself" (p. 288).

Fortunately, similar predictions regarding individual differences in relative hemispheric alpha abundance and cognitive responses to persuasive communications can be derived from these differing notions of cerebral asymmetry. Whether the left hemisphere (of right handed men with familial histories of right handedness) inclines a more piece-meal analysis of a persuasive communication or more cognitive abstractions of the recommendation, one would expect to find the relative activation of the right hemisphere to be associated with a more affectively polarized profile of thoughts listed by subjects about the attitude issue. The primary objective of this research was to determine whether there was this association between relative hemispheric alpha abundance and cognitive responses to persuasive communications.

In the first experiment, 40 right-handed men were given the task of judging the sound quality of audio-tapes as part of what they believed was a study of people's involuntary bodily responses to communicative stimuli. Twenty subjects were exposed to a message arguing for fewer restrictions on coed visitation (a proattitudinal recommendation), and 20 heard a message advocating greater visitation restrictions (a counterattitudinal recommendation). The message, which lasted 2 minutes, was preceded by a 1-minute baseline, a 15-second forewarning of the topic and position of the message, and a 1-minute post-warning-premessage epoch. Monopolar EEG activity was amplified from the left (P3) and right (P4) parietal areas (referenced to linked ears) using wide-band AC preamplifiers, channeled through an 8-13 Hz band-pass filter, full-wave rectified, and sampled 100 times per second using a laboratory computer. This procedure transforms the complex EEG waveform into a simple measure, expressed in arbitrary units, of the abundance of alpha activity detected over each recording site. The relative alpha abundance was subsequently determined by calculating the ratio of the difference in alpha abundance at the left and right parietal sites over the total abundance of alpha evident over the recording sites (i.e., $100 \times (P4-P3)/(P4+P3)$). The larger the ratio, the greater the relative abundance of alpha over the right parietal region, suggesting the relative activation of the left hemisphere (see Davidson & Schwartz, 1977; Galin & Ornstein, 1972).

Immediately following the message, subjects were asked to list everything about which they had thought during the preceding few minutes (see Cacioppo & Petty, 1981b for a detailed description and discussion of the thought-listing procedure). Subjects rated their own thoughts as favorable (+), unfavorable (-), or neutral/irrelevant (0) toward the recommendation (cf. Petty & Cacioppo, 1977). Subjects also indicated their attitude toward the recommendation "since your feelings toward the recommendation

might alter your judgments of the sound quality of the audio-tapes." Finally, subjects completed several ancillary measures pertaining to the sound quality of the audio-tape to maintain the cover story of the experiment. Subsequently, a measure of affective polarization was calculated specifically for testing the present hypothesis by subtracting the number of nonpredominant from predominant topic-relevant thoughts. For the proattitudinal communication, this measure was calculated by subtracting the number of unfavorable from favorable thoughts, whereas for counterattitudinal communications this measure was derived by subtracting the number of favorable from unfavorable thoughts.

Relative hemispheric alpha abundance was determined for two periods: The 60-second initial baseline epoch and the 195-second epoch during which time subjects could conceivably be thinking about the attitude issue. No differences in alpha-ratios were obtained as a function of Position, so a median split along the alpha-ratios for each of the two epochs described above was performed within each group (i.e., pro- and counterattitudinal groups). The results of the median splits were used as a blocking factor in the ANOVAs of subjects' cognitive and attitudinal responses to the persuasive communication.

The analyses revealed that the manipulation of Position was effective. Subjects exposed to the proattitudinal communication indicated more agreement, $F(1, 36) = 15.12, p < .001$; they also tended to generate more favorable thoughts, $F(1, 36) = 3.81, p < .06$, than subjects exposed to the counterattitudinal communication.

In tests bearing upon the experimental hypothesis, the ANOVAs indicated that individual differences in hemispheric activation prior to the initiation of the forewarning (i.e., during the initial baseline period) did not account for a significant portion of the variance in subjects' cognitive and attitudinal responses to the message that was subsequently presented ($ps > .20$). However, individuals characterized by the relative activation of the right hemisphere when anticipating and monitoring the persuasive communication did produce a more affectively polarized profile of topic-relevant cognitive responses than their counterparts, $F(1, 36) = 4.02, p < .05, M$ (relative right activity) = 2.20, M (relative left activity) = 0.15. Interestingly, this individual difference emerged similarly for the proattitudinal and counterattitudinal messages and did not show concomitant variation with the simple number of favorable thoughts, unfavorable thoughts, neutral/irrelevant thoughts, or the simple number of affect-laden thoughts, or total listed thoughts. In sum, then, the relationship that was observed was consistent with the notion that a relative dearth of left hemispheric EEG activity would be inversely related to the affective polarity of the cognitive responses toward an attitudinal recommendation.

We repeated this study making a number of changes to provide a more stringent test of the replicability of these initial observations. We conducted two versions of our second study, using eight right-handed men as subjects in each version. We did this because the replicability of a number of studies of functional asymmetry has been poor and the effect that we obtained in our first study is new. To assure the generalizability of the effect we prepared persuasive messages on two new topics. Students' access to season basketball tickets and the university facilities for dining were topics in which undergraduate men were keenly interested the semester this study was conducted and were employed as the topics of persuasive communications in this study. Forewarnings and messages were developed that recommended changes that students either strongly favored or disfavored.

We also subdivided the EEG sampling epochs into four distinct periods: (a) 15-sec forewarning of the topic and

Position of the message they were to hear, (b) 45-sec postwarning-premessage anticipatory epoch, (c) 60-sec persuasive message, and (d) 15-sec postmessage epoch of silence during which time subjects might reflect upon and integrate what they had heard. This breakdown of the communicative sequence allowed us to determine whether the results of the first study were attributable to subjects' reactions to a specific aspect of the broadcast sequence (e.g., to its presentation) or, more likely, to the broadcast sequence generally (e.g., when subjects are thinking about the attitude issue).

Finally, although the same basic cover story as was used in the first study was used in the second, each subject was exposed to both proattitudinal and counterattitudinal communications. This change was done so that we might reduce the number of subjects that needed to participate in the experiment.

The manipulation of Position was again effective. Proattitudinal compared to counterattitudinal communications elicited more agreement, $F(1, 8) = 67.43, p < .001$, fewer unfavorable thoughts, $F(1, 8) = 37.70, p < .001$, and more favorable thoughts, $F(1, 8) = 33.88, p < .001$. No other main effect for Position was statistically significant.

Blocking for the relative hemispheric alpha abundance was performed as in the first study except that, rather than calculating a single median split for the broadcast sequence, we conducted a series of ANOVAs on the basis of the relative hemispheric alpha abundance evinced across the four epochs outlined above. One-tailed tests were conducted to assess the specific experimental hypothesis, and $p < .05$ was used as the criterion for statistical significance.

The ANOVAs revealed very similar results regardless of the epoch from which the alpha-ratios were calculated, suggesting that there are individual differences in interhemispheric responding to the forewarning and presentation of a persuasive communication (and, perhaps, to communications generally). (The median splits calculated for the forewarning and message epoch, in fact, yielded identical results.) As in the first study, subjects characterized by relative right hemispheric activation, when compared with their counterparts, tended also to generate more one-sided sets of thought-listings about the attitudinal recommendation. Cell means for the various epochs are summarized in Table 1. No other test on these measures was significant.

TABLE 1
Mean Responses to the Presentation of a Persuasive Communication as a Function of Relative Hemispheric EEG Activity^a

Measure	Postwarning- Premessage		Forewarning/ Message		Postmessage	
	Left	Right	Left	Right	Left	Right
Affective polarization of thoughts	1.00	2.16	1.19	1.97	1.13	2.03
Agreement	4.16	4.75	4.44	4.47	4.31	4.59
Unfavorable thoughts	2.22	2.50	2.25	2.47	2.16	2.56
Favorable thoughts	.78	2.09	1.31	1.57	1.16	1.72
Neutral/irrelevant thoughts	1.41	.84	1.38	.88	1.38	.88

^aMeans for the forewarning epoch are identical to those presented for the message epoch. Thus, they are presented together.

The results of this second study are encouraging regarding the replicability and generalizability of this effect. Subjects who showed a relative abundance of the alpha activity over the left hemisphere (and, presumably, relative activation of the right hemisphere) also generated a more affectively polarized profile of cognitive responses to the persuasive communications. The data, however, also indicated that subjects' agreement with a persuasive communication was not influenced by blocking on relative hemispheric activation, a result obtained in the first study, too.

The aim of our third investigation was to examine the effect on relative hemispheric EEG activation of increasing the affective polarization of a person's thoughts about an attitude issue. We used Tesser's (see Tesser, 1978) paradigm of self-generated attitude change since it seemed especially suited to our theoretical and methodological requirements (e.g., physical movement is minimal in Tesser's time-to-think procedure; subjects can keep their eyes closed). Tesser and his colleagues typically give their subjects either a short (e.g., 10 or 20 sec) or long (e.g., 90 sec) epoch to think about an attitude stimulus. Using this procedure, they have repeatedly found that as subjects think longer about an issue, their attitudes polarize and the profile of their thoughts about the issue change "in the direction of greater schematic and evaluative consistency" (Tesser, 1978, p. 290).

Hence, we conducted two replications using seven right-handed men in each. A 2 (Replication) x 2 (Time-to-Think) x 2 (Position: pro- vs. counterattitudinal) mixed design was employed in which Replication served as the only between-subjects factor. The experimental stimuli and conditions were ordered randomly for each replication; in other regards, the replications were identical.

An initial pool of 60 attitude statements was generated for possible use in the study. Recommendations such as "Placing a tax on oil company profits" and "Driving 55 mph to conserve energy" were included in this initial pool. One to two weeks prior to their participation in the study, subjects expressed their attitude toward each of the 60 recommendations using a 14-point Likert-type scale. A second rating of these recommendations, which were ordered differently, was made when subjects arrived for participation in the study. The second rating, however, was made using a 7-point scale. For each subject, the four recommendations toward which the subject expressed a moderately positive attitude on both ratings and the four recommendations toward which the subject expressed a moderately negative attitude on both ratings were selected for use as experimental stimuli. This selection was achieved following the attachment of bioelectrical sensors to the subject and while he worked on a list of anagrams (e.g., mubrc). Subjects were led to believe that electrophysiological recordings were being made during the anagram task, but in fact none were obtained.

Afterwards, each subject was exposed to the eight selected attitude issues. For two of each set of four issues, the subject was given a short (20 sec) epoch to think about the attitude stimulus, whereas the subject was given a long (90 sec) epoch to think about each of the remaining issues. This, of course, means that each subject cogitated for 20 sec each on two recommendations about which he felt moderately proattitudinal, 20 sec each on two recommendations about which he felt moderately counterattitudinal, 90 sec each on two recommendations about which he felt moderately proattitudinal, and 90 sec each on two recommendations about which he felt moderately counterattitudinal.

Analyses of covariance (ANCOVAs) were performed on the scores of relative hemispheric alpha abundance to test the

hypothesis that there would be a shift of relative alpha activity toward the left parietal area (i.e., a shift in relative hemispheric activation toward the right hemisphere) as subjects thought longer about an issue and regardless of the initial polarity of the position recommended. The mean alpha-ratio obtained during a pre-stimulus epoch served as the covariate in the analyses.

The first ANCOVA was performed comparing the relative alpha abundance observed during the 20-sec Short time-to-think conditions with that observed during the first 20 sec of the 90-sec Long time-to-think conditions. The analyses revealed that there were no significant differences among conditions on this measure. This indicates that there was comparable interhemispheric patterns of EEG activation at the outset of the time-to-think epochs.

The next ANCOVA was performed testing the specific experimental hypothesis by comparing the relative alpha abundance displayed during the 20-sec Short time-to-think conditions with those displayed during the last 20 sec of the 90-sec Long time-to-think conditions. Results of the analysis indicated that larger alpha-ratios were obtained during the Short than Long time-to-think conditions, $F(1, 12) = 4.50$, $p = 0.025$, one-tailed, a finding in accord with the experimental hypothesis. No other significant effects (e.g., the main effect for Position) was found in this analysis ($ps > .15$).

A second test of the experimental hypothesis was performed by comparing the alpha-ratios obtained during the first and last 20 sec of the Long time-to-think conditions. The results provided further support for the experimental hypothesis. Larger alpha-ratios were observed during the first than last sampling epoch, $F(1, 12) = 3.02$, $p = .05$, one-tailed, suggesting an actual shifting of relative hemispheric alpha activity toward the left parietal area as subjects thought longer about an attitude issue. No other test in this ANCOVA was significant.

In sum, one new effect emerged consistently in these studies, regardless of topic, replication, position, or epoch during which thinking about an attitude issue was evoked: Individuals showing relative right hemispheric EEG activation also produced a more affectively polarized profile of cognitive responses. This result is clearly in accord with Hansen's (1981) hypothesis that "Some individuals are more likely than others to rely on right-brain processes" (p. 33).

Matters of interpretation can still be debated, as these studies have been exploratory rather than definitive in nature. Nevertheless, the strategy of using what is known about psychophysiological mechanisms to derive hypotheses about social behavior proved useful in this research. Moreover, the theoretical benefits of this research strategy may work both ways. As more research in social and consumer-oriented settings is conducted, a larger database will be generated yielding new empirical effects challenging psychophysiologicals and neuropsychologists to construct models accommodating a broader range of observations. As these models are developed, of course, the utility of using the present research strategy only improves.

Even at present, though, some of the existing models of hemispheric lateralization and consumer behavior are being advanced by these and other recent observations. For instance, Krugman (1971) suggested that the right brain may be primarily involved during the processing of the information in advertisements transmitted through an audio-visual mode (e.g., television), whereas the left brain may be primarily involved when processing information from advertisements presented in the print medium. In addition, Krugman suggested that this asymmetry would lead to differential recall of the advertising content,

with information processed primarily with the left hemisphere being recalled verbally best. Appel, Weinstein, and Weinstein (1977) recorded alpha brain wave activity while subjects were exposed three times to television advertisements whose content was either highly memorable or not. Appel et al. did not find differential hemispheric EEG activity as a function of message recallability. These results seem inconsistent with Krugman's (1971) theorizing. In reanalyzing Appel et al.'s (1979) data, Krugman (1980) found that the brain wave activity over the left hemisphere declined with the repetition of the advertisement, whereas the activity over the right hemisphere remained more constant with repetition. This shifting of brain wave activity from the left to the right is, of course, in accord with the observations we have made: As the advertisements are presented repeatedly, people have more and more time to think about the attitude issue and may evince a shifting of "relative" hemispheric EEG activity from the left toward the right hemisphere as their thoughts about the issue become more stereotypic or more affectively polarized. Krugman (1980) argues that the lateral asymmetry is attributable to the fatigability of the left hemisphere and the enduring vigilance of the right. Krugman's interesting hypothesis does not account very well for the relationships we have observed between relative hemispheric alpha abundance and the affective polarization of people's thoughts about an attitude issue. Nevertheless, it remains possible that the relative fatigability of the left hemisphere contributed to the present data and is itself attributable to the less stereotypic, relatively idiosyncratic cognitive operations performed by the left hemisphere.

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A COMPARISON OF ALTERNATIVE MEASURES OF INDIVIDUAL DIFFERENCES IN BRAIN LATERALIZATION

by Flemming Hansen and Niels Erik Lundsgaard

Abstract

Four different measures of individual differences in brain lateralization have been intervalidated; i.e. tachistoscope measures, dichotic listening, selected psychological tests, and self-administered questionnaires. Two times 50 respondents were exposed to the various stimuli and factor analysis has been used to analyze the collected data. Also part of the data have been reliability-tested.

The present findings suggest that there are complicated problems involved in measuring brain lateralization and recommend that future efforts are concentrated on methodological problems, rather than wasted on speculative applications, resulting in findings the interpretation of which are far from obvious.

Consumer behaviour researchers have shown an increasing interest in brain lateralization in recent years. Based upon psychological studies of hospitalized patients, it became established in the early sixties, that the left and the right hemispheres of the human brain are functioning very differently. Studies of "split-brain patients" (Sperry, 1973) and another group of patients, to whom electric stimulation is applied to only one of the halves of the scalp (Deglin, 1976) as well as studies of individuals with partly damaged brains, all show the same. The left part of the brain is particularly specialized in handling verbal, symbolic, arithmetic information, and it is doing so in an orderly sequential manner. The right brain on the contrast, is concerned with holistic, musical, geometrical, and pictorial information. Moreover, the processes of the right brain are largely unconscious.

These observations have made researchers, in several areas, interested in possible applications. Wexler (1980) for instance, reviews left and right brain processing in relation to psychiatric treatment. Bogen (1977) discusses educational implications, and Hansen (1981) reviews findings of relevance for the study of individual information processing.

Traditional models of consumer behaviour are decision process models, cognitive models, information processing models, and effect hierarchy models. The processes described in these models are so, that it is natural to suggest that they primarily occur in the left hemisphere. The question then arises whether there are right brain processes, also, with which the student of consumer behaviour should be concerned? To explore this possibility, it is necessary to discuss two alternative ways of studying brain lateralization.

The first approach focuses on whether different kind of stimuli tend to be processed more or less consistently in left or right brain hemisphere, and on whether different situations give raise to more or less right or left brain processing. Thus, the concern is with the extent to which certain brain functions are more likely to become activated under same circumstances, whereas other functions are triggered by other tasks or conditions. This, for example, was the approach taken by early psychologists studying split-brain patients. Here the concern was with the extent

1) As a treatment in severe cases of epilepsy, Bogen (1977) began a treatment, where the two brain halves were disconnected by having the corpus callosum (the nerve tissue connecting the two brain halves) cut. These "split-brain patients" made it possible to study the functioning of the left and the right brain half separately.

to which verbal vs. pictorial information gave raise to right or to left brain processing; how musical impressions were received, how arithmetic problems were handled, etc. Similarly studies where the left or the right brain half was neutralized for a shorter period of time with use of electro-shock were carried out along these lines. Later, also, many studies of normal individuals' perceptual kinds of stimulations gave raise to left or to right brain activity (Kimura, 1973).

Also, in the study of consumer behaviour the possibility of situational differences has been suggested. Krugman (1977) maintains that compared with print advertising, television advertising generates right brain information processing, and therefore, it functions very differently from what is suggested by effect hierarchy models.

In this connection Weinstein, Weinstein, and Appel (1980), and Appel, Weinstein, and Weinstein (1979) have reported relevant findings. With the use of electroencephalogram (EEG) measures, they studied left and right brain processing in adult subjects, while they were watching television commercials and print advertisements. Their findings, however, are not very conclusive and even though Krugman (1980) by reanalyzing their data gets somewhat more confirmative results, there are still many problems associated with the use of the EEG-measures in studies of brain lateralization. Presumably the measures are very sensitive to the location of the electrodes on the skull of the respondent, and it is also difficult to interpret the continuous stream of responses. Questions are such as: How long time intervals to use as analytical units? Should brain activity in a particular moment be related to the stimulation received simultaneously or to the information received sometimes earlier?

Rockey, Greene, and Perold (1980) also report on problems with the interpretation of brain wave-measures. In an experiment where they compare 8 different EEG-lateralization measures for advertisements known to produce high and low recall scores, and regular TV-programs, they get significant, but sometimes unpredicted different scores when viewing of programs and of commercials are compared. When high and low recall advertisements are compared, the resulting scores are even more difficult to interpret.

Finally, the use made by Kling (1980) of conjugate lateral eye-movements should be mentioned. With this measure, it is assumed that a person when faced with a task will look to the right, if he is primarily using the left brain, and that he looks to the left, if he is dominated by right brain processing. With this technique Kling finds some relationships between his respondents' tendency to rely upon left brain processing, and the consistency of judgements regarding car preferences.

Following the second approach the researchers look for stable individual differences in the extent to which people tend to rely upon left vs. right brain information processing. This approach has dominated among psychiatrists (Wexler, 1980) and among educational psychologists (Wittrock, 1977). Similarly, Richardson's (1977) work on visualizers vs. verbalizers as information processing types is relevant in this context. Also, it can be mentioned that Hansen and Lundsgaard (1981) attempted to develop operational measures for the purpose of identifying individual differences in brain lateralization, and it is remarkable that Appel, Weinstein, and Weinstein (1979), without emphasizing themselves, find dramatic individual differences in their brain lateralization index among their 31 Connecticut housewife subjects (see table 10 in their original paper).

The present paper looks at alternative ways of identifying such individual differences. To the extent that such differences can be established, they can explain individual differences in information processing, decision-making and persuasibility in connection with different kinds of messages.

Measurement Problems

There are several different techniques which can be used for the purpose of identifying individual differences in the extent to which individuals rely more or less extensively on left or right hemispheres. Several of these are reviewed in Hansen (1981). Among these the most promising are:

1. Tachistoscope measures
2. Dichotic listening
3. Selected psychological tests
4. Self-administered questionnaires
5. Electroencephalogram (EEG)
6. Conjugate lateral eye-movements (CLEM)

To cross validate these techniques is an extremely important task, which must be completed before a thorough understanding of individual differences in brain lateralization can be gained. Without this kind of validation it is difficult to compare findings from different research traditions and to improve our understanding of the nature of individual differences in brain lateralization research. Strangely enough, in spite of the frequent use of all of the techniques by different researchers, no attempts to cross validate any two of the techniques have been published. In the present paper, the four first of the techniques are studied. It is hoped that it shall subsequently be possible to extend the work so that EEG- and CLEM-measures will be included in the comparisons, also.

Research Design

In the present study 50, 20-24 years old male and female, right handed, students in an educational programme participated as subjects. Each subject was exposed to a tachistoscope test, a dichotic listening task, a selection of psychological tests, and finally they completed a self-administered questionnaire dealing with possible aspects of brain lateralization. Because of incomplete data 4 of the subjects subsequently were deleted, so that 46 complete data sets resulted.

Since some of the measurements are rather complicated, they will be described in more details, as they are introduced in the following.

For their participation respondents were paid a fee of \$ 10.- each. For each respondent the complete test took 2-3 hours. The data collection was carried out under supervision of the authors, and the psychological tests were administered by a trained psychologist, whereas the tachistoscope and dichotic listening tasks were carried out by a research assistant, especially trained with this equipment.

Tachistoscope Test²⁾

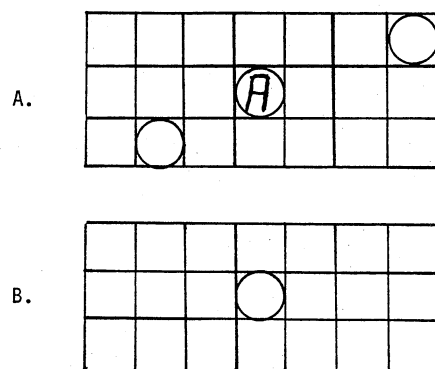
The tachistoscope test relies on that peculiarity of the human vision, that subjects appearing in the left visual

field, is initially transmitted to the right brain half, and vice versa. It is important to note that we are talking about visual field and not right vs. left eye. Operationally this implies that it is necessary to have the respondent fixating his attention on a particular point, before information is exposed to the left and to the right of this point. For the present tachistoscope task, a design was used where a screen was exposed from behind. On the center of the screen, a circle is located, and at the beginning of the test, the respondent is asked to focus on this particular circle. Then, a figure or a letter is presented in the circle, together with the test material, which is exposed to the left and to the right of this point of fixation. Following this, the respondent is then asked to report what the figure or the letter in the circle was. This is done to make sure that the subject had actually had his attention directed to the center part of the screen.

One problem with the tachistoscope procedure is that even though information initially is transmitted as described from one visual field to the opposite brain half, it is perfectly possible for normal individuals, shortly after the initial exposure, to transmit the information back to the other brain half. Actually, when the information has first been transmitted to the right brain half, and you ask the respondent to verbalize what he has seen, he must utilize his left brain half to be able to verbalize his response.

Two different tests were used. One was supposed to favour the right brain half information processing, and the other was supposed to favour left brain half information processing. The first test consisted of showing circles in different locations in the left and in right visual field. One particular presentation looks as in figure 1A. Here an "A" appears in the center circle, and there are two other circles one to the left and one to the right of the focal point. After a brief exposure, the respondent is asked to indicate on a piece of paper, where he saw the circles. This is done by marking a sheet like figure 1B. This complete task consists of 34 exposures, and 2 initial ones where the respondent is instructed about the procedure. The exposure is very short (5-20 milli seconds). With exposures of this length, it was determined in advance that normal individuals should be able correctly to identify approx. 75 percent of the circles exposed to them.

FIGURE 1
Bilateral Circles (A),
and Scoring Sheet (B)



This as well as the next test was introduced to the respondents as a test of visual ability.

²⁾ The authors are grateful to associate professor Steen Larsen, Institute for Educational Psychology, Teachers College, Copenhagen, for assistance with the equipment for these tests.

In the second test the respondents are exposed to three digit numbers in the left and in the right visual field. After the exposure which was 100-300 milli seconds - which is longer than in the first test - the respondent was asked to identify one of the figures exposed, either to the left or to the right.

Whether the respondent was asked about the figure appearing in the left or the one in the right visual field was determined in advance in a manner, so that prior to the exposures, the respondent did not know what visual field he was to focus on. In this test, the score was computed as the number of correctly identified left or rightly exposed figures. In this fashion four different scores were obtained:

- I. A tachistoscope circle - left visual field (TA-C-L)
- II. A tachistoscope circle - right visual field (TA-C-R)
- III. A tachistoscope figure - left visual field (TA-F-L)
- IV. A tachistoscope figure - right visual field (TA-F-R)

Since each of those scores are influenced not only by the individual's tendency to rely more or less on left or right brain processing, but also by the individual's overall ability to identify circles or to identify figures, it can be useful to compute an index also neutralizing this effect. This index is computed as shown below, with the right visual field scores less the left visual field scores divided with the sum of the two scores:

$$V. TA-C-IN = \frac{(TA-C-R) - (TA-C-L)}{(TA-C-R) + (TA-C-L)}$$

$$IV. TA-F-IN = \frac{(TA-F-R) - (TA-F-L)}{(TA-F-R) + (TA-F-L)}$$

Finally, a special score was computed based on both of the tests. Since the circle test was thought to favour right brain dominated individuals, and the figure test left brain dominated individuals, a score like:

$$VII. (TA-C-L) - (TA-F-R)$$

might reflect right or left brain dominance.

Dichotic Listening

The dichotic listening task relies on a phenomenon which is somewhat similar to that based upon which the tachistoscope test is developed. It is known that the majority of the information sent to the left ear initially is processed in the right brain half and vice versa. Consequently, by sending competing information to the left and to the right ear, and by observing whether the individual picks more or less information up with his left or with his right ear, one gets an indication of brain lateralization.

For the present test, a specially developed stereo equipment was used. This was constructed so that with the use of ear-phones, one sequence of messages is sent to the left ear simultaneously with another sequence being sent to the right ear. The pitch of the messages sent to the left and to the right ear was adjusted, so that it would seem the same to normal individuals. The first test was

composed of 30 meaningless three letter words. These words were presented in blocks of three, so that the respondent first heard two times three words with half of them sent to the left and the other half to the right ear. Each pair of words were sent at exactly the same time. Examples of the words are: GUK-BAP, VEP-GIT, BØT-VYK.

After the exposure to such two times three words, respondents were asked to report what they recalled. Again the score is a simple count of the number of correctly identified words sent to the left and to the right ear.

Following this task, the test was repeated with 30 three letter meaningful Danish words, with the scoring done in the same manner. Whereas the meaningless words were supposed to favour the right hemisphere processing, the meaningful words were supposed to favour left brain activity.

Out of the complete task came four basic scores, namely:

- I. Dichotic meaningless words picked up with left ear (DI-ML-L)
- II. Dichotic meaningless words picked up with right ear (DI-ML-R)
- III. Dichotic meaningful words picked up with left ear (DI-MF-L)
- IV. Dichotic meaningful words picked up with right ear (DI-MF-R)

As with the tachistoscope test, an index was computed for the meaningful words, as well as for the meaningless words:

$$V. D-ML-IN = \frac{(DI-ML-R) - (DI-ML-L)}{(DI-ML-R) + (DI-ML-L)}$$

$$VI. D-MF-IN = \frac{(DI-MF-R) - (DI-MF-L)}{(DI-MF-R) + (DI-MF-L)}$$

Finally, a combined score was computed as:

$$VII. (DI-ML-L) - (DI-MF-R)$$

As with the tachistoscope test, there are uncertainties in connection with the interpretation of the dichotic listening test results. Again here, information may very shortly after it has been received be transmitted to the opposite brain half, and to verbalize the response will always require the left brain half to become activated regardless of what ear the information originally was transmitted to. The dichotic listening test is complicated to construct. However, since the problems in connection with this test are discussed elsewhere (Lundsgaard and Hansen, 1981) they will not be taken up in any great details here.

It should be mentioned, however, that since it was possible to carry out a re-test with 20 of the original 50 respondents, a reliability coefficient could be computed. With 3-4 weeks between the first and the second test, it was .6. Although not extremely high, it does suggest that the measurement procedure has some reliability over time. A finding also Wexler and Heninger (1979) report from a study with a very similar procedure.

Tendencies Towards Brain Lateralization as Measured with Tachistoscope and Dichotic Listening

Since each of the two tachistoscope tests and the two dichotic listening tests produce results with very different average number of correctly identified test items, and since also the variance differ in the four sets of measurement, it was decided to standardize and normalize the scores before further analyses were carried out. This was done by deducting the average from each single score and dividing the score with the variance.

After this all 8 basic measurements were correlated with each other. Results from this analysis are shown in table 1.

TABLE 1.
Correlations between 4 tachistoscope and 4 dichotic raw-scores.

	IA-C-L	IA-C-R	IA-F-L	IA-F-R	DI-ML-L	DI-ML-R	DI-MF-L	DI-MF-R
TA-C-L		0.47 ¹	0.17	0.13	0.35 ¹	0.10	0.04	-0.05
TA-C-R			0.07	0.20 ³	0.20 ³	0.42 ¹	-0.05	0.07
TA-F-L				-0.02	0.24 ²	0.12	0.03	-0.02
TA-F-R					0.09	-0.15	-0.05	-0.11
DI-ML-L						-0.06	0.21 ³	0.00
DI-ML-R							0.08	0.17
DI-MF-L								0.03
DI-MF-R								

1) Significant with $p \leq 0.01$
2) Significant with $p \leq 0.05$
3) Significant with $p \leq 0.10$

It is remarkable that none of the correlations are very high. Actually, the largest correlation (0.47) is between the measurement of correctly identified circles in the left visual field (TA-C-L) and correctly identified circles in the right visual field (TA-C-R). Presumably, respondents, who are good at identifying circles in their left visual field, are good at doing so in their right visual field, also. A similar phenomenon does not occur for the three other tasks for which measurements are made.

The next two observations to make from table 1, are the significant correlations between:

1. Tachistoscope circle left visual field measure (TA-C-L) and the measure for dichotic meaningless left ear words (DI-ML-L) (0.35), and
2. The similarly large correlations (0.42) between identification of tachistoscope circles in the right visual field (TA-C-R) and correctly identified meaningless words from the dichotic listening task (DI-ML-R) with the right ear.

Seemingly, the tachistoscope circle test and the dichotic meaningless word test are measuring a related phenomenon. This can hardly be said about any of the other measures, even though a few meaningful relationships approaching significance, appear in the table. For example, this is the case with the correlation between tachistoscope figures left visual field (TA-F-L), and dichotic meaningless left ear (DI-ML-L); the correlation between dichotic meaningless left ear (DI-ML-L) and dichotic meaningful left ear (DI-MF-L) and the correlation between the tachistoscope circles right visual field (TA-C-R), and tachistoscope figures right visual field (TA-F-R).

A similar correlation occurs, however, between tachistoscope circles, right visual field (TA-C-R) and dichotic meaningless words in the left ear (DI-ML-L). This may follow, however, from the high correlation between the left and the right measures for the tachistoscope circle task. Since these two variables are so relatively closely correlated, it is likely that anything correlated with one of them, is likely to be correlated with the other also.

Finally, it is note-worthy also, that 6 out of the negative correlations are between left and right brain measures, and that all measures supposed to measure right brain dominance, are positively correlated and so are all but 2 measures of left brain dominance.

Altogether the correlations of table 1 are not very promising even though they do suggest a possibility for continued work with the tachistoscope circle test combined with the dichotic meaningless word test. This is explored further in a different context. In the present paper, focus is on the validation problems in connection with the four different measures studied.

The close relationship between the measures of correctly identified circles in the left (TA-C-L) and in the right hemisphere (TA-C-R) makes it somewhat difficult to interpret the only strongly significant relationship found in table 1. This suggests that the indexes computed as described before, may be useful in identifying tendencies for the left vs. the right brain half to dominate in information processing.

By measuring the extent to which left or right responses dominate relative to the total number of correct responses, the effect of the intercorrelation between the left and right measures should be eliminated. In table 2 correlations are small, but the tachistoscope circle index (TA-C-IN) seems to perform slightly better than the other, whereas the tachistoscope figure index (TA-F-IN) makes no sense at all. It even correlates negatively with the (DI-ML-IN). If any of these indexes were to be used in further work, it seems that among the tachistoscope indexes the circle (TA-C-IN) performs the best, whereas the two dichotic indexes do not differ. Based upon the evidence from table 1, however, and since the meaningless index is less influenced by uncontrolled left brain processing, this index would have to be preferred. However, the most striking observation to be made from table 2 are the very low correlations between the various measurements. And the same small correlations appear (0.17) when the combined tachistoscope lateralization score (VII) is related to the similar dichotic score (VII).

It is no surprise that researchers primarily basing their conclusions on tachistoscope measures often have disagreed with researchers basing their conclusions upon dichotic listening (see for instance Kimura, 1973). In the present study at least, it has not been possible to find evidence supporting that it is the same underlying phenomenon which is being measured with the two instruments.

TABLE 2
Correlations between tachistoscope and dichotic lateralization indexes

1) $p \leq 0.01$, 2) $p \leq 0.05$

	TA-C-IN	TA-F-IN	DI-MF-IN	DI-ML-IN
TA-C-IN	1.00	0.22 ¹	0.17 ²	0.15 ²
TA-F-IN		1.00	0.04	-0.15 ⁵
DI-MF-IN			1.00	0.16 ²
DI-ML-IN				1.00

Psychological Tests

In a previous paper (Hansen and Lundsgaard, 1981) 10 selected psychological tests were evaluated. A detailed description of these tests appear in this publication. Briefly, they include:

- . 2 word mobilization tests, where the respondent is asked to name as many words he can come upon when: (1) the word street, and (2) animals are mentioned. Both tests are meant to measure left brain capability.
- . 1 copy recall test measuring the ability to remember details of a story told to the respondent.
- . 1 subtraction test measuring arithmetic capabilities.
- . And finally, as the last measure of left brain capability: A word-pair learning test.

As measures of right brain capability were used:

- . 1 face identification test, in which the respondent is supposed to point out pictures of the same person appearing on a piece of paper together with several other faces.
- . 1 visual gestalts test measuring ability to recognize geometrical figures.
- . 1 face recognition test measuring the ability to remember faces and rightly recognize them in a second presentation.
- . 1 cube-test where the respondent is supposed to solve puzzles with cubes having various geometrical figures on their 6 sides.
- . And finally, 1 incomplete picture test where the respondent is supposed to find missing items in two seemingly identical pictures.

TABLE 3

Two Factor Vari-Max Rotated Principal Component Solution from a Study of Left and Right Brain Capabilities of 50 Students (Hansen and Lundsgaard, 1981)

	Fac- tor 1	Fac- tor 2
Word mobilization II. (left) .....	.77	.08
Word mobilization I. (left) .....	.66	-.21
Copy recall (left) .....	.56	.22
Subtraction (left) .....	.49	.15
Word-pair learning (left) .....	.08	.05
Face identification (right) .....	.18	.24
Visual gestalts (right)	-.10	.51
Face recognition (right)	-.09	.42
Cube-test (right) .....	.17	.63
Incomplete pictures (right) .....	.54	.59

In this study a factor analysis was conducted extracting two principle component factors which were vari-max rotated. This solution is reproduced in table 3, where it appears that of the five left brain capability tests four of them correlate significantly with the first factor. Similarly four of the five right brain capacity tests correlate with the second factor. Two of the tests did not correlate strongly with either of the factors. Among the left brain tests, the subtraction test performs the weakest, and among the right brain tests, the incomplete picture test seems problematic since it loads strongly on factor one as well as on factor two.

In the present study the four first and the last four tests of table 3, were used. In addition to this, four more tests were included. The first digit span is borrowed from the Wechsler Adult Intelligence Scale. This is supposed to measure left brain capability by testing the respondent's ability to recall figures.

The other left brain capability test included is a simple arithmetic test using different combinations of addition and subtraction problems.

As a third new test it was decided to try the stroop test, since this test in a different context has been suggested as a measure of brain lateralization (Lindzay and Norman, 1977). The stroop test is interesting because it is measuring responses in situations where he or she is placed in a conflict between information submitted to the left and information submitted to the right hemisphere.

For example the respondent is asked to report what he sees, when the word green appears in front of him printed in a strong red colour. Here left brain dominance should favour the response "green", whereas right brain dominance should favour the response "red".

Finally, as a supposed measure of right brain ability, a simple puzzle task was included.

All the 12 tests described here were administered to the same subjects, who had taken the tachistoscope and the dichotic listening tests. The resulting scores were standardized and normalized; and results from the eight tests included in the first study, also, were compared with the results from this study. No systematic differences in the right brain scores were found, whereas all left brain scores were higher for the university students than for the educational program students, two of them even significantly so. This is in accordance with expectations, since the first group, is a group with more and presumably better school training, and, therefore, it should perform better on the "intelligence like" left brain tests.

TABLE 4

Two Factor Vari-Max Rotated Principal Component solution of 12 Psychological Tests

	Factor 1.	Factor 2.
L1 Copy recall*	0.44	0.07
L2 Subtraction* ¹⁾	0.23	0.70
L3 Word mobilization I.*	0.73	-0.05
L4 Word mobilization II.*	0.88	-0.31
L5 WAIS-test	-0.04	0.26
L6 Computation	0.22	0.56
Stroop	0.30	0.09
R1 Face recognition*	-0.10	0.08
R2 Visual gestalts*	-0.10	0.23
R3 Cube-test*	0.18	0.42
R4 Incomplete pictures* ²⁾	0.54	0.27
R5 Puzzles	0.04	0.37

* Same tests as in table 3.
 1) Lowest factor loading in first test
 2) Loaded on left as well as on right factor in first test.

The 12 psychological tests were factor analyzed. The two factor principal component vari-max rotated solution is shown in table 4. Here, a somewhat mixed picture emerged. However, three of the four original left brain tests (copy, recall, and the 2 word mobilization tests) correlate with the first factor, and so does the stroop test. Similarly, two of the original right brain tests (visual gestalts and the cube-test) relate to the second factor, and so does the puzzle test. Problems appear, however, with the subtraction test (which was weak in the first test, also) and with the two new supposedly left brain measures, both of which correlate more with the second than with the first factor. Additionally the face identification test, which in the first application also correlated with the left brain factor, does so here again, and the same applies to the incomplete picture test.

Following this a new factor analysis was carried out with the seven best tests out of which five are identical with those from the first application. For these tests a vari-max rotated two factor solution was sought. This is shown in table 5, where it appears that the solution has some similarity with that of the previous application (table 3). Only the visual gestalts test does not fit this pattern. From table 5 it appears, that all tests loading strongly on the first factor, reflect left brain capabilities, whereas all tests loading on the second factor reflect right brain capabilities.

Altogether this gives some face validity to the interpretation of the two factors, as reflecting left and right brain capabilities. Similarly, the fact, that the reduced test battery (table 5) produces factors comparing well with those of the first application (table 3) suggests that these tests have some reliability.

For further analyses a psychological test index was computed where the standardized and normalized scores on the 4 left brain items was deducted from the double scores on the 2 right brain items, and this again divided with the total score of all 6 tests.

TABLE 5

Factor Loadings from Two Factor Vari-Max Rotated Principal Component Solutions Based on Standardized and Normalized Responses to 7 Psychological Tests.

	1.	2.
L1 Copy recall	0.44	-0.12
L3 Word mobilization I.	0.65	0.15
L4 Word mobilization II.	0.98	0.16
Stroop test	0.28	-0.05
R2 Visual gestalts	-0.10	0.07
R3 Cube-test	0.06	0.75
R5 Puzzle test	-0.07	0.54

The Relationship Between Psychological Tests, Dichotic- and Tachistoscope Measures

The psychological index does not correlate with either of the two most promising tachistoscope and dichotic tests. To examine the possibility of a relationship further, the seven psychological tests included in the last factor analysis (table 5) are correlated with the left and right visual field, measures from the tachistoscope circle and the meaningless word test (table 5). In interpreting these findings, it should be remembered that the ability to observe stimulation in the left visual field or by the left ear is supposed to indicate right brain processing and vice versa. In table 6 there are four strongly significant relationships ($p \leq 0.01$), and 3 relationships slightly less significant ($p \leq 0.05$). Most of these correlations, however, are opposing expectations, in the sense that they relate psychological tests measuring left brain capability with tachistoscope or dichotic measures supposed to indicate right brain capacity. To this observation should be added that already in the first study (Hansen and Lundsgaard, 1981) the relationship between dichotic listening measures and the psychological tests was questionable.

Therefore, it must be concluded that the psychological test do not validate the use of dichotic nor of the tachistoscope test as a measure for the identification of individual differences in lateralization in information processing. Of course it cannot be known whether it is the psychological test, the dichotic listening, the tachistoscope test or neither of them which actually measure such differences. We really only know that they do not measure the same phenomenon.

TABLE 6

Correlations between seven Psychological Tests and Tachistoscope and Dichotic Measures

	TA-C-L	TA-C-R	DI-ML-L	DI-ML-R
Copy recall (L1)	0.18	0.16	0.16	0.00
Word mobilization I. (L3)	0.04	0.04	-0.06	0.34 ¹
Word mobilization II. (L4)	0.12	0.10	-0.07	0.21 ²
Stroop	-0.13	0.05	0.30 ¹	0.00
Visual gestalts (R2)	-0.04	-0.20 ²	0.11	-0.04
Cube-test (R3)	0.19	0.18	0.16	0.22 ²
Puzzles (R5)	-0.03	0.25 ¹	-0.06	0.25 ¹

1) $p \leq 0.01$, 2) $p \leq 0.05$

2. Self-Administered Tests

The fourth type of measures included in the present study are self-administered tests. Here three different tests were used. From Richardson's (1977) verbalizer/visualizer test was included 15 of the original 20 items. To these, respondents should express agreement on a 5 point scale. The items are such as: "I like a job, where I am supposed to write and talk a lot (left)", "My imagination is better than of most others (right)". Of 15 items included, 8 were supposed to measure left brain capability.

It is worth-noting that the Richardson-test when it was developed, with some success, was compared with CLEM-measures. In later replications, however, this relationship did not hold up (Richardson, 1977).

Secondly, a forced choice test reported by Donegan (1979) was included. This test is composed of 20 items out of which 2 were deleted since they were assuming a knowledge of American culture which Danish subjects could not be expected to have. An example of the items which were used are:

- . Which of the following two games would you prefer:
 - a) Scrabble (left brain)
 - b) Chesser (right brain)
- . If you were to solve a problem what would you prefer:
 - a) A cross word puzzle (left brain)
 - b) Picture puzzle (right brain)
- . Do you easily remember faces:

Yes (right brain)

No (left brain)
- . Do you easily remember names:

Yes (left brain)

No (right brain)

Finally, a test developed by the present authors was included. This test is composed of 40 statements rated on a 5 point Likert scale, ranging from agreeing to strongly disagreeing. The test is partly based on experiences from the study reported in Hansen and Lundsgaard (1981). The first 28 items are revised versions of selected items from this study. The remaining items are constructed as substitutes for those deleted from the first application.

Prior to its inclusion in the present study, the questionnaire was administered to a group of 103 evening graduate, predominantly male business students, aged 25-40. Based on expectations regarding the effects of age, sex, and education, compared with the educational students, this group should be less right and more left brain oriented. Of the 24 significant differences found between the business graduates and the educational program students, 22 are in the expected direction.

For the Richardson and Donegan questionnaires a scoring plan is provided, so that for each of these a lateralization index can be computed. With regard to the Hansen and Lundsgaard questionnaire, several of the items are still tentative in character. Nevertheless, it is possible to hypothesize regarding their left vs. right brain relationship. Based upon this, it is possible to compute an left/right lateralization index for this questionnaire, also.

TABLE 7

Correlations between Richardson, Donegan, and Hansen/Lundsgaard index
N = 46, all correlations are highly significant ($p \leq 0.01$)

	H-L-Index ITEM-IN	Donegan VAR-IN	Richardson SPM-IN
ITEM-IN (H-L)	1.00	0.51	0.51
VAR-IN (DON)		1.00	0.29
SPM-IN (RICH)			1.00

TABLE 8

Correlations between 3 Questionnaire Indexes and the Tachistoscope and Dichotic Indexes

	TA-C-IN	TA-T-IN	DI-MF-IN	DI-ML-IN
ITEM-IN (H-L)	-0.11	0.07	0.01	-0.00
VAR-IN (DON)	0.04	-0.25 ¹	-0.15	0.05
SPM-IN (RICH)	0.13	0.13	0.01	0.01

1) $p \leq 0.05$				

Correlations between these three indexes are shown in table 7. They are all significant and so large that it is reasonable to conclude that they all measure aspects of the same underlying psychological structure. When these indexes are compared with the tachistoscope and the dichotic listening scores, however, the very discouraging result of table 8 emerge. Only one correlation is significant and this is in a direction opposite to expectations. Based upon these findings it is hard to claim that any of the questionnaires measure the same phenomenon as is being measured with either the tachistoscope or the dichotic listening techniques.

TABLE 9

Correlations between Index Computed Based upon Selected Psychological Tests, and Self-Administered Tests.

	Hansen/ Lundsgaard (item)	Donegan (var)	Richardson (spm)
Selected psychological tests	0.26 ¹	0.33 ¹	0.13

1) $p \leq 0.01$			

Comparisons with the psychological test come out slightly more positively. The psychological index correlates significantly with two of the three questionnaire-indexes (table 9). With regard to the Hansen/Lundsgaard index, it should be remembered that 28 of the 40 items included in this questionnaire originally were selected based upon their relationship with the psychological test items in

the first test reported in Hansen and Lundsgaard (1981). As pointed out earlier 4 items in the present psychological index are identical with those items appearing in the first test.

Other Measures

As discussed in the introduction conjugate lateral eye-movements (CLEM) have been applied in an attempt to measure tendencies for brain lateralization. In the Richardson (1977) application the relationship of the CLEM-measure to the self-administered questionnaire by Richardson is being studied, and even though the questionnaire is constructed based upon its relationship with the CLEM-measures, a revised relationship between the two measures is observed in later applications. Apart from this, we do not know, however, whether the CLEM-measure correlates with any of the measures tested in the present experiment.

With regard to the EEG-measures the situation is almost the same. In neither the Weinstein-studies nor in the Rocky, Green, and Perold-study are attempts made to validate the measurements with alternative measures of brain lateralization. The somewhat unclear results reporting in both studies, suggest problems with these measures, also. As discussed earlier, there are several methodological problems involved in connection with the EEG-measure. The extent to which the EEG-measure relates to either of the four measures used here, cannot be determined presently.

Discussion

The present findings suggest that there are complicated problems involved in studying brain lateralization in an economic psychological context. It is warranted to recommend that much more effort is put into the development of suitable measurement techniques before theoretical construct derived from brain lateralization research can be of any use in the study of economic psychological behaviour. They also suggest that findings reported by researchers in different research traditions should be viewed with caution. The results reached in other areas than economic psychology may be as dependent upon the measurement techniques as the findings reported here suggest. One must be cautious with regard to the interpretation of the relationship between the actual results and the underlying brain half specialization.

Also, the present findings make it important to emphasize the need for detailed methodological information to be included in all reports. This of course should apply to all good research. It is, however, not always being followed, and in the present area this is highly, unfortunate. Among the very large number of papers being reported in the psychological literature where dichotic listening has been applied for the study of brain lateralization, very few can be found where thorough replication can be carried out based upon the methodological information presented together with the findings alone.

The methodological problems are so much more important since the techniques used in those studies from where most of our knowledge about brain lateralization comes, are not easily - if at all - applicable on larger samples or even in smaller laboratory studies in economic psychology. This applies to split-brain observations, studies of brain damages, the use of electro-shock, and brain blood-flow photography.

Therefore, it is necessary to be sure that those substitute techniques, which are applied, do measure the same phenomenon which is being studied in more basic brain lateralization research.

In the view of the present authors, the discouraging findings reported here should not be taken as to proof that brain lateralization is an uninteresting phenomenon to the economic psychologists. On the contrary, brain lateralization research has a potential for making it possible to approach problems which have so far been unattainable to the economic psychologist. Therefore, it is of the greatest importance to solve those methodological problems which have been pointed out in this paper. To do so, however, requires that efforts are concentrated on this, rather than wasted on speculative applications, resulting in findings, the interpretation of which are far from obvious.

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ACHIEVING CORRESPONDENCE AMONG
COGNITIVE PROCESSES AND PHYSIOLOGICAL MEASURES

Michael J. Ryan, The University of Michigan

Abstract

The empirical bias inherent in buyer behavior research will hinder the theoretical usefulness of psychophysiological measures. This situation will arise primarily from the confusion of relationships among independent and dependent variables and levels of abstraction. A return to some basics of theory construction together with more emphasis on conceptual analysis may alleviate this problem.

Introduction

In order to develop the central thesis, a common ground must first be established concerning the notions of science, explanation, the role of concepts, and the relationships among abstractions and phenomena. The applied orientation of buyer behavior has led to some confusion concerning science and technology. Whereas fuller treatments are available elsewhere (Calder, Phillips, and Tybout 1981; O'Shaughnessy and Ryan 1979), a fundamental distinction must be made since this paper deals only with theory building which is in the realm of science. Science seeks explanation through abstraction whereas technology seeks prediction and control of everyday phenomena. Thus, there is a basic distinction in their objectives that dictates different methodological approaches.

Levels of Abstraction

Science seeks networks of concepts in which each concept accounts for a number of phenomena. Its objective, the explanation of the largest number of phenomena with the fewest number of concepts, is gained by overlaying networks of variables at more abstract levels (see Ryan and O'Shaughnessy 1980). Torgerson's illustration, shown in the Figure, captures this notion quite well.¹

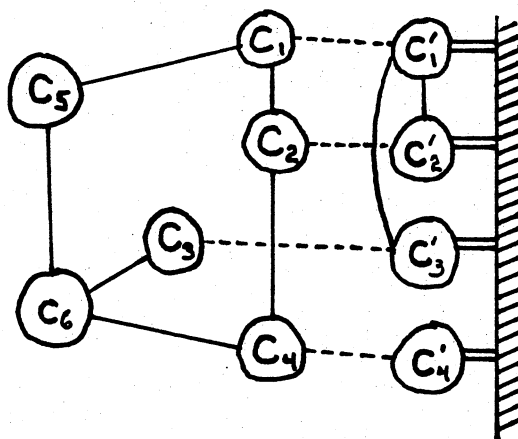
At the extreme left are concepts which have no existence in the empirical world. Each concept is itself a mental process by which theoreticians account for concepts at lower levels of abstraction. For example, the concept cognitive dissonance may be useful in accounting for "anger" "frustration" and "complaint intentions." What is important to note is that by their very nature concepts have no direct connection to the observable world. They are general analogies useful for explaining "as if" they existed and their validity is judged by their usefulness. If, for example, the "consolidation theory of memory" is replaced with a "depth of processing" theory that does not contain "short term memory" this would imply that the new theory accounts for observable phenomena in a way more useful for the purpose at hand than did the old theory. The existence of "short term memory" is not an issue since its imaginary life in the theorists mind is quite apart from observable phenomena.

A concept depends upon theory for its meaning, not observable phenomena, as it has only systemic (Kaplan 1964)

¹The description that follows is based heavily on Kaplan's (1964) exposition. Slightly different viewpoints will be found in Baggozzi (1980) and Zaltman, et al. (1973).

FIGURE

Relationships Among Abstract and Empirical Variables



Source: Torgerson, 1958, p. 5.

meaning.² For example, cognitive dissonance derives its meaning from its relationships (the solid lines in the Figure) with other concepts contained in balance theory. Furthermore, meanings change depending on theoretical orientation. Thus, for example, the meaning of attitude depends on whether one subscribes to single component or tripartite attitude theory (Peter 1981).

Constructs are inventions whereby we link concepts to the empirical world. They contain both systemic and observational meaning. Thus, they are linked to concepts through laws or propositions (the solid lines in the Figure) and to phenomena through rules of correspondence (the dashed lines in the Figure). Thus, "sensory input," "short term memory," and "long term memory" may be viewed as constructs having systemic meaning within "consolidation memory" and observational meaning through rules of correspondence linking them to appropriate phenomena. Whether a term is a concept or construct will, of course, depend on the theory that contains it.

Phenomena refer to things recognizable by one or more of the five senses. By an "appropriate phenomena" is meant something that falls within the domain of the construct (Nunnally 1967). A specific type of recall, for example, may evidence a phenomenon only explainable by long term memory or a particular written statement may indicate dissatisfaction.

²The position taken here is based on the philosophical school known as instrumentalism. For a more detailed exposition and juxtaposition with other schools of thought see Messick (1981).

Operational definitions (the sets of parallel lines in the Figure) state how certain characteristics of the phenomena are quantified. For example, "strength" may be a characteristic of intentions which we may quantify through use of a probability scale or "duration" and "detail" may be characteristics of "recall" also susceptible to paper and pencil testing. The important point here is that we never directly measure any construct no matter how low its level of abstraction. We only quantify certain characteristics that we attribute to it (Jones 1971). We may, for example, measure the width, height, weight, light reflecting property, etc. of a table. Yet, table is an arbitrary category since these characteristics could just as well refer to "cube" or "box." In the same way, a galvanic skin response measure could be accounted for by a number of different abstractions such as sexual arousal, anger, frustration, etc. Thus, phenomena depend on abstractions for their meaning.

The above discussion suggests that it is a long way from concept, on the extreme left of the Figure, to observable, on the extreme right of the Figure. Furthermore, the interplay among the different levels of abstraction makes it impossible to view certain levels in isolation from others. Thus, measurement of any type cannot proceed without conceptual analysis.

Consumer Research Orientation

The field as a whole is continually recognized for its deficiency in conceptual analysis and lack of theoretical frameworks (Ferber 1979; Jacoby 1978; Kollat, et al. 1970; Sheth 1967). Areas of research have been abandoned to conceptual confusion arising primarily from inadequate measurement procedures (e.g., Kassarian 1971; Wilkie and Pessemier 1973) and the general problem of reification has been pointed out (Fishbein 1976).

Consider the following quote from a recent article on voice graph analysis (Nighswonger and Martin 1981): "Attitudes are constructs which exist in the minds of individuals" (p. 350, 1st line).³ The only individuals in whose minds attitudes exist are the researchers not the subjects. Attitude may provide a conceptual scheme useful in interpreting voice pitch and voice pitch analysis may help document the usefulness but not the existence of attitude.

Orientation of Psychophysiology

Due to tremendous technological limitations, psychophysiology has been preoccupied with the development of measurement apparatus. This orientation, together with the primary objective of understanding physiological processes, has produced a large body of literature primarily concerned with relationships among empirical phenomena (e.g., Thatcher and John 1977). For example, a tree sways back and forth in the breeze and a corresponding pattern of electrical impulses are detected in the brain. When the physiologist talks about electrical impulses as a representation of tree movement he is not referring to this representation as a mental construct. As Jacobson (1973) notes: "in electrophysiology, of course, we record signalization, not meaning" (p. 4). And "...when a physiologist speaks about mental activity to the experienced psychologist, he is talking in a foreign language" (p. 5). To the physiologist, then, a mental representation would consist of coordinated neural activity shifting and

³The notion that constructs actually exist is consistent with the philosophical school known as realism which flourished in the 18th and 19th century (see Kaplan, 1964, especially Chapter 2 and 8).

changing in an orderly position as the tree sways (Thatcher and John 1977, p. 135). The internal representation does not, of course, resemble a tree. On the other hand, the behavioral theoretician would view the internal representation as the ideal type "tree" which, of course, does resemble a particular swaying tree, and is an imaginary concept useful for organizing and interpreting the world.

Psychophysicologists do use mental concepts to organize physiological phenomena. However, they are careful to make the distinction noted above between abstractions and phenomena. Thus, for example, Cacioppo and Petty (1981) refer to electromyograms as responses which may be accounted for by "information processing," an abstraction. More to the point, Cacioppo and Petty clearly delineate levels of abstractions (e.g., models of memory + linguistic elaboration + self reference vs. orthographic task) in a way that their theoretical framework provides meaning for observed EMG activity.

Problem Proneness

There are always problems not understood by the inventors and the borrowers concerning the magnitude of errors or inaccuracies inherent in the measurement process. The empirical bias of consumer researchers suggests that they will focus on the complex technological limitations of physiological measures and overlook the conceptual limitations known to psychophysicologists. There are already indications that this bias will manifest itself in two ways; first, a misunderstanding of which concepts may account for psychophysiological phenomena, second, a lack of recognition of the role of artifacts and intervening variables.

Pupillometrics provides an apt example of the first problem. Reviewers of this literature report that, among other things, pupil dilation-contraction may be accounted for by affect, sexual arousal, discrimination of auditory pitch, cognitive processing, task difficulty, and memory loading (e.g., Hess 1972; Watson and Gatchel 1979). Watson and Gatchel and Blackwell, et al. (1970) conclude there is doubt as to which psychological processes underlie pupil response. Yet, Hansen (1981), writing in the *Journal of Consumer Research*, reports that what is being measured is most frequently believed to be involvement, activity, or engagement in the issue. Without a conceptual explanation this interpretation of selected empirical findings is simply misleading. In fact, Hess (1972) cites a number of empirical studies to conclude that pupillometrics is valuable because it reflects many different types of nervous system functioning and mirrors ongoing neurological activity in all parts of the brain. He does not address the more interesting question as to how this general level of neurological activity can indicate distinct mental constructs.

An excellent example of the intervening variable problem has been provided by Edelbert (1972) in regard to electrodermal responses (EDR). He states that EDR is an indicator of autonomic (primarily sympathetic) nervous activity and, more specifically, reflects the sympathetic inflow to the cutaneous area under observation.

...it is clear that more often than not the investigation in a psychophysiological experiment conceptually bypasses this step and equates electrodermal activity either to the level of arousal or to emotional activity. It should be apparent that this is an abstraction based on an assumption that there is a direct relation between sympathetic activity and these behavioral correlates, an assumption which, in view of the neuro-physiological substrate of the electrodermal reflex, may be unwarranted.

Writing in the Journal of Consumer Research, Krober-Riel (1979, 1980) does equate EDR to level of arousal. In an analogous situation he also defines information as only the sensory input reaching short term memory. Yet, eye fixations are used to indicate information. This interpretation is based on the assumption that information within the fixated area is necessarily processed. Unfortunately, the selective and distorted perceptions that attend information processing mitigate against this assumption (Ryan 1980).

Conclusion

Psychophysiology may hold promise in the development of consumer behavior theory, especially in areas where verbal responses are inappropriate (cf. Nisbett and Wilson 1977). However, beliefs that physiological measures provide direct access to mental processes are based on outmoded views of science. Indeed, the reliability and validity problems of psychophysiological measures may be more awesome than those we face with verbal, paper and pencil, or more traditional observational measures. In order to avoid the problems of the past it is suggested that those using physiological measures to build theory incorporate the following suggestions. First, there should be a clear delineation of levels of abstraction with physiological response meaning embedded in a theory. Second, it should be clear which parts of the conceptual analysis involve primarily deductive and/or inductive reasoning (cf. Marx 1963).

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CONSUMER USES OF COMMON DIMENSIONS
IN THE APPRAISAL OF SERVICES

J.E.G. Bateson, The London Business School
E. Langeard, I.A.E. University of Aix - Marseille

Introduction

This study is concerned with how consumers evaluate services. In particular it is concerned with whether consumers' evaluation of different services can be understood using the same criteria or dimensions. It is therefore an attempt to rise above the level of service specific attributes and instead look for commonality between services.

This paper first describes the extensive process of focus groups, in-depth interviews and pre-tests which were used to develop a set of dimensions. The validity of the dimensions is then discussed in the context of consumers' choice between more or less participative methods of receiving a number of different services, for example the choice between pumping their own gas and having an attendant do it or an automatic teller machine and a human teller. Finally some observations are offered on future research based on these dimensions.

The Exploratory Research

The initial phases of the exploratory research consisted of two focus groups, twelve personal interviews and three 'mini-group' discussions. One focus group consisted of a cross-section of white collar workers, the other of blue collar. The professional group leader lead the white collar group into discussions of restaurants, hotels, and banks and the blue collar of restaurants, banks, and supermarkets.

The twelve personal interviews were conducted by a professional psychologist and took the form of semi-structured discussions of banks, fast food restaurants and hotels. The difficulty of getting individual respondents to talk and of getting sufficient depth in large groups lead to the idea of a 'mini-group'. Three groups of three respondents were assembled with a professional discussion leader.

This entire process was intended to surface the dimensions along which respondents evaluated all services. A number of such dimensions emerged and these are described below. It should be stressed that reactions to different services varied across respondents. Thus for example some respondents thought they could have more control of the situation using an automatic teller, others that they were more in control with a human teller. Consumers reactions to services also varied with the situation, for example who was in the party, but the dimensions did not vary. In total seven dimensions emerged and are listed below with representative respondent comments where appropriate:

- Time. The respondents saw services as time consuming in a time budgeting sense.
- Control. The respondents expressed the need to feel in control whilst receiving the service:
"I much prefer to know what I am doing"
"I don't like using the bell boy in hotels -- I don't know what my purpose is walking along behind him...I don't like not knowing what I'm doing"
- Effort. There was a general consensus that the more participative services required effort. This was especially obvious where the effort involved was physical e.g. in pumping gas but many respondents perceived more effort to be needed in the more intellectual tasks e.g. using an automatic teller machine.

- Dependence. There was quite a large reaction against the need to depend on other people to receive the service:
"Machines make us more independent"
"I like to depend on myself"
"I don't need that other person..."
- Efficiency. A large number of the respondents articulated their reaction to services in terms of how efficient it was for them.
- Human Contact. Different respondents had different reactions to the need for human contact when receiving a service but all perceived differences between services along this dimension:
"The people, courtesy, human contact...I enjoy that"
"A bell hop is human, hotels are so big, a bell hop humanizes the hotel"
"I don't have to get involved if I don't want to"
- Risk. Many of the dimensions of risk originally suggested by Bauer (1960) and others surfaced doing the various discussions. There was little talk of financial risk but much of psycho-social and performance risk.

Following these initial stages draft questionnaires were developed attempting to measure consumers reactions to services along these dimensions. To provide a preliminary test of these questionnaires two focus groups were conducted. Respondents were first asked to complete the questionnaire and then a professional discussion leader asked them to go through the questions and articulate what they thought they meant. This process produced a number of word changes but did not surface any new dimensions.

Consumers' Use of the Dimensions

The problem of productivity is one that plagues the service sector. Across many industries within the sector, one approach being used to improve productivity is to increase the participation of the consumer in the production of the service. To encompass this idea Gartner and Riessman (1974) extended the traditional ideas of capital and labour intensity and suggested that in the service sector we should also be concerned with 'consumer intensity'.

The dimensions developed by the process described earlier were used to investigate how consumers evaluate the choice between the two alternative ways of receiving their service.

The Methodology

The exploratory research described earlier highlighted early in the study that consumers' choice between the different ways of receiving a service was highly influenced by situation specific variables (e.g. What is the occasion? What time is it? Who is in the party? etc.). To overcome this, situational scenarios were developed which were realistic from the standpoint of the respondents, controlled for a wide range of factors known to affect behavior (including monetary incentives) and offered respondents a choice between two alternative service delivery systems.

In total six scenarios were developed:

1. At a service station -- pump your own gas versus having an attendant do it for you.

For this specific scenario the dimensions clearly discriminate between the intention groups in terms of their perceptions of the alternatives. All of the F-statistics are highly significant. The general pattern across dimensions is that those respondents who are less inclined to use the participative alternative perceive little difference between the alternative delivery systems. Those respondents who intend to use the more participative alternative on a greater percentage of occasions, see much bigger differences. They perceive the A.T.M. as taking less time, offering them more control of the situation; making them less dependent on others; being more efficient and having less human contact.

For this banking scenario, the importance attached to time, control, efficiency, human contact and risk all discriminate between the groups. The more participative groups rate time and efficiency more highly and the less participative groups human contact and risk. Although there are differences along the human contact dimension the general level of importance attached to this dimension is low.

The analysis for the bank scenario has been presented in detail to illustrate the general process. Of more interest, in terms of the validity of the dimensions, is the pattern across all seven scenarios. Figure 3 tabulates only the F-statistics for all seven scenarios for both perception and importance. The findings tend to duplicate those found for the bank scenario alone. The perception of time, control, dependency, efficiency and risk discriminate between the participator groups. The importance attached to time and control stood out as key dimensions across all scenarios. These two dimensions must therefore be considered as particularly important since they discriminate on both 'perception of difference' and 'importance'.

Figure 3
F-Statistic for all Seven Scenarios
for Importance and Perception

PERCEPTION OF DIFFERENCE	QUESTIONNAIRE A			QUESTIONNAIRE B				NUMBER OF SCENARIOS FOR WHICH THIS DIMENSION DISCRIMINATES
	GAS STATION	BANK	QUICK SERVICE RESTAURANT	GAS STATION	AIRPORT	HOTEL	TRAVEL AGENCY	
Time	21.8**	48.1**	9.2**	18.3**	33.9**	13.4**	61.0**	7
Control	21.8**	36.4**	26.1**	11.5**	20.4**	21.9**	15.9**	7
Effort	5.1**	9.1**	1.2	5.3*	23.7**	2.3	18.2**	5
Dependency	22.1**	21.3**	16.0**	12.8**	27.5**	7.0**	19.2**	7
Efficiency	27.2**	32.2**	21.0**	15.8**	39.8**	16.4**	26.5**	7
Human Contact	0.6	7.3**	2.4	0.8	5.1**	3.9*	10.5**	4
Risk	38.9**	37.4**	23.2**	32.3**	25.4**	16.3**	14.6**	7
NO. OF DIMENSIONS DISCRIMINATING FOR THIS SCENARIO	6	6	5	6	7	6	7	

IMPORTANCE ATTACHED TO THE DIMENSIONS	QUESTIONNAIRE A			QUESTIONNAIRE B				NUMBER OF SCENARIOS FOR WHICH THIS DIMENSION DISCRIMINATES
	GAS STATION	BANK	QUICK SERVICE RESTAURANT	GAS STATION	AIRPORT	HOTEL	TRAVEL AGENCY	
Time	10.5**	22.4**	33.0**	5.2**	26.4**	24.7**	7.9**	7
Control	24.4**	3.9*	22.6**	17.5**	51.1**	27.1**	5.5**	7
Effort	22.3**	0.6	3.5*	21.4**	81.4**	11.5**	0.9	5
Dependency	1.7	2.1	10.2**	2.7	4.3**	5.1**	1.7	3
Efficiency	6.8**	3.4*	17.1**	1.5	11.0**	10.6**	7.6**	6
Human Contact	1.1	17.9**	8.3**	1.8	2.5	3.5**	6.8**	4
Risk	2.2	19.3**	2.2	4.4*	11.0**	0.5	8.4**	4
NO. OF DIMENSIONS DISCRIMINATING FOR THIS SCENARIO	4	5	6	4	6	6	5	

* Difference between participator groups are significant at $p < 0.01$
 ** at $p < .001$

Summarizing the detailed contents of the tables across scenarios is more difficult. Figure 4 tabulates the number of scenarios where a particular participator group perceived the alternatives as different. 'Different' is here arbitrarily defined as having a mean score differing by more than one from the indifference point of 3 in either direction on the scale. The table is therefore a crude

indicator of where groups saw differences, but not of the direction of the differences.

Figure 4
Perceptions of Differences

	PARTICIPATOR GROUP					TOTAL
	NON PART.	LOW PART.	MEDIUM PART.	HIGH PART.	FULL PART.	
Time	0	1	2	6	7	16
Control	0	0	1	5	5	11
Effort	3	1	1	1	0	5
Dependency	0	0	1	7	7	15
Efficiency	0	0	0	2	6	8
Human Contact	2	3	3	6	5	19
Risk	0	1	1	1	3	6
Total:	5	6	9	28	33	

*For each Group Number of Scenarios for Which a Specific Dimension Deviates from the Indifference Level (3,0) by 1.0 or more. The Theoretical Maximum in each Cell is 7.

The bottom row of the table confirms the findings from the bank scenario. Less participative groups perceive few differences between the alternatives. This was not an altogether intuitively obvious finding since an alternative hypothesis would have been that the less participative groups would have perceived 'negative' differences between the alternatives. The final column of the table confirms the importance of time, control, dependence and human contact as dimensions along which the different groups perceive differences between the alternatives offered to them across a number of scenarios.

In a similar way, Figure 5 tabulates the number of scenarios where a particular participator group indicated a particular dimension was 'important'. 'Important' is here arbitrarily defined as a mean score of 3.0 or above. Once again the theoretical maximum in each cell is seven in all the scenarios.

Figure 5
Importance of Dimensions Across Scenario

	PARTICIPATOR GROUP					TOTAL
	NON PART.	LOW PART.	MEDIUM PART.	HIGH PART.	FULL PART.	
Time	1	6	7	7	7	28
Control	2	4	7	7	7	27
Effort	3	4	1	0	0	8
Dependency	0	0	0	0	0	0
Efficiency	2	5	7	7	7	28
Human Contact	0	0	0	0	0	0
Risk	6	4	3	3	4	20
Total:	14	23	25	24	25	

The results again mirror those found with the bank scenario. Time, control, efficiency and risk stand out as dimensions perceived to be important in many scenarios. The more participative groups across scenarios perceive time, control and efficiency as important whereas the less participative groups assign their importance to the risk dimension.

Discussion

The dimensions that have been developed have little more than face validity. They are however capable of discriminating between groups of consumers in terms of their intention to participate more in the production of their services. Not only that but the pattern of responses by participator group is intuitively reasonable.

The idea that consumers' evaluation of services could be understood using dimensions above service specific

attributes is rooted in our belief that, from the consumers' perspective, services do have common characteristics. Elsewhere we have argued that those common characteristics result from the experiential nature of services and have suggested a theoretical model of services as an interactive process involving the consumer (Langeard, et. al., 1981).

Of the dimensions that have been studied two are not new. The consumer behavior field is increasingly interested in the role that time plays in decision making. The idea of perceived risk was originally proposed by Bauer (1960) and produced a stream of work over the next fifteen years (see Ross 1974 for a review). The other five dimensions are, however, not only new but would be inappropriate if applied in the goods sector.

The five dimensions are all consistent with the idea of a service as an interactive process. Perhaps the most interesting and potentially the most worthy of further study is the dimension of control. This dimension was a valuable discriminator in terms of both perceived differences and importance rankings. The idea that consumers should wish to feel in control when receiving a service is also intuitively appealing. One obvious direction for future work would be to consider whether 'need for control' could be measured and whether it varied across individuals. It would be equally important to investigate the characteristics of a particular service which engendered in a respondent the sensation of being in control.

Understanding service interactions from the consumer point of view is a field that has received little attention. Czepiel (1980) in considering consumer satisfaction with services concluded that "little formal work has been done to investigate the elements of service encounters and conceptualize their content".

Potentially the work focusing on consumer involvement could provide a framework for investigating such interactions. Houston and Rothschild (1978) suggest three kinds of involvement: situational, enduring and response. All three could be helpful in understanding service interactions. However response involvement is probably the most interesting. Unfortunately, of the three measures this is the least standardized, dealing as it does with the various stages of the buying process. Since consumers are more and more being called upon to be the producer of their service it would also have to be extended to cover consumers participation as a producer.

Appendix A

The Bank Scenario

"It is 10.00 a.m. and you wish to withdraw \$50.00 from your checking account. You have a card which would enable you to use an automatic teller machine or you could go to a human teller with your checkbook. So your choices are:

Either use the automatic teller machine;
or use the human teller.

There are equally short lines of people waiting to use the machine and at the teller window."

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ATTRIBUTE DETERMINANCE: A FUNCTION OF PAST MEMORY AND EXTERNAL FACTORS

Meryl Paula Gardner, New York University

ABSTRACT

The effect of memory on situation-specific brand evaluation processes is explored. The impact of internal and external factors on attribute and non-attribute strategies is discussed. An attempt is made to integrate past findings and to suggest directions for future research.

INTRODUCTION

How does memory affect the brand evaluation process used in a particular situation? This question is most interesting, and most difficult to answer, when each of the terms involved is used in its most general sense. The term "memory" refers to all that is stored - not just product knowledge. Analogously, the phrase "evaluation process" refers to how brand affect or brand attitude comes about - not just cognitive, attribute-based evaluative procedures.

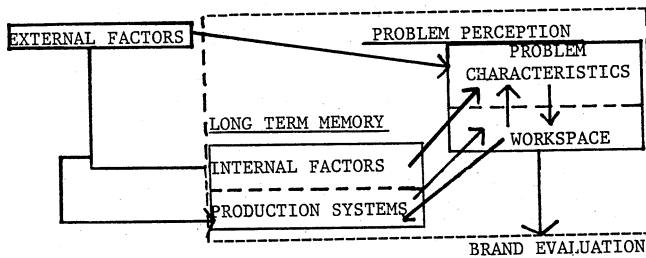
Any viable framework for approaching the initial, general question must be able to address the following sub-questions:

- (1) How does memory affect the degree of attribute processing used in a particular brand evaluation?
- (2) If attributes are not used, how does memory affect what is used instead?
- (3) If attributes are used, how does memory affect which ones are used?
 - a) Which general types of attributes?
 - b) Which specific attributes?

Past research has addressed each of these questions individually. This paper seeks to provide a framework for integrating past findings and suggesting future research directions.

Brucks and Mitchell (1981) provide a general framework for such an approach. A modification of their model appears in Figure 1.

FIGURE 1
OVERVIEW OF MODEL (MODIFIED FROM BRUCKS AND MITCHELL, 1981)



In this model, brand evaluation is viewed as the output of an internal process influenced by internal and external factors. The internal aspects appear in the dotted line box. They include the individual's long term memory, i.e., internal factors and production systems, and his perception of the problem, i.e., problem characteristics and workspace.

Internal factors are organized as schemata, i.e., frameworks into which thoughts must fit (Calder and Schurr,

1979). These structures influence retrieval of stored information and acceptance of incoming information (Neisser, 1976; Rumelhart and Ortony, 1977; Taylor and Crocker, 1981). Schemata may include five kinds of knowledge traditionally studied by information processing research: terminology, specific facts, relationships, criteria for evaluation, and procedural information. (For a discussion of this typology, see Brucks and Mitchell, 1981). Such knowledge may be with respect to a particular domain or it may be general, world knowledge. In addition, schemata may include elements less frequently discussed by information processing researchers. These include cultural values, sensory memories, motor responses, affect, and response tendencies. Such factors are hard to define and assess, but may have important effects upon consumers' brand evaluations.

Production systems have traditionally been used to help explain human behavior at the information processing level (Newell and Simon, 1972). They provide a control structure to organize the elements of the human information processing system (e.g., memories, encodings, primitive operations) to effectively process knowledge (Newell, 1973). The basic element of a production system is a condition-action statement. The condition refers to elements in the consumer's workspace; the action consists of transformations on such elements (e.g., Klahr, 1973). Productions allow dynamic responses. They can self-trigger and trigger in parallel. Recently, production systems have been used as control systems to explain processing of emotions (Bower and Cohen, 1982).

Internal factors and production systems are stored and relatively enduring, though not always activated. A more transient internal aspect is problem perception. This consists of two parts, the individual's characterization of the problem and his active workspace. The term "problem characteristics" refers to how the consumer structures the problem in his mind. It may include problem definition, alternatives considered, and the perceived urgency of the problem. The term "workspace" refers to all of the material activated at an instant.

External factors are characteristics of the decision situation external to the individual. These include outside pressures, situational importance, budget constraints and outside requirements. In addition, they include characteristics of the product, characteristics of the ad, e.g., amount of information, and characteristics of the viewing situation, e.g., external distractions.

How do internal and external factors interact to form overall affect or attitude toward a brand? Attitude formation involves interacting processes and intermediate steps. In order to answer the question and sub-questions posed earlier, the effects of internal and external factors on some of these processes and steps must be examined.

SOME EFFECTS OF INTERNAL AND EXTERNAL FACTORS

Problem Characteristics: Internal and external factors may affect such problem characteristics as problem definition, alternatives considered and the urgency of the problem.

Problem definition may be affected in the following ways:

- 1). Sets of requirements or needs associated with par-

ticular situations may be stored and elicited directly.

2). Procedural knowledge for a task category may affect problem definition by specifying behaviors with respect to objects in a domain.

3). A culture's goals and values may affect the way its members define their needs.

4). Aspects of the external environment may catch an individual's attention and affect his needs or his awareness of them. For example, hearing the sound of liquid pouring into a glass may make him thirsty or make him think he's thirsty or make him aware of his thirst. Research is needed to fully unravel these possibilities.

The alternatives considered may be affected by the set of products associated with consumption experiences in the consumer's memory. For example, hunger may evoke many different kinds of alternatives, depending upon prior experiences. For some individuals, the evoked set may consist of names of restaurants. For others, it may consist of names of foods to cook at home. In either case, the set of salient alternatives may be influenced by environmental cues, e.g., billboards.

The urgency of the problem may be affected by the individual's somatic feelings/needs, e.g., extreme hunger, and by external pressures, e.g., a deadline.

Comprehension: A basic understanding of terminology is necessary to understand and interpret incoming information. In addition, differences in schemata may cause familiar and unfamiliar consumers to differ in the difficulty they experience learning new information about a brand or product. Familiar subjects may be able to readily integrate a new attribute into their complex, well-indexed long term memory (Kinder, Fiske, and Wagner, 1978). Converse (1975, p. 79) points out the differences in costs of assimilating new information for those who are well-informed or poorly-informed about politics:

If an informed observer hears a surprising policy statement in the news by the Secretary of Defense, he may prick his ears and pay close attention. He relates this information to what he knows of recent policy, what he knows of the Secretary's relationship to the President, what he knows of past positions the Secretary may have taken, and the like, since he is intensely interested to detect even small reorientations of national policy. In short, he automatically imports enormous amounts of prior information that lends the new statement with high interest. The poorly informed person, hearing the same statement, finds it as dull as the rest of the political news. He only dimly understands the role of Secretary of Defense and has no vivid image grounded in past information as to the inclinations of the current incumbent. His awareness of current policy is sufficiently gross that he has no expectation of detecting nuances of change. So the whole statement is confronted with next to no past information at all, hence is just more political blather.

Research involving text processing has shown that individuals who are knowledgeable about an area are able to recall more information about a presented passage than individuals who are not knowledgeable (e.g., Spilich, Vesonder, Chiesi and Voss, 1979; Chiesi, Spilich and Voss, 1979). These studies have involved intentional learning of long, complex stimuli. Further research is needed to ascertain the extent to which these results can be generalized to ad-viewing situations.

Inference Formation: People who know the relationships among product attributes may use such knowledge to form inferences. For example, an individual may believe that smooth riding cars often handle poorly. When presented with information about a new car's ride or handling, he

can make inferences about the car's performance on the missing attribute.

Chi (1981) has found that expert physicists are better able to form inferences needed for problem solving than novice (beginner) physicists. Further research is needed to ascertain the applicability of research on expert - novice differences in physics to consumer differences in product familiarity.

Moesser (1976) has postulated that new information which can be readily related to other information in an encoder's memory system may be added to the existing structure in semantic memory and could be used to generate inferences. New information which cannot be related to other stored information may be stored as a discrete unit in episodic memory. If encoded as a discrete fact, the information could not be used for inference formation.

Ability to Use Information: People differ in their knowledge of procedures for using, interpreting, manipulating, and combining pieces of information. Chi (1981) found that novice (beginner) physicists tended to lack the knowledge of when to use certain physics knowledge.

Redinger and Staelin (1979) investigated consumer evaluations of refrigerators and air conditioners of varying energy efficiencies. They found that consumers provided only with information concerning annual operating costs chose less energy efficient appliances than those provided with information on how to trade off operating costs with initial price. Consumers in the first group, after becoming aware of the fact that appliances cost a significant amount to operate, seemed to attempt to reduce the amount they spent initially so that they could later afford to pay the high energy costs. They did so by purchasing lower priced, less efficient appliances.

These findings suggest that telling consumers about energy costs without teaching them how to use that information to trade off between initial price and operating cost might decrease sales of energy efficient appliances among consumers who do not know how to use the information. Information provided to consumers seems to affect purchase differently for consumers who differ in their abilities to use the information.

Source and Information Evaluation: An individual's knowledge of specific facts and relationships may aid in source and information evaluation. Presented material may be compared to recalled data and to inferences. If the stimulus materials do not jibe with what is known or inferred, counterarguing against the contents in the stimulus may occur. If the ad or spokesperson seems foolish, unreliable or untrustworthy, source derogation may occur. In such cases, the consumer may not use the stimulus information to form his attitude.

Confidence in Evaluative Ability: The discussion, thus far, has dealt with the effects of the consumer's objective knowledge about products or evaluations. It is also important to understand the effects of the consumers' subjective assessment of his knowledge (Park and Lessig, 1981). Eighmey (1978) reported that only about half of those respondents who had recently purchased a major durable felt that they could judge the product they purchased without obtaining additional information. Consumers may, in fact, know more than they think they do. Perhaps, like rats in learned helplessness experiments, they have been taught not to use the skills they possess.

A consumer's assessment of his ability to evaluate brands in a product class may be affected by interactions between his knowledge and external cues. For example, if a salesman used terminology unfamiliar to the consumer, he may intensify the consumer's feelings of subjective unfamiliarity. This may make the consumer more vulnerable to the

salesman's informational influence (e.g., Park, 1982).

Subjects unfamiliar with a product class are likely to be less confident in their product judgements. Markus (1977) found that individuals who have a self-schema in a domain are more confident in predicting schema-related behaviors than those who do not.

In addition, Raju and Reilly (1977) found that subjects selected brands with fewer below average features when making choices for unfamiliar products than for familiar products. They conjectured that subjects were more likely to "play safe" when dealing with unfamiliar products than when dealing with familiar ones. This tendency might extend to avoidance of new attributes by unfamiliar subjects.

Saliency: Krech and Crutchfield (1948) are credited with the earliest definition of saliency: "Saliency refers to the fact that not all of a man's beliefs stand out with equal prominence in his cognitive field. He may be more acutely aware of certain of his beliefs than others, they may enter his thoughts more readily, they may be more frequently verbalized - they are, in a word, salient." Thus, saliency may be associated with "ease of recall" and is frequently assessed with elicitation procedures (e.g., Ryan and Etzel, 1975). According to a spreading activation theory of memory (e.g., Collins and Loftus, 1975), the items that are elicited first are the ones most strongly associated with a cue node in memory.

Things that are familiar may be more readily recalled than those that are unfamiliar. Chi and Koeske (1979) found that the superior recall of familiar items is directly related to the large number of connections among them in memory. Thorndyke and Hayes-Roth (1979) found that interconnected knowledge substructures or schemata may encourage both facilitation and interference effects. Compared to consumers who are unfamiliar with a product, those who are familiar may have more knowledge in memory related to the product and it may be more cohesively interconnected. We expect consumers familiar with a product to exhibit different recall patterns from those who are unfamiliar.

Marks and Olson (1981) postulated that familiarity may affect the nature of elicited attributes. They found marginal support for the elicitation of more abstract attributes by people familiar with the product class, typing chairs. They postulated that people unfamiliar with the product may not be able to go beyond its obvious features.

Saliency is strongly affected by external stimuli. Things which stand out in an environment may receive more attention and so, be more easily recalled (e.g., Taylor and Fiske, 1978). Advertisers can use attention getting devices such as color, letter size, and typeset to make a particular attribute stand out in an ad. Under such circumstances, the prominent attribute is more likely to be recalled than when it is merely mentioned in the body copy. In addition, when one attribute is prominent, other attributes are less likely to be recalled than when all attributes are merely mentioned in the body copy. Making one attribute prominent seems to direct attention to it and away from all others (Gardner, 1981). Calkins (1894) reported similar findings using color to manipulate the prominence of numerals in a list. (For a discussion of the underlying process, see Simon and Feigenbaum, 1962).

Evaluative Criteria: Salient attributes may or may not be determinant, i.e., used to evaluate brands in a product class. (For a discussion of the relationship between saliency and determination, see Gardner, 1981).

Park and Lessig (1981) have investigated the relationship between familiarity level and reliance on nonfunctional cues such as price and brand name. They found that low familiarity consumers placed a higher confidence on brand name and price than on functional dimensions; moderate

familiarity consumers displayed less confidence on brand name and price than on functional dimensions; and high familiarity consumers placed as high a confidence on brand name and price as upon the functional dimensions. They interpreted these findings as reflecting the effects of the consumer's shopping and consumption experiences on his evaluative criteria.

In general, consumers differ in their knowledge of criteria to use to evaluate brands in a product class. The subject's own evaluative criteria and the attributes featured in a stimulus ad may interact to determine the set of criteria used in a given evaluation. For example, we might hypothesize that subjects who are familiar with a product and have a stored set of evaluative criteria may handle missing information differently from those who are unfamiliar with a product and do not have a stored set of evaluative criteria. Those in the former group may form inferences about the omitted attributes; those in the latter group may base their attitudes solely on the attribute information provided. In general, consumers who do not know which attributes to use to evaluate a brand, may use the advertised attributes and little else (e.g., Wright and Rip, 1980).

What happens if both the internal and external environment fail to provide information about evaluative criteria? When confronted with such a situation, an individual may use categorical information. He may base his evaluation upon attributes which are normally used to evaluate objects in a more general class of products to which the unfamiliar product belongs or is related. For example, if you don't know anything about shaving cream, you might use attributes appropriate for evaluating toiletries in general, such as scent, or those frequently found useful in evaluating products in general, such as price. If a product is considered highly representative of or similar to the more general class of products, the tendency to use this strategy may be enhanced due to the representativeness heuristic originally investigated by Kahneman and Tversky (1972).

Evaluative Style: A consumer may choose products without forming attribute-based evaluations. Instead, affective channels, category-based affect, pattern matching, or motor responses may influence his brand preferences.

Under some circumstances, consumers may use affective rather than cognitive channels for evaluation. Mitchell and Olson (1981) have found that a subject's evaluation of the ad itself may help explain his attitude toward the advertised brand. Affective channels may be more important for consumers who are unfamiliar with a product class. In addition, the advertiser can encourage non-cognitive heuristics. He might fail to provide adequate factual information (mood ads), use pictures rather than words or present the advertisement too quickly to permit processing. He may also encourage consumers to evaluate the ad, a procedure which may discourage brand evaluation (e.g., Advertising Age, 1981). Special camera angles may encourage the viewer to project himself into the picture. According to Krugman (1965), showing a commercial on television may discourage evaluation.

Affect associated with entire categories or types of stimuli may affect brand choice. Fiske (1982) has investigated affect associated with category schemata. She has presented evidence that affect may be triggered by a match with a type rather than by a piecemeal combination of brand attributes. (For a discussion of category-based models of affect in consumer behavior, see Cohen, 1982).

Pattern matching strategies may be used to select products. For example, a shopper may sniff a cantaloupe and put it in her wagon if its smell is as expected.

Motor responses may also affect evaluations. Zajonc (1982)

has found that subjects testing headphones for vertical motion, i.e., shaking their heads up and down, evaluated the headphones more favorably than those testing them for horizontal movement, i.e., shaking their heads left and right. Head movements appeared to affect attitude without the subjects' awareness. The processes underlying the connection between the motor system and affect formation require further investigation.

Number of Attributes Used:

Isen (1982) has found that mood affects problem solving behavior. Subjects who are put into good moods seem to search fewer alternatives and to finish the task more quickly than subjects who are put into bad moods. She has postulated that the former did not want to risk losing their good moods by slow, deliberate processing. In a consumer situation, one might hypothesize that people in good moods might examine fewer brands, use fewer attributes or be less likely to use attributes entirely. Perhaps, they might be more likely to use the affective or categorical heuristics discussed earlier.

Clark (1982) has found that the effects of mood on processing seem to be intensified by physiological arousal. Further research is needed to extend these findings to advertising effects and to consumer behavior.

Processing Time:

Mood and external pressures may accelerate the evaluation process. Generalizing from Isen's (1982) findings, one can hypothesize that consumers in good moods may make purchase decisions more rapidly than those in bad moods. Quick decisions may also result from acute needs, rapid presentation of information, or salesperson pressures.

Processing time may also be affected by stored facts about brands in a product class. Newman and Staelin (1972) found support for the idea that consumers who had purchase and use experience with a major durable could use their stored knowledge and did not have to do as much external search as those who lacked that experience. It might be hypothesized that, for some products, experience may allow more rapid decisions by decreasing external search. In addition, repeating the evaluation process may hasten its execution through learning. Under some circumstances, the process may become automatic.

Attitude Extremity:

Linville and Jones (1980) have investigated the effects of category familiarity on the extremity of attitude toward category members. They postulated that people have more complex schemata for in-groups than for out-groups and that such complexity would yield more moderate attitudes for members of in-groups than for members of out-groups. The data supported their model.

Tesser (1978) has found that complex schemata may induce more attitude polarization over time than simple schemata. The complex structures may provide more dimensions which, with thought, can be used to back up, strengthen and intensify initial evaluations.

In addition, Lord, Ross and Lepper (1979), working with strong opinions on a complex social issue, found that subjects used prior attitudes to bias their evaluation and interpretation of new information. Work is underway to see if these effects hold in the more mundane world of consumer products.

Attitude polarization might also be used as a dissonance reducing strategy. Sheth (1968) postulated that consumers unfamiliar with buying a given product class might exhibit more post-purchase dissonance and use more dissonance reducing strategies than those familiar with buying the pro-

duct class. In such cases, the number of attributes used by unfamiliar subjects in their evaluations would be artificially inflated if assessed by traditional correlation/regression methods.

CONCLUSIONS

Thus far, discussion has focused on the effects of internal and external factors on aspects of brand evaluation. Further research is needed to fully understand these effects and their impact on evaluative criteria. A production system paradigm may systematize that endeavor. Our understanding of processing cannot be complete without a conceptualization of its control system. The preceding section discussed some of the findings that a model of attitude formation must be able to explain.

In conclusion, these findings provide partial answers for the sub-questions posed earlier. Memory seems to affect the degree of attribute processing used in a particular brand evaluation through its effects on problem characteristics, comprehension, inference formation, evaluative style, and mood. Memory appears to affect non-attribute evaluative strategies through its effects on problem characteristics, evaluative style and the use of sensual/motor memories. Memory seems to affect the attributes used in evaluations in two ways. It may affect the nature of attributes used through its effects on problem characteristics, categorization, and evaluative style. It may affect the particular attributes used through its effects on problem characteristics, salience, stored evaluative criteria, and confidence in evaluative ability.

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THE ROLE OF MEMORY IN UNDERSTANDING
ADVERTISING MEDIA EFFECTIVENESS: THE EFFECT
OF IMAGERY ON CONSUMER DECISION MAKING

Jolita Kisielius, University of Michigan

Abstract

A new approach is suggested for understanding the nature of the differences between the advertising media. The information processing view of the media that is presented in this paper suggests that media differences can be examined in terms of the differential processing capabilities of their presentation formats of pictures and sentences, which vary in imagery level. The availability - valence hypothesis is proposed as a means of identifying and explaining the learning and evaluative effects of advertisements differing in imagery.

Introduction

The issue of media effectiveness is of major importance to firms and consumers. Firms spend over 40 billion dollars annually for time and space in broadcast and print media. They also allocate significant human resources to media selection and the associated activities of media buying and monitoring. Furthermore, because the viability of the media depends on advertising revenues, advertisers' media choices affect the entertainment and information made available to consumers.

To address the media selection decision, practitioners typically employ a two step approach. Initially, media are identified that yield efficient exposure to some target audience given reach, frequency, and budget constraints. Then selection among these media is based on their impact as determined by expert judgment. Impact is assessed by examining such factors as the suitability of the editorial environment, production quality, and longevity. In some instances, these decision criteria have been formalized, using subjective estimates of media impact to model the selection problem (e.g., Gensch, 1970).

The appropriateness of this approach is questionable because of the problems associated with the measurement of the impact factors. The factors depend on the judgment of experts, yet the definition of an expert is not delineated and may vary across situations. In addition, the judgments may be biased in reflecting idiosyncracies in the experiences of the experts. Moreover, there has been no systematic attempt to empirically confirm the use of impact factors as a means of distinguishing the media.

Despite these problems with the practitioner's approach to media selection, few improvements have been suggested. In large measure, this may be due to the fact that there has been little inquiry regarding the nature of the differences between the media. Rather, media research has been concerned with establishing the superiority of one medium over another. Although a substantial number of studies have been undertaken on the media, the results have not been informative. Some studies reported that television advertising was more effective than print (e.g., Greenberg, 1966) while others found the reverse true (e.g., Williams, Paul, and Ogilvie, 1957). Similarly, in some studies comparing the effectiveness of the print and radio media, it was observed that print was more effective than radio (e.g., Haugh, 1952) while others indicated the opposite (e.g., Wilke, 1934). The same lack of consistency characterizes studies comparing the television and radio media (e.g., Beighley, 1952; Nasser and McEwen, 1976). In addition, a number of studies have also found no differences between

the media (e.g., Sawyer, 1955).

Central to the problem of determining media effectiveness is the fact that the majority of media research has been motivated solely by the desire to demonstrate main effects, without any attention to the theoretical constructs producing the effects. Yet the inconsistencies found in the media studies may have been due to the existence of unknown factors that were unwittingly varied from study to study. The main effect focus of this research has precluded any investigation of these factors. To resolve this problem, research needs to be motivated by a theoretical perspective that is able to suggest constructs that can be used to distinguish among various media.

The Information Processing View

A promising approach for understanding the factors underlying the effects of the media is information processing theory (see Bettman (1979) for a general discussion). Within this perspective, differences in media effectiveness can be examined in terms of the level of imagery associated with each of the media. Specifically, the presentation formats of the media are assumed to differ in their degree of imagery. As a starting point, the radio, print, and television media can be viewed as presenting information through sentences, which are low in imagery level; whereas the print and television media can be assumed to also convey information through pictures, which are high in imagery level. According to an information processing view, the degree of imagery present in the information being conveyed by a particular medium is assumed to affect the manner in which the information will be processed. As a result, pictures, which are high imaginal stimuli, are assumed to differ from sentences, which are low imaginal stimuli, in their impact on learning and evaluation.

Extensive support for the view that imagery affects learning can be found in verbal learning and cognitive psychology studies. These investigations have documented the imaginal superiority effect on learning; highly imaginal stimuli, such as pictorial representations, have been found to yield significantly higher levels of learning than less imaginal stimuli, such as verbal representations (e.g., Dallet and Wilcox, 1968; Paivio and Csapo, 1969, 1971, 1973; Shepard, 1967; Snodgrass and Asiaghi, 1978). Applied to an advertising context, this finding suggests that persuasive communications in the television and print media, which use both pictures and sentences, may be better learned than in the radio medium, which relies on sentences alone.

The relationship between imagery and learning implies that imagery should be related to evaluation as well. If imagery has an effect on the memorability of information, and if memory plays a role in the evaluation process; then imagery should have an effect on the formation of an evaluation. Although this reasoning appears plausible, the results of a number of marketing studies that have empirically examined the effect of imagery on evaluation question this logic. In these studies imagery has been operationalized in two ways. One involved examining the imagery operationalization of presentation format; that is, pictorial and verbal

representations of information were compared (Mitchell and Olson, 1977, 1981; Rossiter and Percy, 1978, 1980). The second operationalization entailed varying the type of instructions given to subjects. Subjects in the imagery conditions were given instructions to create a mental picture or image of information they were being presented with, whereas subjects in the no imagery instruction conditions were given no such instructions (Cialdini and Carpenter, 1980; Mowen, 1980; Wright and Rip, 1980).

In contrast to the studies on learning, the marketing studies undertaken on the evaluative effect of imagery have not yielded consistent results. A number of studies found the expected positive relationship between imagery and evaluation (Cialdini and Carpenter, 1980; Mitchell and Olson, 1977, 1981; Rossiter and Percy, 1978, 1980); but one study found that the imagery condition produced a less favorable evaluation than the no imagery control condition (Mowen, 1980), and another found no effect of imagery on evaluation in a preference judgment task (Wright and Rip, 1980). Despite the importance of understanding the learning effects of imagery as a measure of a medium's effectiveness, the learning of a message alone does not seem to be able to account for attitude formation. Although a high level of imagery has been found to lead to a high degree of learning, it has not necessarily led to the formation of positive attitudes.

In summary, the information processing view is useful in that it suggests the imagery construct for explaining differences in media effectiveness. However, extant research based on information processing theory does not provide an adequate account of the effect of imagery on attitude formation. To address this concern, a theoretical view termed the availability-valence hypothesis is proposed.

The Availability-Valence Hypothesis

The availability-valence hypothesis interprets the learning and evaluation of persuasive communications, such as advertisements, in memorial terms. The availability-valence hypothesis is an extension of the concept of the availability heuristic that was advanced by Tversky and Kahneman (1973). The availability heuristic was defined in terms of the "ease with which instances or associations could be brought to mind" (Tversky and Kahneman, 1973, p. 208), but it did not specify the nature of the relationship between the associations and the process that "brings them to mind." The availability-valence hypothesis is more elaborative about the processes by which information becomes available. In addition, the objective of the availability-valence hypothesis differs from that of the availability heuristic. The goal of the availability heuristic is to explain frequency judgments, whereas the goal of the availability-valence hypothesis is to explain evaluative judgments.

According to the availability-valence hypothesis, the learning and evaluation of a communication depends on the availability of information associated with the communication. The hypothesis suggests that the degree to which information is available depends on two factors. One is the cognitive elaboration of the information conveyed about an object or event. Cognitive elaboration refers to the number of information units that are stored in multiple locations and the number of retrieval pathways that are associated with the information (Bower, 1972; Nisbett and Ross, 1980). According to the hypothesis, the greater the cognitive elaboration of the information being processed, the greater is its availability. Availability also depends on the recency of the information processed such that the more recently processed information is more available. In support of the importance of recency in the processing of information, one study (Higgins, Rholes, and Jones, 1977) found that exposure to positive or negative adjective word

lists subsequently affected the evaluation of a person. Subjects exposed to the positive words evaluated the person more highly than those exposed to the negative words.

The availability-valence hypothesis can be evoked to explain the learning and evaluation of a persuasive communication, such as an advertisement. According to this view, the degree to which a communication is learned is dependent on the availability of the information in the communication. The greater the availability of the information, the higher is its memorability. The evaluation that is formed about a communication depends not only on the availability of information about the communication but also on the valence of the information that is available. Valence refers to the affective value of information, which can be positive, negative, or neutral. For any particular communication, the more available is favorable information, the more favorable will be the evaluation of the communication.

If the availability-valence hypothesis is viable, it should be able to predict an imagery effect on learning and evaluation. The superiority of high vs. low imaginal stimuli in learning can be explained in terms of the differential availability of information for the two types of stimuli. A communication characterized by a high degree of imagery is expected to elicit a higher availability of information about the communication than a low imagery communication. According to the hypothesis, a highly imaginal communication is assumed to stimulate greater cognitive elaboration of the information conveyed in the communication; that is, the development of more storage locations and sensory pathways in response to the information. As a result, the information associated with the highly imaginal communication should be more available or accessible for being retrieved. Therefore, highly imaginal communications, such as those relying on pictorial information, should exhibit higher degrees of learning than communications characterized by a low level of imagery, such as those presenting verbal information.

The availability-valence hypothesis can also explain the effect of imagery on evaluation. According to the hypothesis, the information generated in response to the high and low imaginal communications will be valenced; that is, it will be favorable, unfavorable, or neutral in regard to the advocacy of the communication. However, the extremity or degree of favorableness of the evaluation will differ in the two communications. The greater cognitive elaboration of the highly imaginal communication should lead to a greater availability of that information. Since the information evoked in response to the highly imaginal communication is valenced, the greater availability of this valenced information should lead to the formation of a different and more extreme evaluation than would be formed for the less imaginal communication. Thus whether imagery enhances or reduces the favorability of an evaluation depends on the relative favorability of the information available in the high and low imaginal conditions.

Discussion

To assess the usefulness of the availability-valence hypothesis as an explanation of imagery effects, empirical investigations of the availability-valence hypothesis are warranted in future research. In order to reconcile the inconsistencies in imagery research that were noted, tests of the availability-valence hypothesis should include the manipulations of imagery that were previously used in imagery research. Specifically, both the independent variables of presentation format and imagery instructions should be examined. In addition, special emphasis should be placed on assessing the effect of imagery on the dependent measure of evaluation. Whereas the majority of imagery research has found a positive effect of imagery on learn-

ing, its effect on evaluation has been far from univocal. Preliminary support for the hypothesis has been found by the author within the context of a print advertisement for a new product. Further research is needed to determine the ability of the availability-valence hypothesis to predict the conditions under which the imagery effect occurs. Currently an investigation of the role of cognitive elaboration in the availability-valence hypothesis is being conducted by the author.

If the availability-valence hypothesis is empirically supported, its contribution will be theoretical and practical. From a theoretical viewpoint, the hypothesis will extend the information processing perspective of consumer behavior by specifying the learning and evaluative effects of persuasive communications that differ in imagery. The availability-valence hypothesis presents a theoretical framework for reconciling inconsistencies found in media research and suggests future research directions in this area. Most importantly, it provides a bridge between the research concerned with learning and that focused on evaluative processes. The availability-valence hypothesis underscores the importance of going beyond learning effects in understanding evaluative judgments. Because the availability-valence hypothesis is broad-based in its conceptualization of thought processes in memory, it can also be applied to other social cognitive phenomena in future research.

The availability-valence hypothesis also has significant practical implications for various advertising issues. The hypothesis presents a new perspective for analyzing media selection decisions. According to the availability-valence view, a more complete understanding of media effectiveness can be gained by examining the processing of information in these media. Specifically, the impact of the presentation formats of the media should be addressed. Furthermore, because of the hypothesis' ability to explain pictorial processing, it can also provide insight into strategies concerned with developing effective trademarks. The hypothesis also has implications for the measurement of advertising effectiveness in that it proposes that measures of learning are not sufficient indicators of an ad's impact on the consumer. Lastly, the availability-valence hypothesis can contribute to the formulation of public policy decisions concerning advertising by suggesting that their current focus on copy testing (Eighmey, 1978) may be inappropriate. Copy testing, which relies on the processing of verbal information, has been used for the purpose of measuring the amount of information provided by an advertisement. However, the availability-valence hypothesis suggests that the use of copy testing may be ignoring the more important impact of visual or highly imaginal claims.

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INFERENTIAL BELIEF FORMATION: AN OVERLOOKED CONCEPT IN INFORMATION PROCESSING RESEARCH

Philip A. Dover, Amos Tuck School, Dartmouth College

Abstract

A study examined the role of inferential beliefs in the formation and modification of cognitive structure toward a product. After careful observation of existing knowledge structure for the trial product (cold, ready-to-eat cereal), subjects were exposed to limited salient or non-salient information about a new brand of cereal. Hypotheses were based on the differential impact of these pieces of information on evolving cognitive structure, with emphasis on the extent and nature of the inference process.

Conceptual Framework

Fishbein and Ajzen (1975) suggested that three different processes may underlie belief formation. First, a perceived relationship between the object of belief (o) and some object (x) may be actively established on the basis of direct observation (descriptive belief). Second, a link between o and x may be perceived from information obtained from an outside source, and this relationship may be accepted (informational belief). Third, a link between o and x may be established through a process of inference from some other belief about o (inferential belief).

Although evidence from the social psychology literature indicates that inferential beliefs are important in the formation of impressions and attitudes (e.g., Jaccard and Fishbein, 1975), few consumer behaviorists have mentioned these cognitive "spill over effects" in their research (for exceptions, see Lutz, 1975; Mazis and Adkinson, 1976; Olson, 1978; Olson and Dover, 1978). Moreover, no consumer researchers have explicitly examined beliefs formed via the inferential process nor how these inferential beliefs influence other components of cognitive structure (i.e., attitudes and behavioral intention). This observation raises serious doubts about the completeness of our treatment of the basic expectancy-value theory and has clear implications for information processing and communications research.

If we accept the importance of inference formation in cue utilization, how good are people as intuitive information processors? Some controversy exists here. Based on mathematical probability theory, various models have been employed to account for relationships between subjective probabilities or beliefs (e.g., McGuire, 1960, Wyer and Goldberg, 1970). These models are normative in that they prescribe what relations should exist between probabilities or how beliefs ought to change in light of new information. Although probability models describe the belief structures of "rational" or "logically consistent" persons rather than those of actual persons, it has been suggested they can be used as first approximations for a psychological theory of inferential belief formation. Here deviations from the normative models indicate that such "nonrational" factors as the person's attitudes or personality characteristics may influence his probabilistic judgments or beliefs. Wyer (1974) reports reasonably strong relationships between his model predictions and independent ratings of attribute associations provided by respondents. Similarly, Fishbein and Ajzen (1975) report a large number of studies that show Bayes's theorem as a reasonably good descriptive model of human information processing. In other words, there is a strong tendency not only for beliefs to be internally consistent but also for people to revise their beliefs in an

orderly fashion as a result of new information. On the other hand, a number of judgment researchers (e.g., Slovic and Lichtenstein, 1971; Kahneman and Tversky, 1972) have revealed people to be "quite inept at all but the simplest inferential tasks . . . muddling through a world that seems to let them get through life by gratuitously allowing for a lot of error". Tversky and Kahneman (1974) feel that people rely on a limited number of heuristic principles by which they reduce the complex tasks of assessing likelihoods of uncertain events and predicting their values to simpler judgmental operations. Such heuristics may prove quite useful, but sometimes lead to severe and systematic errors.

It is clearly not possible to answer such an intriguing conundrum in a single paper or research project. Many variables can be suggested (e.g., cognitive complexity: product specific ego-involvement) that may influence the adoption of "rational" information processing. One such variable -- information cue saliency -- is examined in this paper. Only a small part of the total research program is described here but it is hoped it provides a suitable stimulus to further study of inferential belief formation.

Methodology

Devising Measurement Instruments

An explanation for inferential belief formation first requires a consideration of previously learned information upon which one can logically base, or from which one can derive, inferences. Measurement of relevant memory schema has been suggested (Olson, 1978) as a way to identify such knowledge representations. A method was sought that reveals individual consumer's knowledge as it naturally exists, stored in memory. After piloting a number of techniques, Kelly's Repertory Grid (1955) was selected as the test instrument. This was done as the output of the grid, in the form of personally salient product characteristics at a number of discriminable levels, was easily transferred to a structured questionnaire, allowing precise response scoring to create a base for predicting subsequent inference processes. A full description of this and other measures devised for this research are contained in Dover (1980).

The next question was how to expose respondents to information about a new brand of breakfast cereal and best observe the effect on the belief structure towards this new product. Consequently, three linked techniques were used to measure inferential belief formation, each technique being successively more structured. These were as follows:

Cognitive Responses → Implications Grids → Cognitive Structure

Immediately after exposure to the single variable information, subjects were asked to write all of their thoughts that occur during exposure. These thought protocols are assumed to indicate the internal, sub-vocal responses that take place during message reception. As such, they should represent the process activated as incoming information reacts with retrieved memory schema (e.g., whether there

is a critical or favorable orientation to the external facts) and offer an indication of the mediating factors at work in the formation of new beliefs or changes in existing beliefs. Of particular interest in this study was whether cognitive responses were generated that relate to issues not directly contained within the limited message and thus help explain and predict the inferential belief process.

Following this, implications grids were conducted using the bi-polar approach advocated by Fransella (1972). Respondents were provided with one piece of information (e.g. a new brand of cereal is pre-sweetened) and asked to indicate which other characteristics, from those elicited at the earlier Rep Grid, they would expect to find in the new brand. Observation of the number of implications resulting from exposure to any single information cue are a simple index of the extent of inferential belief formation given knowledge of that cue.

In order to better quantify this inference process, the cognitive structure questionnaire, formulated at the first stage, was readministered. Again the only constructs used were those elicited at the original Rep Test. It was felt that this multiple measure approach to inference formation permits cross validation of research results.

Research Procedures

Salient attributes were defined as those elicited during the Repertory Grid interview. Pilot tests suggested two breakfast cereal attributes, both related to nutritional considerations, for use in the study. All respondents identified the sugar content of cereal as a product construct while only one mentioned vitamin content or the level of vitamins as a point of similarity or dissimilarity between cereals. Hence, sugar content was used as the salient feature while vitamin level became the non-salient piece of information.

Sixty homemakers, aged 18-49, were recruited to participate in the two-stage study. To be eligible they had to have purchased and used RTE cereal in the home in the past three months. Thirty respondents were pre-sweetened cereal users while the remaining thirty did not currently use pre-sweetened cereal.

Each respondent first undertook the Repertory Grid test in which memory schema components for the generic product category of breakfast cereal were elicited. These idiosyncratic constructs were used for each individual for the remainder of the experiment. About two weeks after this first stage, respondents were exposed to salient and non-salient information about a new brand of breakfast cereal (i.e., it is pre-sweetened or vitamin fortified) and the successive inferential belief measures were administered. This allowed comparison of the cognitive structure for the generic product category with that emerging for the new brand(s) of breakfast cereal.

Results

The measures of inference progressed from highly qualitative (cognitive responses) to highly quantitative (cognitive structure) in a hopefully fairly nonreactive way. Hypotheses were based mainly on the premise that a greater amount of inferential activity would result following exposure to a limited amount of highly salient information than following a less salient disclosure. This contention was generally well supported. As there is only space to describe one of the measures, findings from the implications grid are shown below.

To recall, subjects were shown cards containing each discriminable product attribute level elicited from the Repertory Grid application. They were asked to imagine that

they knew only one thing about a new brand of breakfast cereal (e.g., "it's pre-sweetened"). Then they indicated, from the cards shown, which characteristics they would expect to find in the new brand, given the limited knowledge they possessed. Replies were recorded on a special scoring sheet. Implications made were presumed to reflect the formation of inferential beliefs. Results are shown in Table 1. Because no difference in response was evident between pre-sweetened and nonpre-sweetened cereal users, findings are shown for the total sample only.

TABLE 1
Effects of Message Salience on Number of Implications Made

	Treatment Cell Means		ANOVA Effect
	Pre-sweetened Message	Vitamin Fortified Message	Message Salience Main Effect
No. of implications made from memory schema constructs	4.18 (86%)	2.68 (44%)	48.15 ^a

^aStatistically significant F-ratio (p < 0.01)

The cue saliency hypothesis was strongly supported. Subjects were able to imply or infer the existence of more associated attributes following the pre-sweetened (highly salient) than the vitamin fortified (less salient) message (4.18 vs. 2.69 for memory schema implications).

Table 1 also presents the proportion of the constructs elicited from the original Repertory Grid test that were implied to exist in the new brands, following exposure to high and less salient information. A higher proportion of the memory schema constructs were inferred following the pre-sweetened message (68%) than after the vitamin fortified message (44%). This suggests that subjects were not merely responding to the implications grid task by simple "yea saying" but perceived a genuine difference in the inferences from each message.

The cognitive response and cognitive structure findings will be discussed in future papers. It is interesting to note, however, that cognitive responses provide a useful indicator of inferential belief formation. Although all responses influence belief formation, it is felt that certain types do so more directly than others. That is, some responses make specific reference to product characteristics involved in belief modification or formulation. As such, counter- and support arguments, and perhaps curiosity statements, suggest strong inferential activity. Similarly, the various cognitive structure measures give an introductory view of the compositional nature of emerging beliefs, adding data on strength and confidence to that on extent of belief formation.

These measures of inference are rather simple. But they do not show how orthogonal methods can provide convergent evidence in the study of an important yet little considered area of cognitive research -- inferential belief formation.

Potential Applications

A few concluding words should be said about the policy implications resulting from the study of inferential beliefs. The importance of considering the role of inferences in the development of communications should not be doubted, given the strong evidence of inferential activity

in the present study.

It is argued that in creating a persuasive communication the following steps should be undertaken: a) identification of the content and structure of topic specific memory schema, b) isolation of the attribute(s) to be used in the message, c) measurement of the information and inferential beliefs formed as a result of such information exposure. Differential impact of such variables as message, vehicle and receiver effects, held-advocated belief discrepancy, cue saliency, and extent of prior product experience should be carefully considered.

In a broad sense the study of inferential belief formation should add considerable insight into the topics of deceptive and corrective advertising. Extensive debate has centered around a definition of deception (cf. Gardner, 1975; Olson and Dover, 1978), with much concern relating to what information to consider. Some have argued that only explicit statements should be judged while others claim that what the consumer implies from incomplete information is just as important. This study provides considerable evidence of inferential workings in information processing and underlines the point that advertisers must be prepared to accept responsibility not only for what they do say but also what they leave unsaid. The application of this knowledge should greatly assist policy makers in measuring and identifying false beliefs and help manufacturers overcome consumer skepticism about advertising by avoiding misleading communications.

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IS THERE A VALID PRICE QUALITY RELATIONSHIP?

Richard J. Rexeisen (student), University of Minnesota

Abstract

This study attempts to expand the scope of previous research on the influence of price on product evaluations. A 2 x 2 x 3 factorial experiment with multiple response measures examined price as an information cue while controlling for several potential sources of error identified in previous price cue studies. In contrast to many reported studies, no significant price cue effects were found, however, a highly significant ordering effect was identified. In addition, there were significant interactions between place of purchase, information levels and the ordering of price presentation.

Introduction

Price as an information cue has stimulated considerable research interest over the last forty years. Early research (Levitt 1954; Scitovsky 1944; Tull et al 1964) typically examined the effects of price alone on consumer evaluations. More recent studies, however, have tended to consider multiple cues such as store image, multiple products, brand familiarity, and generic product information (Andrews et al 1971; Enis and Stafford 1969; Landon and Shafer 1974; Valenzi and Andrews 1971).

In a summary literature review, Olson (1977) reported that all single cue studies found price to have a significant effect on evaluative judgments or choices. This is not surprising given that price was the only information available to the subjects. Multiple cue studies, however, did not reveal a clear pattern of price cue effects. Olson attributed the inconsistent findings to serious methodological and/or conceptual flaws inherent in many of the price cue experiments.

Olson's (1977) review raises three key issues: 1) Is there a valid price quality relationship?, 2) Are there alternative explanations for the reported findings of the price cue literature? and 3) Have sufficient theoretical constructs been identified to formulate a meaningful conceptual framework for price cue research? The objective of this study is to address and expand upon these concerns.

Background Literature

Although single cue studies were highly simplified, they were useful in demonstrating the perceived price quality relationship and as such served as an important heuristic. The typical single cue study manipulated prices in a within subjects design. Subjects, generally students, were asked to make either a brand choice or a quality rating (Levitt 1954; Tull et al 1964; Lambert 1970, 1972; Deering and Jacoby 1972).

Enis and Stafford (1969) and Jacoby et al (1971) were not satisfied with the single-cue effect and hypothesized that cues influencing product evaluations (e.g., place of purchase, brand name, and product familiarity) probably interact with one another. To test this hypothesis, multiple cue studies have generally utilized the factorial research design and have analyzed their results by either a fixed model analysis of variance, or when appropriate, a multivariate analysis of variance. For a summary table of the research dealing with price cue effects on product evaluations refer to Olson (1977).

Olson (1977) recognized, however, that the validity of

quantitative relationships between price and perceived quality depends heavily on interval scale properties of the quality measure and the assumption that equal price intervals are perceived as equal by the consumer. A major weakness of many price-cue studies has been that they have not used multiple dependent variables and/or measures to cross validate their findings. Inadequate measures may partially explain some of the inconsistent findings of the price related literature.

Stafford and Enis (1969) found significant main and interaction effects between product, price and store image. The most interesting result of this study was that the experimental evidence tended to support the hypothesis that the judgment of quality by price can be confounded by nonprice information about the product. Landon and Schafer (1974), and Wheatly and Chiu (1977), however, did not discover significant interactions in their attempt to replicate the Stafford et al (1969) study. Demand characteristics, however, are potentially present in all three studies.

Gardner (1970) reported significant main effects but no interactions between product type or search time factor, and price. In a second study, however, Gardner (1971) failed to find a similar affect involving the price cue. Gardner's second study, however, also examined the influence of brand name on quality ratings. It is possible that brand name, as an information chunk, has a more powerful effect on reported quality measures than does the price cue.

Jacoby et al (1971) tentatively hypothesized that a product's physical characteristics may enter into a complex interaction with information cues (such as price) and reported quality measures. Valenzi and Andrews' (1971) study found significant main and two-way interaction effects between physical composition cues and price cues. The Valenzi experiment appears to add credibility to Jacoby's hypothesis.

Other studies, however, have failed to identify any price-cue relationship. Szybillo and Jacoby (1972) reported no significant main or interaction effects on quality evaluations and brand name and store image information. This study represents one of the few published experiments where the findings are non-significant with regard to price-cue effects. The results of this study, however, were also not conclusive because of potential demand characteristics in the price present conditions.

While most multiple cue studies find significant price cue effects, some researchers have found that price remains the dominant cue (Andrews et al 1971) and others have found that it declines in importance (Jacoby et al 1971; Rao 1971). To date, this conflict has been difficult to reconcile. Gardner (1970) has suggested that price effects on quality perceptions are product specific which may account for some of the confusion in the literature.

Olson (1977) identified four major problems with the previous price cue research: 1) confoundings were common (unintentional manipulation of two or more variables within a single independent variable), 2) demand characteristics were potentially present in many of the price cue studies, 3) design factors may have resulted in different price effects (price as a between- or within-subjects factor), and 4) many studies did not use multiple dependent variables or multiple measures of the dependent variables (a measure of convergent validity). Olson suggested that these methodo-

logical weaknesses have confounded the interpretability of the price-cue literature.

In summary, there is convincing evidence that in the absence of other cues, price acts as a significant information cue. In contrast, multiple cue studies have not demonstrated consistent price cue effects. Olson (1977) suggested that some of the inconsistencies may be attributable to serious methodological flaws or measurement problems. This experiment is designed to control for the sources of error identified by Olson and explore possible alternative explanations for the price cue effect.

Conceptual Framework

Berkowitz and Walton (1980) have noted that the encoding process is especially important to an individual's price perception. Fair price theory (Kamen and Toman 1970) and adaptation level theory (Monroe 1977) suggest that the consumer evaluates subsequent price cues after comparison with an adaptation level price. Monroe (1977) has further observed that an individual's standard for judging stimuli is actually like a sliding scale that is influenced by previous stimulus values.

While these theories are informative and are of considerable value in single cue studies, they do not adequately explain the complex interactions reported in multiple cue studies. Further, the inconsistent findings reported in the price literature have seemingly confounded the identification of reliable theoretical constructs. Therefore, rather than propose a conceptual framework based on inadequate or unreliable constructs, the purpose of this study will be to test, rather than explain, the price-quality relationship.

The focus of this study will be on the remaining two issues raised by Olson (1977): 1) Is there a valid price quality relationship? and 2) Are there alternative explanations for the price cue effect? The specific research hypotheses are:

- H₁: Quality ratings will be differentially affected by price.
- H₂: Product information will moderate the price cue effect.
- H₃: Place of purchase will differentially affect quality ratings.
- H₄: Order of price presentation will not differentially affect quality ratings.

Hypotheses 1, 2, and 3 were extracted from the pricing literature and pertain to the validity of the price-quality relationship. Hypothesis 4, however, was based on the observation that pricing studies have typically not reported any randomization of price presentation formats (i.e., low vs. high price being shown first). This suggests that the randomization of the price format is either so commonsensical as to exempt its mention, or implicitly that price presentation will not differentially affect quality ratings. Monroe (1977), however, provides some evidence that ordering effects do occur. The purpose of H₄ is to test the ordering effect **within the context of the price quality relationship.**

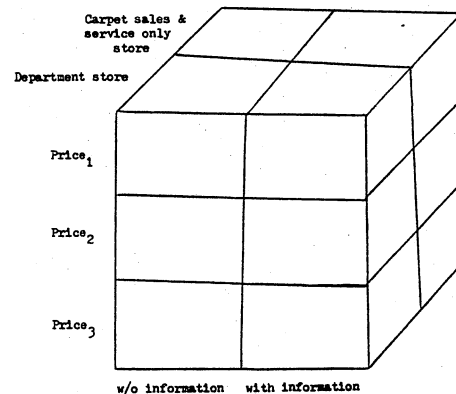
Methodology

Subjects were one hundred and thirteen undergraduates enrolled in introductory marketing at the University of Minnesota during the Winter quarter of 1981. Subjects were drawn on a convenience basis and were given extra credit for their participation.

A 2 x 2 x 3 factorial experiment design was utilized. The respective factors consisted of two information levels (with or without product information provided), two stores

(product was identified as either coming from a department store or a carpet specialty store). Price levels were treated as a within subjects factor, while information and place of purchase were considered as a between subjects factor. Figure 1 illustrates the treatment conditions.

FIGURE 1



Carpeting was selected as the experimental product because of its use in other price related experiments (Enis and Stafford 1969; Landon and Schaffer 1974; Shapiro 1974; Wheatley and Chiu 1977) and because college students were presumed to have little experience making quality assessments of carpeting. All carpet samples were identical but controls, as later discussed, were utilized to minimize student's guessing that the samples were in fact identical.

Information about carpeting was developed from a pretest of 38 college students in a different section of introductory marketing during the same period. The pretest subjects were asked what types of information they would like to have prior to making a carpet purchase and what they thought the range of prices would be for a square yard of carpeting. Anticipated price ranges were used rather than actual price ranges to more accurately reflect the student's perceptions of carpet price ranges. Product information was developed (i.e. information on density, thickness, composition) based on reported preferences for the information. Students were also asked if they knew much about carpeting and the consensus was that they did not.

Subjects were randomly assigned to treatment conditions (Dept. store with no information, Dept. store with information, Carpet store with no information, or Carpet store with information). Neither the "with or without" information groups were given price information. Subjects provided with information were given three minutes to read the information and given the opportunity for more time if they requested it. No subject requested additional time to read the information.

Within each treatment condition subjects were presented first with a carpet sample that had no price on it. Carpet samples were designated only as A, B, or C. Subjects were told that the brand names had been moved to add realism. The no price treatment had been recommended by Olson (1977) and provided a base line for subsequent analysis.

The second carpet sample was either high or low priced (\$7 or \$29 per square yard) based on a random assignment within each treatment condition. Subjects were then asked to make various evaluations. Order of presentation was noted for each subject for use subsequently as a blocking factor. The third carpet sample was high priced if the former was low and vice-a-versa. Subjects could look only at one sample at a time and were instructed not to change any answers or look back at a previous response. Carpet samples

were turned upside down to make sure only one carpet sample could be looked at to avoid direct comparisons. Questions about each sample were on separate pages of the questionnaire to minimize multiple response contamination.

Multiple dependent variables were utilized and multiple measures were taken of each variable. Dependent variables included: 1) a quality rating, 2) value for the money, and 3) perceived worth. Semantic scales, ratio and Likert type questions were utilized as a basis of testing convergent validity for each respective dependent variable. Subjects were questioned after the experiment to ascertain whether demand characteristics were present.

Analysis and Results

Preliminary analysis revealed that the three dependent variables did not exhibit substantial intercorrelations ($.08 \leq r \leq .41$). This suggested that each variate should be analyzed in its own right rather than employing a multivariate analysis of variance (MANOVA). Multiple measures of each variate, as noted above, were significantly correlated with r 's generally above .80. Therefore, it was concluded that each response variate exhibited the desired convergent validity and merited a comprehensive analysis.

A univariate analysis of variance (ANOVA) was computed using the regression approach, blocking on order of presentation. Table 1 summarizes the results for each ANOVA run.

TABLE 1

Summary Analysis of Variance Data (F Scores)^a

Source of Variation	df	Quality	Value for the money	Perceived Worth
A. Information	1	.53	.03	.11
B. Place	1	.61	.42	.42
C. Order	1	8.20 ^a	21.70 ^a	3.15 ^c
A x B	1	.84	4.16 ^b	.59
A x C	1	8.02 ^a	3.34 ^c	2.11
B x C	1	.27	.80	.38
A x B x C	1	1.92	.13	1.75
Error	105			
D. Price	2	.53	.16	.13
D x A	2	.62	.02	.65
D x B	2	1.04	1.89	.36
D x C	2	4.21 ^b	226.35 ^a	.19
D x A x B	2	.93	.09	.10
D x A x C	2	.91	.61	1.01
D x B x C	2	.42	.56	.05
D x A x B x C	2	.73	.03	.27
Error	210			

^a Where $a \leq .01$ $b \leq .05$ $c \leq .10$

This first point of interest in Table 1 is that neither place nor information levels resulted in significant main effects for any of the three dependent variables. However, highly significant ordering effects were observed for both the perceived quality and value for the money variate. Perceived worth was in the same direction but the ordering effect was only marginally significant.

Table 1 also reveals that there were no interaction effects between price, place or information levels for the quality or perceived worth variates. This allows direct assessment of the main treatment effects as opposed to examining the influence of treatments as individual values of the other factors. Since information levels and place resulted in

significant interactions for the response variate value for the money, differences were examined further. Mean response patterns for place and information are shown in Figure 2.

FIGURE 2

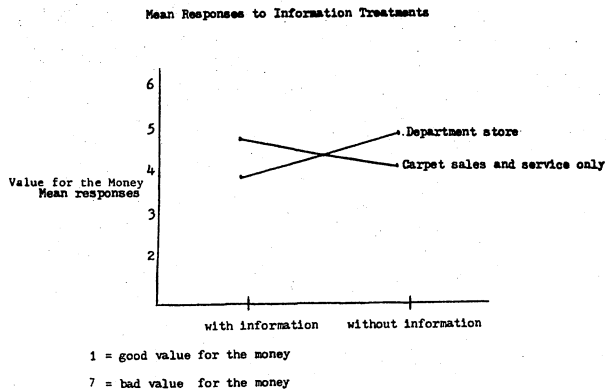


Figure 2 suggests that Department stores benefit (receive better reported value for the money ratings) from having information made available to the customers. In contrast, carpet sales and service only stores received lower ratings on value for the money in the information present condition. It is interesting to note that value for the money exhibited this pattern but not quality ratings for place of purchase. Therefore, hypothesis 3 can not be accepted.

Figures 3 and 4 illustrate the interactions between information and order effects which were highly significant ($p = .005$) for the quality dimension and marginally significant ($p = .079$) for value for the money. What is especially interesting to note is the direction of the mean responses to the ordering effect. Low price first subjects rated overall quality higher than did high price first subjects. The differences were highly significant as indicated by the main effect for order. Figure 3 suggests no ordering effects for the without information treatment group while a significant change for the with information treatment group.

Adaptation level (AL) theory, Helson (1964) and others, would have predicted that in the absence of price information, all subjects should have rated quality an average "4". This was exhibited by the "without information" group. What should be of interest to researchers, however, is that the "with information" group did not respond as predicted by AL theory, nor as would have been expected by the price quality literature. Recall that the "with information" group was not provided price information.

FIGURE 3

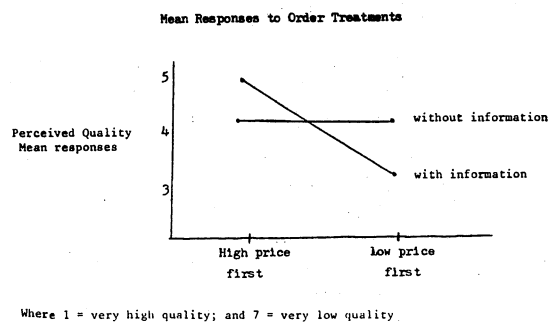
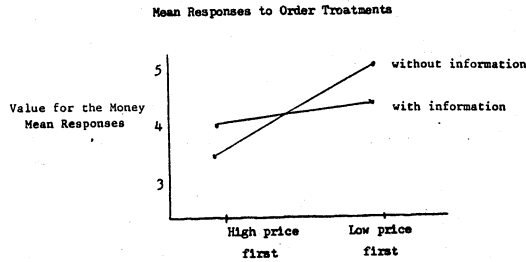


FIGURE 4



The differences between responses to price levels and order treatment was significant for the perceived quality measures. As shown in Figure 5 quality ratings remained unchanged then deteriorated for the "high price first" group. In contrast, the "low price first" group improved their ratings when the price was raised.

The highly significant interaction between price levels and order effect was in the expected direction. Figure 6 illustrates that respondents rated carpeting a better value for the money when it was shown with a lower price for either treatment group. The reported interaction for this dimension is an artifact of the experimental design; price level for B and C is a function of order format.

FIGURE 5

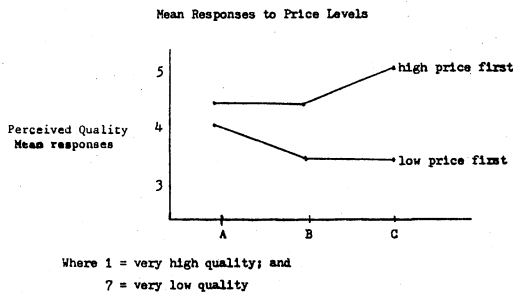
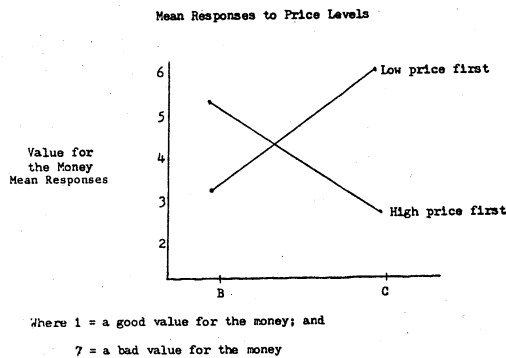


FIGURE 6



Sex differences were analyzed using individual t-tests for each dependent measure and no significant differences were found except that women rated style information more highly than men ($p=.006$). T-tests were computed rather than using sex as a blocking factor in the ANOVA run because of cell size limitations. A separate univariate analysis was computed for sex and type of information requested but no significant differences ($p=.125$) were found.

Price, aside from the ordering effect, did not result in any significant changes in quality ratings. Therefore, hypothesis one can not be accepted and hypothesis four is rejected because of significant ordering effects. Hypothesis two is no longer meaningful because price did not have an effect in either the information present or absent conditions, except as noted for the ordering effect. Finally, subjects were questioned about the experiment at its conclusion and there did not appear to be significant demand characteristics. The significant ordering effect would, in fact, argue against the presence of demand characteristics.

Discussion

Results from this experiment have significant implications for both researchers and practitioners. To a large extent the potential sources of error identified in earlier studies have been controlled or accounted for. This is especially true for confounding effects, demand characteristics and dependent variable validity considerations. The design factor consideration was only partially addressed by this study as this experiment was not a fully crossed, repeated measures design.

Implications for Researchers

The findings of this study do not support the traditional notion of the price quality relationship. First, this study joins a handful of studies (Gardner 1971; Jacoby et al. 1971; Roa 1971; Szybillo and Jacoby 1972) which did not find significant main and/or interaction effects for price-quality. Second, this study suggests that ordering effects, if uncontrolled, may confound the interpretation of main effects. The resulting error could be attributed to method variance.

The significance of the main ordering effect is magnified by its multiple interactions with place of purchase and information levels. This finding would strongly suggest that price levels must be randomized for the within subjects design or significant confounding effects could be present. A review of the literature does not indicate that previous within subjects research, which constitutes a majority of price studies, randomized price levels. In addition, significant order interactions could also confound interpretations of between subjects designs.

Aside from the issue of method variance, the ordering effect has interesting research implications. When information was present, high price first resulted in lower overall quality ratings. This affect is in the opposite direction than would have been predicted by the classical price-quality literature. However, the theory of assimilation and contrast does suggest that when a price falls outside a subjects latitude of acceptance it will be discounted further.

A review of the mean responses to price levels also reveals some interesting ordering effects. In the no price treatment, all subjects rated quality of the carpeting similar. When the high price was shown first to subjects, no change was recorded in their quality rating. However, there was a significant lowering of the quality rating when the low price carpeting was shown next. In contrast, subjects significantly raised their quality ratings when the low price was shown first and maintained these ratings when the price was raised. Perhaps the affect reflects an inflation mentality.

Considerations for Practitioners

Retailers should also recognize the significance of these findings. First, retailers should recognize the long term effects that one pricing decision will have on subsequent decisions. This experiment would suggest that quality perceptions are adversely affected by lowering the price. This study does not, however, address the influence reduced quality perceptions have on the willingness of a consumer

to buy.

Second, pricing strategies based on the traditional price cue research should be cautiously employed. If a high price strategy is selected with the objective of raising quality perceptions, the firm may be committed to that strategy if quality ratings are to be maintained.

Summary

This experiment was designed to address three questions: 1) Is there a valid price quality relationship?, 2) Are there alternative explanations for the reported price cue effect? and 3) Have sufficient theoretical constructs been identified to formulate a meaningful conceptual framework for price cue research? The treatment conditions were place of purchase, generic product information, and price levels. Price presentation format was analyzed as a subsequent blocking factor. Response measures were perceived quality, value for the money and perceived worth.

The author regrets that a conceptual framework could not be developed for this study. Clearly, theoretical constructs need to be identified before experimental results can be meaningfully generalized. Nevertheless, this study did demonstrate the importance of considering the effect of one pricing decision on subsequent decisions.

There does appear to be a valid price quality relationship. However, in contrast with previous studies the relationship identified in this study could be explained by a significant ordering effect.

The usage of students as experimental subjects may be viewed as a weakness in the study, however, their usage is consistent with traditional price research. A second criticism of the study may be that it was product specific. The issue of product generalizability is indeed important and should be addressed further. The primary reason the issue was not considered in this study was because multiple products potentially introduce confounding effects which this experiment was not designed to control.

Finally, future price research would benefit from considering the ordering effect identified in this study. Research into product generalizability, sample frame appropriateness, and conceptual framework development are all areas which should prove highly productive.

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GENERIC: THEIR IMPACT ON NATIONAL AND PRIVATE BRANDS*

John J. Wheatley, University of Washington
John S. Y. Chiu, University of Washington
Douglas Allen, Universal Services, Inc.

Abstract

Generic products in supermarkets improve consumer perceptions of the quality of both national and store brands. In spite of this, however, sales of both are apparently adversely affected by the introduction of generics. The impact of generics on the market shares of national and private brands depends on such things as price spread, perceived quality differences among brands in a product class and degree of brand loyalty.

Introduction

Generic products in supermarkets continue to grow in popularity. One of the reasons for this is the strong price appeal of the generics vis-a-vis private or store brands and especially when they are compared to nationally advertised brands (Cox, 1981).

The arrival of generics has also recently been reported (Wheatley, 1981) to have had an effect on consumer perceptions of both store brands and manufacturers' brands. Wheatley examined consumer choices in six product categories and the reasons that shoppers gave for the choices that they made. However, he utilized a between subjects research design; consequently, he was unable to examine individual consumer brand switching behavior and the possible reasons for it. The research reported here involves a replication and extension of the earlier work by Wheatley utilizing a longitudinal or within subjects design. The magnitude of the price spread between the national brand and the private brands and generics was also experimentally manipulated and the effect on quality perceptions and choice behavior examined.

Influence of Brand on Quality Perceptions and Choice Behavior

The role of brand in influencing consumers' perceptions of quality has been examined more extensively in recent years than its effect on choice behavior. However, Gardner (1971) was unequivocal in stating that "brand name greatly influences perception of product quality [and] willingness to buy." Wheatley and Chiu (1977) concluded that while the influence of brand on quality perceptions was possibly product specific it was a significant cue. Andrews and Valenzie (1971) also found that, at least for lower priced products, brand names influenced quality perceptions. Underlying both of the latter studies is the implicit assumption that, *ceteris paribus*, brand cues should also be expected to influence choice behavior.

While it appears that the extent to which brand influences quality perceptions and/or choice behavior is limited by the requirement that consumers must believe that there are differences among brands in a product class (Leavitt, 1954), this has not been demonstrated experimentally. One reason for this perhaps is that brand as a stimulus is hard to manipulate. The analytically convenient assumption that price, for example, and brand are independent variables is a bit tenuous because brand and price are usually

linked elements of an internally consistent marketing mix; many brands and prices, or at least price levels, must surely be associated in consumer minds as a consequence of the marketing efforts of sellers.

Influence of Price on Quality Perceptions and Choice Behavior

Like brand, the role of price in influencing perceptions of quality has been examined in a very large number of studies but its effect on actual choice or self-reported choice has also been much more limited. With respect to the question of quality perceptions, it is generally agreed that high prices are positively correlated with high quality perceptions when it is the only cue available. There is, however, controversy regarding the effect of price as a quality cue in a multi-cue setting. The conflicting evidence on this point has been attributed to such factors as the prior product experience of the experimental subjects (Jacoby, et al., 1971), the specific types of products dealt with (Wheatley and Chiu, 1977), and the other kinds of quality cues presented and their level. With respect to cue level, Andrews and Valenzie (1971) have indicated that "the lower the price the greater the influence of brand names."

Studies that have concerned themselves with indicated choice behavior have also suggested that price is used as an implied quality cue (Leavitt, 1954; Tull, et al., 1964; Wheatley, 1981), but while this may influence choice behavior in the direction of choosing the higher priced product, higher prices also serve to constrain such behavior. Lower prices are widely assumed by economists to encourage consumers to choose such products, especially when buyers feel that the differences among alternative brands in the product class are negligible. Eskin and Baron (1977) point out that experimental studies generally support the prevailing view that higher prices inhibit sales. Businessmen also generally believe that a subset of all consumers can be characterized as being price conscious or bargain hunters.

Influence of an Expanded Choice Set on Quality Perceptions and Choice Behavior

Monroe (1979) has suggested that price perceptions of particular products are influenced by the prices of similar products. His notion of a reference price as an average of the range of prices for a product class is based on Helson's (1964) adaptation level theory. The study by Wheatley (1981), mentioned earlier, extended Monroe's proposition by demonstrating that a new brand selling at a lower price than that prevailing prior to its introduction seemed to have the effect of altering consumer perceptions of the older brands within the product category. The new low priced product (a generic) apparently had the effect of lowering the "average" or reference price of the affected product class for consumers thus making the previously low priced store brand lose its "bargain" image and become "moderately" priced. This suggests that, since price is often used as a cue to product quality, some previous national brand buyers might switch to store brands because of their enhanced quality image when generics are available.

*The authors wish to thank W. Burrows and D. Samson for their assistance in the computer analysis of the data in this experiment.

Research Hypotheses

While Wheatley used a between subjects experimental design in his work, it is consistent with Monroe's suggestion and Helson's theory to expect that the introduction of generics should enhance the image of both private and national brands using a within subjects design. Leavitt's observation about the requirement that consumers must believe that there are differences among existing brands if a price cue is to influence perceptions of quality and subsequently choice behavior should also hold in the case of product categories into which generics are introduced.

In view of the foregoing, the following hypotheses were developed for this study:

1. H_0 There will be no alteration in consumers' perceptions of the quality of private or national brands as a result of the introduction of a generic product to a choice set.
 - H_A Consumers' perceptions of the quality of private and national brands will be enhanced as a result of the introduction of a generic product to a choice set.
2. H_0 There will be no differences in brand choice behavior as a result of the introduction of a generic product to a choice set.
 - H_{A1} In product categories in which consumers perceive small differences among brands the introduction of a generic to a choice set will result in a significant number of national brand users switching to the store brand.
 - H_{A2} In product categories in which consumers perceive small differences among brands, the introduction of a generic to a choice set will result in a significant number of store brand users switching to the generic product.
 - H_{A3} In product categories in which consumers believe big differences exist between national and private brands only the switch between the store brand and the generic will take place as a result of introducing a generic to the choice set.
3. H_0 There will be no alteration in consumers' perceptions of the quality of a national brand as a result of increasing its price.
 - H_A In product categories in which consumers believe big differences exist among brands, consumers' perceptions of the quality of a national brand will be enhanced as a result of increasing its price.
4. H_0 There will be no differences in brand choice behavior as a result of increasing the price of the national brand.
 - H_A There will be a significant switch away from choosing a national brand as a consequence of increasing its price.

Research Design and Procedure

The sample of subjects involved in this experiment consisted of 112 adults, all of whom were the principal food shoppers in their household. They were chosen randomly after nine areas within a large western city had been selected. Each subject was interviewed in their home or apartment on two separate occasions approximately two weeks apart. A total of 96 subjects completed both interviews.

The two products used in this study were chosen because they represented product classes about which consumers felt that there were large differences among brands (catsup) on the one hand and small differences among brands (canned tomatoes) on the other. A preliminary survey was undertaken with a separate sample of consumers in order to determine this point. Those respondents were asked to agree or disagree with the following statement:

I personally find that there is no noticeable difference in the quality of different brands of _____.

At the first interview the respondents were shown a color picture of a national brand and a store brand of either catsup or canned tomatoes with the current store prices displayed in a prominent fashion. They were asked, if they were shopping for the product and they had to choose between the two brands presented, which one they would buy. They were then asked to indicate their opinion of the quality of the two brands on a scale of 1 to 7 with 1 representing very high quality and 7 standing for very low quality. Ratings of 2, 3, 4, 5 or 6 represented intermediate judgments. At that point those subjects who had been shown the catsup were shown tomatoes, but this time the price of the tomatoes were not the actual store prices. The price of the national brand was raised above its in-store level, thus widening the price spread between the private brand and the national brand. Similarly, those respondents who had initially been shown the canned tomatoes at regular store prices were then shown the catsup at artificial prices, i.e., with the national brand at an above-store-level price. Once again the subjects were asked for their product choice and quality assessments.

At the second interview the whole process was repeated except that instead of being presented with just the national and private brands the respondents were shown a generic as well. Thus, the experimental design was a $2 \times 2 \times 2$ randomized short block factorial design in which each of the subjects received 4 of 8 possible factor combinations as indicated in Figure 1. Each block consists of 4 responses from each subject (Wheatley and Chiu, 1979). This design is necessary in order to avoid the practical difficulties encountered in a randomized block factorial design in which each subject would receive all 8 factor combinations, e.g., the same brand of a product at two different price levels. It is also the kind of realistic choice situation confronting a buyer in the market place, i.e., different products at different prices rather than the same products at different prices.

FIGURE 1

	Tomatoes		Catsup	
	Choice of 2	Choice of 3	Choice of 2	Choice of 3
Wide Price Spread	n_1	n_1	n_2	n_2
Normal Price Spread	n_2	n_2	n_1	n_1

The order of presenting the factor combinations was random as was the assignment of the women to the treatments.

The statistical model is hierarchical:

$$Y_{i(j)k} = \mu + \gamma_i + \delta_{i(j)} + \tau_k + \epsilon_{i(j)k}$$

where $i = 1, 2$ (groups)
 $(j) = 1, 2, \dots, 96$ (individuals tested)
 $k = 1, 2, \dots, 8$ (treatments) .

Results--Quality Perceptions

The results of the experiment shown in Tables 1 and 2 indicate that consumers' perceptions of the quality of the national and private brands of both products was increased with the introduction of the generic brand to the choice set as hypothesized. This was true regardless of the price spread. The national brands were rated as being of better quality than the store brands while they in turn were perceived as being of higher quality than the generics.

TABLE 1
 Mean Product Quality Ratings--Tomatoes

	Two Choice Alternative		
	National Brand	Private Brand	
Narrow Price Spread, n = 52	2.69	3.53	
Wide Price Spread, n = 44	2.43	3.77	
Three Choice Alternative			
	National Brand	Private Brand	Generic
Narrow Price Spread, n = 52	2.31	3.26	4.18
Wide Price Spread, n = 44	1.96	3.23	4.18

TABLE 2
 Mean Product Quality Ratings--Catsup

	Two Choice Alternative		
	National Brand	Private Brand	
Narrow Price Spread, n = 44	1.84	3.84	
Wide Price Spread, n = 52	2.16	3.67	
Three Choice Alternative			
	National Brand	Private Brand	Generic
Narrow Price Spread, n = 44	1.73	3.41	4.61
Wide Price Spread, n = 52	1.98	3.20	4.04

The differences in quality perceptions of just the private brands attributable to the experimental treatments are shown in Table 3. The introduction of the generic improved the quality perception of the private brand as anticipated. The difference, 3.70 versus 3.28, is statistically significant as indicated by the ANOVA in Table 4. (Eight of the subjects were discarded randomly in order to balance

the number of subjects for each of the factor combinations.)

TABLE 3
 Mean Product Quality Ratings
 Private Brand

	Two Choice Alternative		Three Choice Alternative		Product Means
	Narrow Price Spread	Wide Price Spread	Narrow Price Spread	Wide Price Spread	
Catsup	3.84	3.67	3.41	3.20	3.53
Tomatoes	3.53	3.77	3.26	3.23	3.45
Alternative Means	3.70		3.28		
Narrow Price Mean			3.51		
Wide Price Mean			3.47		

TABLE 4
 Factorial Analysis of Variance
 Private Brand*

Source of Variation	Sum of Squares	d.f.	Mean Square	F Ratio
Total	405.99	351		
Treatments				
Price	.73	1	.73	1.12
Product	.11	1	.11	.16
Number of Brands	9.56	1	9.56	14.70**
Product x Brands	.01	1	.01	.02
Brands x Price	.18	1	.18	.28
Price x Product x Brands	2.23	1	2.23	3.43
Between Groups	1.64	1	1.64	2.52
Replications (Individuals within Groups)	223.85	86	2.60	4.00**
Residual (Error)	167.69	258	.65	

* Note: The price x product interaction effect cannot be calculated because of confounding due to the short block design.

** Significant at .0005 level.

There was no statistically significant difference between the two types of products nor, as a consequence of the price manipulation, was there any significant change in the perceived quality of the private brand in the two product categories.

The differences in the subjects' perceptions of the quality of the national brands due to the experimental treatments are revealed in Table 5. The introduction of the generic also enhanced the quality perception of the national brand as hypothesized. The difference, 2.28 versus 2.00, is statistically significant as indicated by the ANOVA in Table 6. However, while the difference in quality perceptions attributable to the manipulation of the price variable was in the expected direction, it was very small and not significant. Consistent with the results of the preliminary survey, the subjects in the experiment saw large differences between the quality of national brands of catsup and canned tomatoes.

TABLE 5
Mean Product Quality Ratings
National Brand

	Two Choice Alternative		Three Choice Alternative		Product Means
	Narrow Price Spread	Wide Price Spread	Narrow Price Spread	Wide Price Spread	
Catsup	1.84	2.16	1.73	1.98	1.93
Tomatoes	2.69	2.43	2.31	1.96	2.35
Alternative Means	2.28		2.00		
Narrow Price Mean	2.14				
Wide Price Mean	2.13				

TABLE 6
Factorial Analysis of Variance
National Brand*

Source of Variation	Sum of Squares	d.f.	Mean Square	F Ratio
Total	325.11	351		
Treatments				
Price	.00	1	.00	.00
Product	15.14	1	15.14	37.61**
Number of Brands	3.89	1	3.89	9.66†
Product x Brands	1.50	1	1.50	3.73††
Brands x Price	.23	1	.23	.57
Product x Brands x Price	.64	1	.64	1.59
Between Groups	11.28	1	11.28	28.01**
Replications (Individuals within Groups)				
	188.59	86	2.19	5.45**
Residual (Error)	103.85	258	.40	

* Note: The price x product interaction effect cannot be calculated because of confounding due to the short block design.
** Significant at .0005 level; † Significant at .003 level.
†† Significant at .06 level.

Results--Choice Behavior

With respect to the question of choice behavior, Figures 2 and 3 reveal that increasing the price of the national brands of both products in the two choice alternative significantly reduced the proportion of subjects choosing them as hypothesized ($\chi^2, \alpha < .05$). In the three choice situation, the higher price for the national brand of catsup also significantly lowered the percentage of respondents picking it ($\alpha < .01$); but, while the higher price of the national brand of tomatoes reduced the proportion of people selecting it, the difference was not statistically significant. The latter result may reflect the possibility that price increases in this product category do not affect choice behavior very much. This does not, however, preclude the possibility that a price decrease might influence choice significantly (Monroe, 1976).

FIGURE 2
Narrow Price Spread

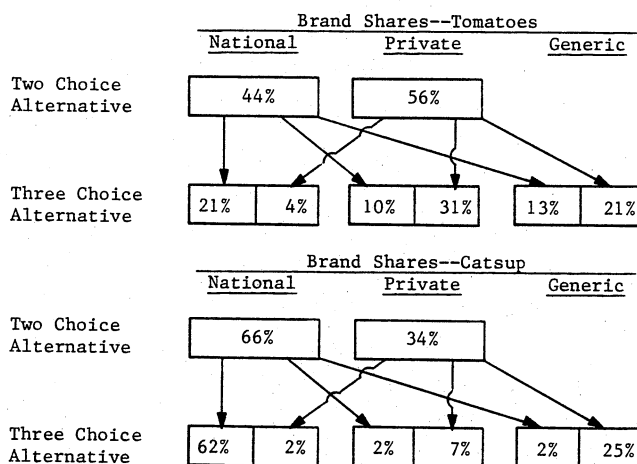
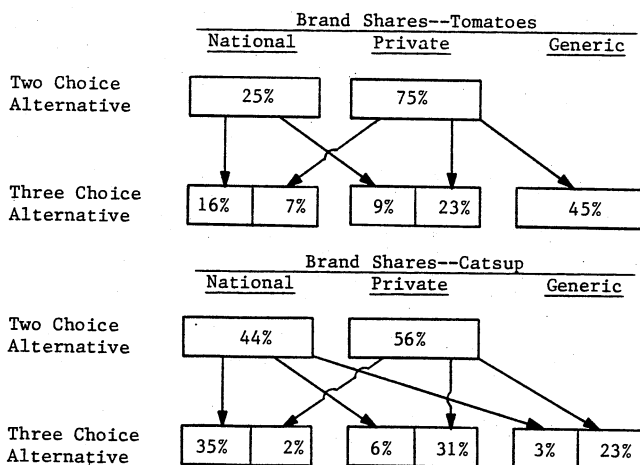


FIGURE 3
Wide Price Spread



In the case of the canned tomatoes, a product category in which consumers perceive small differences among brands and with the actual prices prevailing in the marketplace, choice behavior was much as Wheatley (1981) suggested.

However, almost one third of those who picked the nationally advertised brand over the private brand when the latter was the only alternative switched to the generic when it was made available. Thus, Hypothesis 2H_{A1} cannot be accepted. The predicted downward cascading effect from national brand to private brand spilled over to the generic as well. Hypothesis 2H_{A2} can be accepted, though. A significant proportion of those who selected the private brand of tomatoes in the two choice situation switched to the generic in the three choice alternative.

On the other hand, the national brand of catsup, with a stronger initial consumer franchise, lost very little to either the private brand or the generic in the three choice situation as Berger (1980) predicted. As hypothesized (2H_{A3}), the switch from national brand of catsup to private brand was not significant while the switch from the store brand to the generic that took place was significant ($\alpha < .05$).

While a smaller proportion of the consumers chose the national brand of catsup at the artificially higher price, they remained very loyal when compared to the private brand catsup users when the generic became available. The national brand of canned tomatoes, with a weaker initial consumer franchise, suffered more when its price was raised vis-a-vis the store brand and experienced some further erosion in market share when generics became available.

In the case of both the national brand of catsup and the national brand of tomatoes, and regardless of price, the mean quality assessment of the "non-switchers" was found to be better than that of the "switchers" in the three alternative choice situation, as one might expect.

Perceived quality was correlated with choice behavior and, a priori, appears to have some usefulness in predicting choice behavior. For example, Table 7 reveals that, using the actual prices prevailing in the marketplace, those food buyers staying with the store brand of tomatoes in the three choice situation saw a statistically significant difference between the quality of the generic brand and that of the store brand, while those persons switching from the store brand to the generic saw only a small difference.

TABLE 7
Mean Quality Ratings
Tomatoes--Narrow Price Range
Three Choice Alternative

Brand Ratings	Persons Switching from Private Brand to Generic n = 11	Persons Not Switching from Private Brand to Generic n = 16
Private	2.55	3.19*
Generic	3.09	4.81*

* Significant difference $\alpha < .01$.

Chi square tests also confirm the observation that when the generic brand was introduced, those consumers who initially chose the national brand in both product categories subsequently behaved differently from those who picked the private brand initially, irrespective of price. There was a somewhat greater difference in switching behavior with respect to the national and private brands of catsup than in the case of the canned tomatoes.

Limitations

Although the respondents in this study were permitted to state that they did not wish to indicate a choice, they were presented with what some of them may have felt was a forced selection process. They were presented with one national brand in each of only two product classes. Also, the experiment was carried out in just one city. Finally, the inclination to pick the national brand was probably increased due to the fact that the participants did not have to make an actual purchase.

Conclusions

Using a within subjects experimental design, we have demonstrated that consumers' perceptions of both national and store brands appear to be enhanced as the result of introducing generics. Some researchers have suggested that national brands in particular have been adversely affected by the introduction of generics (Murphy and Laczniak, 1979); others have indicated that generics take sales primarily from private brands (Strange, et al., 1979). However, both national and private brand shares can be expected to decline. The explanation for this paradox is that in the case of the national brands there appears to be some trading down to the private brands because of their improved quality image. This tendency increases when the price spread between the national brand and the store brand widens and when the national brand does not have a strong "consumer franchise."

In the case of store brands, some buyers switch to the generics to take advantage of their lower prices and because some consumers think the generics' quality isn't perceptibly different from that of the private brands. The question of how much brand share is lost by either manufacturer or store brands is very probably product specific. Existing brand shares in product classes where generics are not yet available seem to have little predictive value in terms of indicating what to expect when generics are introduced, in the absence of information about the perceived quality of the existing brands.

Manufacturers of products sold in retail food stores appear to be less than enthusiastic about the emergence of generics on their customers' shelves. On the other hand, a growing number of retailers seem to sense an opportunity to play a larger role than heretofore in the channel of distribution as a result of this development. This research suggests several reasons why retailers should be interested in generics. Problems of quality control and the behavior of costs still would have to be dealt with; but, if they can be managed successfully, stable or declining real incomes from many consumers suggest the possibility that retailers may find their customers receptive to the promotion of generic products on a larger scale than at present.

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THE ELUSIVE ROLE OF PRICE IN BRAND CHOICE BEHAVIOR

C. Whan Park, University of Pittsburgh
V. Parker Lessig, University of Kansas
James R. Merrill, Indiana University

Abstract

The role of price in choice behavior is examined for situations in which information about other important product attributes is available to the consumer. The article suggests that consumers perceive and use price in different ways and readjust its role in choice behavior, thus detracting from the predictability of choice models in which price is one of the important product dimensions.

Introduction

A consumer's brand choice process has been viewed by some investigators as being deterministic and by others as being stochastic. According to the deterministic point-of-view, once we know the consumer's decision criteria and the utility associated with each of these criteria (with criteria and utility assumed to remain constant for a given choice task), we should be able to predict the consumer's brand selection. Choice models of this type include the compensatory models, the lexicographic model, the satisficing-plus model, the conjunctive model, and the additive difference model.

Those who view the choice process as stochastic feel that the utilities associated with the stimuli undergo random fluctuations. This probabilistic view of choice processes is expressed by Tversky's elimination-by-aspects model and the additive random aspects model.

There is sufficient support for the complimentary relationship between the deterministic and the stochastic positions (Rappaport and Wallsten 1972, Fishburn 1974, and Slovic 1975). A consumer's choice is predictable enough to give credit to the deterministic view yet unpredictable enough to support the belief in random elements in the choice process.

Often when a discrepancy is found between a choice model's prediction and the DM's (decision maker's) actual choice, the researcher attributes the failure of accurate prediction to the inadequate conceptualization of the choice model itself or to the DM's inability to cope with the choice task. Surprisingly, little attention has been paid in consumer behavior to the nature of the stimulus dimension itself as a possible source of discrepancy between the actual and the predicted choices. More specifically, the discrepancy between the model's predicted choice and the DM's actual choice may have nothing to do with the particular choice model tested or with the DM's lack of motivational involvement with the choice situation. Rather, it may be caused by the unique characteristics of the stimulus information which the DM uses in making a choice.

The objective of the present study is to examine price as a stimulus dimension and to identify its role in the DM's choice process. Although many studies have been concerned with the relationship between price and perceived quality or its related aspects, we have not been able to find any studies which describe the way consumers use price in choice situations.

The Nature of Price as a Stimulus Dimension

Several researchers have emphasized the importance of stimulus properties in understanding an individual's information processing and choice behavior (e.g., Rappaport and Wallsten 1972, Lawrence 1963, Egeth 1967, and Garner 1970). Unfortunately, in consumer behavior little attention has been given to how an individual processes (interprets), categorizes, and utilizes stimuli in making a choice.

Product-related stimuli can be characterized as being continuous (e.g., price) or as being noncontinuous (e.g., two-door vs. four-door car, sedan, hardtop). An examination of price is of specific interest for two major reasons. First, there is reason to believe that an individual can assign affect or utility to noncontinuous product dimensions with less difficulty and with greater stability than is the case with continuous stimuli such as price. Since there is a relatively small number of categories (e.g., subcompact, compact, mid-size, and full-size car) existing for the noncontinuous dimensions (e.g., car size), by using a sharply discontinuous utility scale, the consumer can clearly discriminate among a dimension's categories. This may not be true, however, in the case of price, a continuous product dimension. A relatively high degree of stimulus ambiguity is expected to exist in categorizing price into ranges due to the absence of an objective external reference. This does not mean that the consumer does not categorize price into ranges or categories based upon utility. There is, for example, strong theoretical and empirical support (Monroe, 1973) suggesting that the consumer categorizes price by breaking it into ranges and then in making a choice uses these ranges instead of the specific price. Park (1978), however, has shown that this price categorization is unstable and often changes during the choice process.

The second major reason why the role of price in the choice process should be examined is that the DM's expressed utility for different prices may not be reliable in the absence of information on other product dimensions. The utility expressed for different prices or price categories may change depending upon the composition of other product-related information. Intuitively, it would seem that an individual may not view price as one of the salient dimensions to be used in making a choice. Rather, he may view price as one dimension against which differences in all the other dimensions are weighed and evaluated. Therefore, when researchers predict one's choice based upon a model using utility information on each dimension (including price), a high degree of discrepancy between the model's prediction and the DM's actual choice would be expected. It should be noted that most choice models (including the compensatory, the lexicographic, and the conjunctive models) base their predictions on utility or preference information which treats each stimulus dimension, including price, separately.

Methods

Subjects

In this study, brands of automobiles were used as choice alternatives. Subjects were selected solely on the basis

of whether or not their interest in and involvement with the task of selecting automobile brands were sufficiently high to provide some meaningful results. The involvement level was controlled by selecting married graduate students intending to buy a car (new or used) within a year of this study. A total of 50 qualifying subjects participated in the study; for their efforts, each was paid \$3.00.

Construction of Experimental Stimuli

Two criteria were applied for constructing the stimuli. First, it was felt that brand information should be realistic. Thus, most of the information profiles of brands were obtained from "Charlton's 1976 New Car Prices," although some modifications of the original information were made. The second criterion was that experimental stimuli should be designed in such a way that the subject makes a choice in a state of conflict, as is usually the case when purchasing a car. If one alternative outperforms the others across all dimensions, the situation would be unrealistic and little information concerning the whole choice process would be obtained. Therefore, stimuli were controlled so that pairs of brands would be similar on some major dimensions (e.g., gas mileage, price, frequency of repairs and size) yet different on other major dimensions.

Using the above criteria, 12 brands described through 10 stimulus dimensions (i.e., product characteristics) were examined. Table 1 (second and third columns) presents the stimulus dimensions and categories which were used to describe each of the 12 brands (unnamed).

Choice Task

Each subject was scheduled for an individual interview in the School of Business laboratory. Four types of information were obtained from each subject. First, each subject indicated the importance associated with each of the 10 stimulus dimensions. Importance was measured using a 7-point scale and was defined as the impact which the particular dimension would have on the selection of an automobile. Second, the subject was presented an information sheet describing each of the 12 automobiles in terms of the 10 dimensions. The subject then indicated which automobiles were regarded as acceptable purchase options. Third, each subject indicated, using an 11-point scale, the degree of satisfaction expected from each category of

stimulus dimension. Finally, from those brands identified as being acceptable (second item above), the subject selected that brand believed to be the best purchase choice, the second best brand, and so on until all acceptable brands had been ranked in order of preference.

From the second and the fourth information sets just described, it can be seen that subjects made their final brand selection from an evoked set rather than going directly from an examination of all available brands to the most preferred automobile. Choices were examined this way for several reasons. Note that a number of theoretical and empirical studies (e.g., Cyert, March and Moore 1963, Howard and Sheth 1969, and Payne 1976) support the concept of a two-stage selection process.

While each subject was examining the brands and making his choice, he was asked to verbalize all of his thoughts so that the interviewer could trace the choice process. Whenever the subject's response was not clear, the interviewer asked for clarification. These protocols were tape recorded and later studied.

When the subject had finished ranking brands, the interviewer removed from the subject all brand attribute information except that for the brands chosen as first and second best. The interviewer then asked the subject to specify which product dimension was the most important for distinguishing the best brand from the second best. Once this subject had indicated this dimension, the interviewer asked which brand, the first or second best, he would choose if both brands were equally satisfactory with respect to this most important product dimension. Next, in addition to assuming that both brands are equally satisfactory on the most important dimension, the subject was asked to assume that they were also equally satisfactory on the second most important dimension. Under these conditions, the subject was again asked to indicate which of the two brands he would select. This procedure continued through the attributes until the subject indicated price as the dimension responsible for the choice. Through this procedure, it was possible to identify the impact of price differences as compared to that of differences on other product dimensions. These interviews were also tape recorded.

TABLE 1
Description of Categories on Stimulus Dimensions

Mean Value of Importance	Product Dimension	Categories on Each Product Dimension
6.58	Price:	\$2,911, \$3,298, \$3,449, \$3,450, \$3,574, \$3,957, \$4,068, \$4,100, \$4,299, \$5,097, \$5,130, \$5,526
5.96	Gas mileage:	17, 18, 19, 25, 27, 29, 30, 34, 36
5.60	Car size:	subcompact; compact; mid-size; full size
5.56	Car style:	sedan; hardtop; wagon; sportscar
3.14	Trunk space:	small; medium; large
5.8	Frequency of repairs:	average; good; very good
4.3	Safety features:	average; good; very good
2.94	Durability of paints:	average; good; very good
3.42	Car manufacturer:	American; import
3.7	Number of doors:	two door; four door

Results

Identification of Price Role Groups

The role of price in choice behavior was analyzed using each subject's protocol and questionnaire responses. (Whether the subject assigned different prices to the same category, i.e., the same satisfaction, was determined from his/her responses to the questionnaire. From the protocol data, we identified how the subject actually handled price in the process of choosing the best brand.) The following five groups were identified from these two information sources:

- I. subjects who categorized the prices of the two best brands as being equally satisfactory and who did not use price differences in making a final choice;
- II. subjects who categorized the prices of the best two brands as offering different degrees of satisfaction but did not use price differences in making a final choice;
- III. subjects who categorized the prices of the best two brands as offering different degrees of satisfaction and who used that difference as a tradeoff while making a final choice;
- IV. subjects who categorized prices of the best two brands as offering different degrees of satisfaction but treated them as if they were the same while making a final choice; and
- V. subjects who initially categorized the prices of the best two brands as being equally satisfactory but treated them as being different when making a specific choice.

Responses on the 11-point satisfaction scale were used for determining the price satisfaction categories. Specifically, each of the 11 points on the satisfaction scale was treated as a category.

Assigning subjects to these five mutually exclusive groups was not difficult. The first two groups contain subjects who, in their protocols, did not mention price while making a final choice. The last three groups contain subjects who explicitly mentioned price.

In order to better understand how subjects were assigned to Groups III, IV, and V, it is helpful to characterize some of their statements. In Group IV, the subjects initially assigned the prices of the two brands to different satisfaction categories. However, in the protocol, these subjects stated that although price was important the prices of the two preferred brands were "about the same." The subject then went on to make a final choice based on other attributes. The subjects in Group V initially assigned the prices of the two brands to the same satisfaction category. Yet, when making a choice, a typical statement was, "Brand A has a little edge in price over Brand B, so I would choose A." The nature of the price tradeoff for Group III subjects was revealed in the protocol by comments such as: "Since the price is lower and the gas mileage is about the same, I would choose Brand B;" or, "Even though car B's price is somewhat lower, car A's frequency of repairs is so much better that I would choose A."

The distribution of the 50 subjects assigned to the five price role groups is as follows: Group I - 11 subjects, Group II - 11 subjects, Group III - 13 subjects, Group IV - 5 subjects, and Group V - 10 subjects. Several aspects of this distribution should be noted. First, price does not seem to play a single role in choice behavior.

Second, the subjects in Groups II, IV, and V clearly treated price in a manner different from that expected from their responses to the price satisfaction questions. While making a specific choice decision, 26 of the 50 subjects readjusted their expressed degree of price satisfaction. This observation supports a proposition discussed earlier in this paper. Specifically, it was argued that the consumer's price categorization or price utility is unstable and often changes during the choice process.

Third, although the subjects in Group IV initially indicated different degrees of satisfaction for the prices of their two most preferred brands, they treated these prices as being the same when making a brand selection. An interesting observation associated with this behavior is that for these subjects substantial differences existed between their two most preferred brands with respect to product dimensions other than price. The satisfaction differences on other product dimensions were greater than the price satisfaction difference. In this situation, the subjects treated the two prices as being the same (due to their relatively low informational value) and instead focused attention upon the larger differences found on other dimensions.

The preceding observations of the subjects' readjustment of the role of price raises two important questions which are: (a) whether the category readjustment phenomenon is present among noncontinuous product dimensions and (b) whether this readjustment is a function of information provided on other product related stimuli. The following is an account of the examination of these two issues.

Comparing Price Role Groups to Similar Groups on Noncontinuous Dimensions

To investigate the process of readjustment among noncontinuous stimuli, two dimensions, frequency of repairs and car styling, were examined. Frequency of repairs and car size were chosen since they appeared across subjects to be the most important noncontinuous product dimensions.

Five groups like those previously discussed for price were identified for the dimensions size and frequency of repairs. Table 2 shows for each of these five groups the number of subjects assigned to that group when subjects are examined on the role of (a) price, (b) frequency of repairs, and (c) car size.

As can be seen from Table 2, the distribution of subjects belonging to these groups when frequency of repairs or when size is the product dimension is in sharp contrast with the role distribution for price. For frequency of repairs and for size, the verbalized choice behavior for 43 of the 50 subjects (subjects in Groups I and III) was consistent with their responses to the 11-point satisfaction questions ($p < 0.0001$ level). However, when price was the product dimension, only 24 of the 50 subjects behaved in a manner which could have been predicted from their questionnaire responses (not significant). This suggests that expressed utilities for these noncontinuous product dimensions are more stable than is the case with price.

Price Readjustment and Information on Other Product Dimensions

Earlier it was mentioned that once a subject had finished ranking his acceptable brands in order of preference, he was asked which of his two most preferred brands he would select (and why) if both brands were assumed to be equally satisfactory with respect to (a) the most important product dimension, (b) the most important and the second most important product dimensions, and (c) so on until price was mentioned as a factor responsible for the purchase decision.

The responses to these questions of the 21 subjects in Price Role Groups I and V were examined to provide

TABLE 2
Attribute Usage Groups Identified through Protocol Data Analysis

Group Frequency			Group Number	Group Description
Price	Repairs	Size		
11	25	32	I	Subjects who categorized this attribute of the two best brands as being equally satisfactory and who did not use differences on this attribute in making a final choice.
11	5	6	II	Subjects who categorized this attribute of the best two brands as offering different degrees of satisfaction but did not use differences on this attribute in making a final choice.
13	18	11	III	Subjects who categorized this attribute of the best two brands as offering different degrees of satisfaction and who used that difference as a tradeoff while making a final choice.
5	1	1	IV	Subjects who categorized this attribute of the best two brands as offering different degrees of satisfaction but treated them as if they were the same while making a final choice.
10	1	0	V	Subjects who initially categorized this attribute of the best two brands as being equally satisfactory but treated them as being different when making a choice.

information on whether a subject's readjustment of the price role could in part be a function of information on other product dimensions. When initially asked to indicate the degree of satisfaction associated with a car's price, these subjects assigned the prices of their two most preferred brands to the same satisfaction category. Yet when questioned in the manner just described, 15 of these subjects used price as a basis for selecting one brand over the other. This was true even though the automobiles differed on other attributes where these specific attribute levels had earlier been specified as providing different degrees of satisfaction. Thus, in the absence of information on other product attributes, price was not anticipated to be a factor influencing the purchase decision. Yet, in the presence of other attribute information, price became a factor.

(It should be mentioned that price again behaved differently from the noncontinuous product dimensions. None of these 21 subjects made a choice between their two most preferred brands through the use of those noncontinuous product dimensions where the two automobiles' attribute levels were initially classified as being the same in terms of satisfaction.)

Hoffman (1960) provides some insight regarding cue readjustments such as those noted above for price. He states that the weight placed upon a particular cue changes depending upon the values of other cues. He goes on to state that people come into judgment situations with certain expectations regarding the interrelatedness of cues which define objects. The weights are then adjusted depending upon the congruence or incongruity of the cue-value with the values of the other cues which describe the object being judged.

Summary

The results of the present study along with past research findings suggest that price plays a different role at different stages of the choice process. In early evaluations of alternatives, price would be used mainly to screen out unacceptably priced alternatives (Park 1978). However, in the subsequent stage of the choice process, price's role appears to be complex and somewhat unstable. Of particular interest at this later stage is the fact that the role of price (unlike that of other product dimensions) was readjusted by many of the subjects.

One plausible explanation for the price readjustment is that subjects might employ a step-wise category readjustment for price while, at the same time, taking other attribute differences into consideration. Specifically, consumers might view price as a dimension against which differences on other dimensions are weighted and evaluated. The subjects appear to derive a certain value from price differences and then compare this value implicitly to the value derived from the remaining attribute (dimension) differences.

This price readjustment phenomenon could contribute to a failure in the prediction of choice and thus needs to be identified in advance. Unfortunately, the appropriate measurement techniques are yet to be developed. Conjoint analysis is one of the few available techniques for this purpose although it would not render a satisfactory answer to the identification problem of price readjustment prior to the choice decision.

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THE INFLUENCE OF PRICE ON PRODUCT PERCEPTIONS AND PRODUCT CHOICE

Kent B. Monroe, Virginia Polytechnic Institute and State University

Abstract

This paper discusses the contributions and limitations of three research papers investigating the influence of price on consumer behavior. Two of the papers investigate the influence of price on product choice dynamically. Although the methodologies of the two papers were vastly different, each research effort is in the direction needed for future behavioral price research. The third paper renews some concerns about previous behavioral price research and corroborates earlier findings that the order of price presentation influences individuals' price perceptions.

Role of Price

The research reported by Park, Lessig, and Merrill (1982) is an important step forward in price research. This research recognizes, as suggested earlier by Monroe and Petroschius (1981), that price plays a multi-dimensional role in influencing purchase decisions. Further, this research provides another approach for discovering the dynamics of the purchase decision process. However, as to be expected with a pioneering effort to investigate the dynamics of the choice process, there are some difficulties with the reported research. These problems exist because the authors use ambiguous technical terms, do not provide a substantive review of relevant price research, nor do they provide complete details about the research methodology.

Ambiguous Terms

Initially, the authors write of price as a stimulus dimension; later, price is referred to as a product dimension, and, at least once, as a brand attribute. But, what is a dimension? And what is a "category of stimulus dimension"? It would have been simpler to refer to price as a stimulus, and to each separate price stimulus as a cue, which is consistent with the price research literature. Further, the authors write of the categorization process of perception, yet call each individual price stimulus (cue) a category. A little more care in the selection and use of the technical language would have improved the paper.

The authors place emphasis on their categorization of product-related stimuli as continuous or non-continuous. Further, they offer the proposition that people can assign utility to non-continuous stimuli easier and with greater stability than with continuous stimuli such as prices. However, the operational dichotomy of stimuli appears to be whether a stimulus magnitude can be quantified, for example, price or gas mileage ratings. In reality, any price stimulus is presented as a discrete entity, not as a part of a continuum. Hence, the continuous - non-continuous categorization is artificial and lacks conceptual meaning for price research. The issue of stability is important and will be discussed below.

Previous Price Research

The authors report an inability to find descriptions of the way consumers use price in choice situations (purchase?). However, in earlier information processing research, Haines (1974) and Bettman (1979) report on the use of price as a means of initially screening purchase alternatives into acceptable or unacceptable choices.

Moreover, Jacoby and Olson (1977), and Olson (1980) offer propositions on the role of price in the purchase decision process. Further, the notion of acceptable and unacceptable prices has been experimentally verified (Monroe 1971, 1973).

The authors suggest that the process of categorizing prices into ranges produces a high degree of stimulus ambiguity due to the lack of an objective external reference. First, what do they mean by stimulus ambiguity? Second, the earlier conceptualizations and empirical work by Gabor and Granger (1966), Kamen and Toman (1970), Monroe (1971) and Wheatley (1981) consistently establish that buyers do have reference prices that serve as evaluative standards. Further, these reference prices may be external (objective), such as last price paid, or price of the leading brand.

The issue of stability in the price categorization process is raised in this paper, particularly when an individual is making a choice from among acceptable alternatives. However, the stimuli set in the second stage of the choice process is different than in the first alternative screening stage. Hence, there is likely to be a reassessment of the now salient stimuli. Second, Della Bitta and Monroe (1974), and in this session both Rexeisen (1982) and Wheatley et al. (1982) have shown that there are effects due to the order of presenting price stimuli. Theoretically, this phenomenon is explained and predicted by adaptation-level theory (Helson 1964). Thus, it would be more appropriate to recognize the dynamic role of price in the choice process, rather than expecting a single, static role of categorizing purchase alternatives into acceptable or unacceptable groups.

Research Method

A number of questions arise relative to the data collection phase. There is considerable similarity between this research effort and the study reported earlier by Park (1978). Since the stimuli came from the 1976 price book, were the data collected during the 1976-1977 period? If not, then the price stimuli would be unrealistic since they range from \$2,911 to \$5,526. Another question arises if this study is a direct result of Park's (1978) earlier inquiry. If it is, then what was learned in the previous study that prompted the seemingly research design changes? It would be useful to know this learning process by the researchers to enable other investigators to improve their research designs.

The description of the third phase of data collection, satisfaction ratings, is unclear whether each subject rated all 45 stimuli or only those stimuli from the acceptable alternatives obtained in the second phase. If all 45 stimuli were rated, then it is not clear that the importance the researchers place on these satisfaction ratings in their interpretation of the protocols is correct. For example, the authors attach much significance as to whether subjects used price differences as a choice criterion even though the prices had equal satisfaction ratings. Less significance must be placed on the satisfaction ratings if all 12 prices were rated on the 11-point scale, than if a more limited set of acceptable prices, say six, were rated on the satisfaction scale. Further, if 12 prices were rated on an 11-point scale, and only two, three, or four stimuli cues from other categories were rated on the same 11-point scale, then it

is possible there was a scale x stimulus interaction confounding the results.

The authors suggest that having subjects make final choices from a set of acceptable alternatives was done for several reasons. Yet, they never tell us what these reasons are. Also, it seems that subjects' verbalizations were recorded for the final choice, but not during the process of categorizing the alternatives as acceptable or not. If so, then valuable information about the subjects' initial decision process has been lost and we do not know what stimuli were used in this initial screening process.

One of the objectives of the fourth stage protocol development was "to identify the impact of price differences as compared to that of differences on other product dimensions." First, what does impact mean in this context? Second, how can one determine stimuli differences when they are described as average, good, very good, or small, medium, and large. Whereas, the differences in the price stimuli and gas mileage were quantified, the differences among each of the other eight stimulus categories were verbal descriptions. Is a \$200 difference in price similar to a difference between average and good for frequency of repairs? Indeed, as mentioned earlier, there is probably more of a lack of an external reference for these unquantified stimuli. We are not told the magnitude of the price differences in the results reported, nor are we told how differences between verbal categories were determined.

Results

One of the difficulties in understanding the results of this study is how to interpret what is meant by stimulus differences as suggested above. Also, whether a satisfaction scale can be used to suggest differences in perceived utility is an important issue. However, one key to understanding the results is whether all prices were rated on the satisfaction scale or only the prices of acceptable product choices. A second concern is whether a price difference is perceived to be noticeably different for the purpose of a choice. That is, two prices may be perceived as providing different degrees of satisfaction, yet in the choice process not be perceived to be sufficiently different to warrant a choice solely on the basis of price differences. This issue relates to the concept of ind or just noticeably different stimuli (Monroe 1979, p. 43).

If the five groups developed by the authors are cross-classified according to whether the prices were rated equally satisfactory or whether the price differences were used in the choice process, the results are as given in the table below. As the table suggests, 27 subjects used price differences as a choice criterion while 23 subjects did not. But, interpreting the lack of use of price differences is impossible without knowing the magnitude of the price differences. For example, as the price differences increased in magnitude, did more subjects use price as a choice criterion? When price was a choice criterion, did the subjects always select the lowest-price alternative? Similarly, how unequal were the satisfaction ratings for the 29 subjects? And, as the differences in satisfaction ratings increased, did more subjects use price as a choice criterion?

Summary

The role of price in the choice process is dynamic, not stable in the sense it is unpredictable. The phenomenon isolated in this study has been reported earlier by Haines (1974) and Bettman (1979). That is, price may be used as an early screening device to eliminate certain alternatives. Then, once deliberation has proceeded using other product attributes, price may again become a part of the

decision process, particularly if price differences between the final alternatives are perceived as significant to the decision maker. Despite the detailed criticisms of this research, it remains an important step forward in behavioral price research. More research on the role of price in the dynamics of the purchase decision process is needed.

TABLE 1
Satisfaction

Price Differences		Equal		Unequal		Totals
		Group	Number	Group	Number	
Used	I		11	II	11	27
				IV	5	
Not Used	V		10	III	13	23
Totals			21		29	50

Validity of the Price-Quality Relationship

The paper by Rexeisen (1982) attempts to assess whether individuals use price as an indicator of product quality, while overcoming some methodological limitations of previous research. Before commenting on the reported research, we should first address the question "What do we mean by valid price-quality relationship?" Essentially, it is necessary to specify whether the relationship of interest is either

product quality $\xrightarrow{+}$ price (1)

or,

price $\xrightarrow{+}$ perceived quality (2)

The first situation postulates that it costs more to produce higher quality (in an objective, technical sense) products, and therefore, products of higher quality are priced higher. The second situation postulates that buyers perceive (believe) that higher-priced products are also higher in quality. While Rexeisen is concerned with the latter proposition, it is important to specify exactly what the domain of the research is. Finally, the issue of validity in the context of this research ought to raise the question of whether the relationship conforms to law, logic, or facts under specified conditions.

Despite methodological limitations of previous price-perceived quality research, it is clear there is a positive relationship as specified above. However, this relationship has not always been found to be statistically significant. Hence, the controversy over whether there is a valid price-perceived quality ought to be centered on determining when the relationship is a determinant of consumer choice, not whether the relationship, per se, exists.

Conceptual Framework

The author sidesteps the issue of whether sufficient theoretical constructs have been identified that we may "formulate a meaningful conceptual framework for price cue research" by proposing "to test, rather than explain" the price-perceived quality relationship. Yet, the author does specify four research hypotheses while disclaiming a conceptual framework. On the contrary, there are several conceptual frameworks proposed and used for price cue research: perceived risk (Olson 1973, 1977), adaptation-level (Monroe 1973, 1977), or assimilation-contrast (Monroe 1971, 1973, 1977). The real research issue, as investigated by Park et al., (1982) is what role does price play in the buyer's

choice process? Or, what is the information value of price (or prices) within the choice process?

Perhaps, due to the lack of using a conceptual framework, the hypotheses tested in this research lack clarity and specificity. The first and third hypotheses suggest that quality ratings will be "differentially affected" by price or place of purchase. What is meant by "differentially affected"? Similarly, what does the second hypothesis mean by "moderate the price due effect"? How would this hypothesized moderation take place? The fourth hypothesis suggests that order of price presentation will not influence quality ratings. Yet, as reported earlier by Della Bitta and Monroe (1974) and reiterated by Monroe (1977, 1979), there is a good conceptual argument for expecting significant effects due to order of price presentation. Moreover, Wheatley (1981) applies this conceptual argument in his research on the influence of generic brands on consumer choice.

Methodology

Even though the research was designed to overcome previously cited methodological weaknesses, many questions remain. Was a manipulation check performed on whether the pretest anticipated price ranges were consistent with the subjects' anticipated price ranges? Indeed, it is possible that the \$29 per square yard price might have been outside the subjects' acceptable price range. If so, then this price unacceptability could weaken the observed price-perceived quality relationship.

Three dependent variables were used (quality rating, value for the money, and perceived worth), yet the hypothesis relate only to the quality rating. Consequently, it is questioned as to why the other two dependent variables are in the study. The author used three measuring scales, yet they are similar methods and not useful for testing convergent validity as claimed by the author. Convergent validity is the degree that two or more attempts to measure the same concept through maximally different methods are in agreement (Bagozzi 1980, p. 129). The high inter-method correlation reported in the paper only indicates that the similar methods produced a similar response on the three dependent variables.

Analysis and Results

The correlation of 0.41 between two of the dependent variables suggests non-independence between these two variables. A correlation of this magnitude implies that the two variables might be tapping the same underlying construct. Although the two variables are not identified, it would seem most likely that the two variables are value for the money and perceived worth. Thus, it might have been more appropriate to have used a MANOVA with these two correlated dependent variables.

In the reported ANOVA, there are a number of low F values, substantially below 1.00. For example, F values of .03, .11, .16 likely are significantly less than treatment error. The implication is there was a lack of treatment effect due to the manipulation not working.

Summary

It is doubtful that this study has provided an answer to the question of the validity of the price-perceived quality relationship. The main finding that order of presentation had a significant effect corroborates earlier findings (Della Bitta and Monroe 1974). However, the author's prescription of randomizing price treatments will not remove this effect in future studies. A randomized presentation of prices simply produces a different, perhaps unknown order effect. It would better to recognize that

when high prices are presented first, subsequent lower prices are judged more favorably than if the presentation order is reversed.

Impact of Generics on Product Choice

The paper by Wheatley, Chiu, and Allen (1982) is a well-designed study covering the important issue of product choice. There is a good review of the literature; the conceptualization is sound; and the hypotheses are explained very well. However, as with the preceding papers, some parts of the methodology were not fully explained.

Methodology

A pretest was conducted to determine that consumers perceive large differences between brands of catsup, but only small differences are perceived between brands of canned tomatoes. Unfortunately, a manipulation check was not used to confirm that these perceptions prevailed among all respondents.

As Rexeisen (1982) noted, there is a need to use multiple indicators for each construct, if we are ever going to be able to check on the reliability of our scales and the validity of our constructs. Unfortunately, this paper follows the tradition of a single scale for the product quality construct. It would be methodologically better to measure perceived quality by utilizing several measurement techniques or scales.

The authors do not indicate what prices were actually used. Instead, we are told the price treatment consisted of a wide price spread and a narrow price spread. Therefore, it is not possible to interpret the significance of the manipulation.

Results

The product treatment for the private brand and the price treatment for the national brand both appear to be significantly less than the treatment error. As noted above, such a result implies the lack of the treatment taking. In particular, it is difficult to understand how the price treatment in Table 6 had a zero sum of squares.

Attempting to understand the resulting choice behavior in this study, the data provided in Wheatley et al., Figures 2 and 3 were converted to the four digraphs below. The numbers represent the proportion of respondents who switched brand choices or remained "loyal" during the experiment. For example, in Figure 1, 48% of those individuals who chose the national brand of canned tomatoes in the first interview, also chose the same brand during the second interview. Similarly, 38% of the individuals switched from the private brand to the generic brand of tomatoes. Figure 1 represents one sample of respondents, and Figure 2 represents the second sample of respondents.

Examining the two figures suggests that each sample behaved similarly whether the choice was canned tomatoes or catsup. As shown in Figure 2, respondents in that sample were more prone to shift their choice from the private to the generic brand. Similarly, the other respondents were more prone to shift from the national to the generic brand (Figure 1). Therefore, was there a confound in this study in that composition of the samples provide a possible explanation of the observed choice behavior?

Alternatively, the results may imply that purchase shifts from private to generic brands are more apt to occur when (1) there are wide price spreads for brands perceived to be relatively homogeneous, or (2) there are narrow price

spreads for brands perceived to be relatively heterogeneous. Obviously, more research using larger samples of products and respondents is necessary to obtain more definitive results. Nevertheless, Wheatley et al's results are intriguing.

FIGURE 1

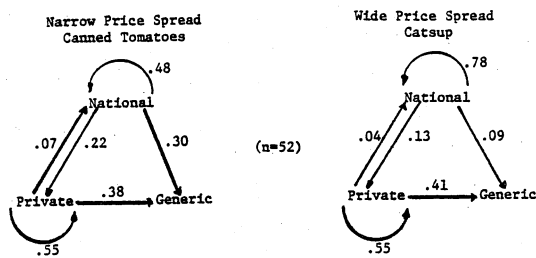
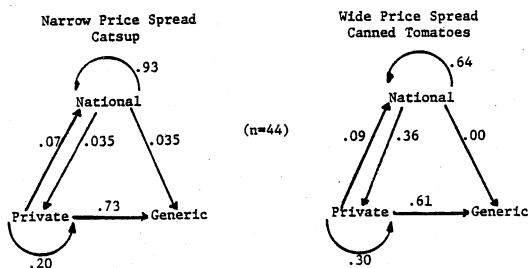


FIGURE 2



Overall, this study is a useful attempt to understand choice behavior. Employing the within subject design permitted an analysis of how individuals might respond over time to a generic brand. Despite the problems inherent in a within subject design, we need to do more research on an individual basis instead of the heavy reliance on cross-sectional designs.

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CONSTRUCT VALIDATION AND EMPIRICAL TESTING OF GUILT AROUSING MARKETING COMMUNICATIONS

Morry Ghingold (student), The Pennsylvania State University
Lorne Bozinoff, The Pennsylvania State University

Abstract

An experiment was undertaken to assess the construct validity of "aroused guilt" and determine the message effects of guilt arousing marketing communications. Findings suggest the validity of a guilt construct and the ability of persuasive communications to arouse guilt and affect self-attitudes. Effects on global attitudes and behavioral intentions were not evidenced.

Introduction

Although advertising and promotion remain as sources of considerable interest within consumer behavior research and theory, the topic of emotion arousing persuasive communications has not received much recent attention by consumer behavior researchers. However, a large body of multidisciplinary research has been reported in the past, with most of the work focusing on fear arousing communications. Regrettably, the results to date remain equivocal. (For more complete discussions on the course and content of fear appeal research and some of the problems encountered see Higbee 1969, Ray and Wilkie 1970, and Sternthal and Craig 1974).

Recently, however, a new type of emotional appeal has been suggested as being plausible, relatively distinct, and in current use in the marketplace. Ghingold (1981) and Ghingold and Bozinoff (1981, in press) have commented on the existence and impact of guilt arousing marketing communications. They have proposed that 1) guilt arousing communications are being used by advertisers, 2) that it may be possible to theoretically account for the efficacy of guilt arousing marketing communications, and 3) that guilt arousing communications do, in fact, arouse guilt and have effects on message recipients.

It would seem that one fruitful avenue for research in this area might include efforts to validate newly proposed constructs. Although Ghingold and Bozinoff (1981, in press) have reported experimental evidence which indicated that ads intended to arouse guilt did so, three questions remain unresolved:

- 1) What is a guilt arousing communication and is it distinct from other forms of persuasive communication?
- 2) Are the affective responses (i.e., emotional arousal) to guilt arousing communications unique and predictable?
- 3) Do guilt arousing communications "work," i.e., what are the effects of attending to a guilt appeal?

As a means of addressing some of these questions a study was conducted with guilt arousing marketing communications. The background, description and results of this research are reported below.

Background and Purpose of the Present Research

In the domain of marketing communications and persuasion guilt may be considered to be an a posteriori emotional response which occurs subsequent to a particular action or thought. Once aroused, guilt feelings may lead to a variety of actions, cognitive or behavioral, intended to reduce the level of guilt one experiences to a more tolerable level (Ghingold 1981). In contrast, fear results from the perception of some danger and brings about the objective of preventing or avoiding the undesired outcome, i.e., an

a priori response. Since guilt is brought about by the actual consequences of behavior and fear is caused by the anticipated consequences of behavior, theoretically there should be differences in these two forms of anxiety although grey areas of overlap may occur (Roseman 1979, Ghingold 1981).

Few investigators within consumer behavior/marketing have addressed guilt arousing persuasive communications. Wheatley and Oshikawa (1970) investigated the relationship between positive and negative advertising appeals and anxiety. Applying a general anxiety reduction model, the authors concluded that "negative communication can be effective in inducing the behavior advocated by the communicator (pg. 85)." Regrettably, a fear manipulation constituted the only negative communication investigated.

Other researchers have also demonstrated a similar emphasis on fear research in studying guilt arousing communications. Haefner (1956), Zemach (1966) and Yinon et al. (1976) reported significant effects due to guilt arousing communications, yet these researchers were applying principles from the fear paradigm dominant at the time. Notwithstanding any methodological or analytical limitations of these studies, it remains unclear whether the theories or models tested were existing fear paradigms or unique conceptualizations of guilt.

More recently, Kelman (1979) has discussed the relationship between various emotional states and subsequent changes in attitude. Citing dissonance theory, Kelman suggested that guilt, as an emotional response, was among the most likely moral dilemmas to lead to attitude change, although he did not frame his conceptualization in the context of persuasive communications. Extending this view, Ghingold (1981) argued in favor of the relevance of guilt appeals. Defining guilt as a psychological construct in a persuasion context, Ghingold proposed an initial conceptualization of guilt arousing persuasion. (For a more detailed review of past research on guilt appeals and greater explication of both the guilt construct and a proposed guilt persuasion model, see Ghingold 1981).

Ghingold and Bozinoff (1981, in press) offered the first empirical study on guilt appeals research in the consumer behavior literature. They presented findings of an investigation on the persuasive effect of guilt arousing marketing communications, reporting that guilt could in fact be aroused in subjects and that the aroused guilt had cognitive consequences on certain post-exposure attitudes.

Given this rather hesitant beginning, guilt appeal research in consumer behavior remains very limited. Notwithstanding King's (1981) call for more research in the area, to date little is truly known about guilt arousing communications and persuasion. Therefore, to extend the limited existing findings concerning guilt arousing communications the present study was undertaken.

The goals of the present research were of an exploratory nature. Validation of a full model of guilt arousing persuasion was not undertaken. Rather, present interest was more narrowly focused on two issues of theoretical and practical significance. First, does a communication, designed to be guilt arousing, in fact arouse feelings that reflect guilt and not other emotions or affects? Second,

given that guilt has been aroused, what, if any, are the effects on consumer cognitions or behavior (e.g., attitudinal and behavioral effects)?

These research questions have been formulated into the following hypotheses which are to be tested in this study.

- H₁: The construct "aroused guilt" is measurable, unique, and distinguishable from other affective constructs.
- H₂: Guilt can be predictably aroused in experimental subjects with marketing communications.
- H₃: Message relevant attitudes can be favorably influenced through the use of persuasive guilt arousing communications.
- H₄: Message relevant behavioral intentions can be favorably influenced through the use of guilt arousing communications.

Thus, the study is an effort to establish construct validity for the abstraction "aroused guilt" and determine the relationship between attention to a guilt arousing persuasive communication and message effects.

Method

Subjects

A total of ninety-one subjects were recruited from various undergraduate marketing courses. During regular class sessions, students were invited to participate in a study of advertising. Participation was voluntary, although all of the students invited agreed to participate. The sample was approximately 60% male.

Since the principal aim of the present research is the detection of significant relationships between variables of theoretical significance, the use of a convenience sample of students is defensible (Sternthal, Dholakia and Leavitt 1978). In cases where individual differences are not of theoretic interest, homogeneous samples (such as students in particular classes at a particular institution) are appropriate for theory-oriented research (Kruglanski 1975). Rather, interest is centered on the causal relationship between the operationalizations of the independent variables (i.e., internal validity). Hence, the use of a student sample in the present research permits the testing of inferences regarding the levels of guilt aroused by particular marketing communications and the persuasive effects of such communications.

Procedure

Subjects in all classes were randomly assigned booklets containing one of five print ads and twenty-six questions. Four of the ads, which solicited donations to a charitable organization to benefit overseas underprivileged children, were designed to partially span the range of guilt arousing communications. Two ads were selected from a group of advertisements appearing in national news magazines which were rated on "guilt arousal" by five independent judges. One ad was judged to induce a low level of guilt and the other ad was judged to arouse a high level of guilt. The experimenters then modified the two ads in an effort to increase the level of guilt aroused by the high guilt and reduce the level of guilt aroused by the low guilt ad. This made a total of four ads, two low guilt arousing ads and two high guilt arousing ads. A fifth ad, which was for an airline, served as a control ad.

Although it may be argued that university students are not the target population for the advertisements used in the study, for the purposes of this experiment the stimuli are appropriate. As noted above, present interest is focused on the causal relationship between the independent and dependent variables, i.e., internal validity. Since the cognitive structures of students should be as prone to guilt arousal as those of other segments of the population, the

stimuli selected should allow for the testing of inferences regarding aroused guilt and its consequences.

The first page of the booklet contained several Likert type questions dealing with present attitudes and behavior. These questions served as premeasures. The advertisement followed the premeasures. After fully reading the ad, subjects completed the remaining questions in the booklets.

Measurement Instruments

Immediately after reading the advertisement, the subjects were asked to indicate how well a series of 13 adjectives described their present feelings. Four of the adjectives were guilt related, taken from Haefner's (1956) list of guilt indices. Three other affective domains (annoyance, joy, fatigue), were included in the list based on items taken from clusters reported by Nowlis (1965). These domains were chosen because they spanned a wide range of emotional states. These measures served two purposes. First, they offered the opportunity of a test of convergent and discriminant validity. Second, the guilt related adjectives allowed for a manipulation check, and served in part as a measure of aroused guilt.

The next series of questions were self-attitude measures relevant to the communication (e.g., I have a clear conscience regarding the plight of the underprivileged). These self-dispositions also served as measures of aroused guilt.

The final series of questions contained measures of more general or deep rooted attitudes towards charities and donating behavior, as well as behavioral intention measures relevant to the content and recommendations of the communication (e.g., I plan to donate to charitable organizations more than I have in the past).

Results

Construct Validation: Tests of Convergent and Discriminant Validity

The validity of a guilt construct was assessed by Campbell and Fiske's (1959) multitrait matrix. (Multiple methods were not available.) As noted above, the 4 adjectives designed to measure guilt were embedded in a list of 13 adjectives. The remaining 9 adjectives were designed to measure elation, fatigue and aggression (Nowlis, 1965). There were 3 adjectives designed to measure each of these three affective domains. Table 1 presents the complete correlation matrix for these thirteen adjectives. In order to show convergent validity, the correlations between the four guilt adjectives should be significantly greater than zero (Campbell and Fiske, 1959). As reported in Table 1, the correlations between the four guilt adjectives (shown within the triangle in Table 1) are all significantly greater than zero. The second component of construct validity, discriminant validity, can be demonstrated by showing that the correlations between the guilt adjectives are significantly greater than the correlations between the guilt adjectives and the other adjectives. The correlations between the guilt adjectives (shown within the triangle in Table 1) are almost without exception greater than the correlations between the guilt adjectives and the other adjectives (shown in the rectangle in Table 1).

As an additional test of construct validity, the multitrait matrix was factor analyzed. If there is a distinct guilt construct, the four guilt adjectives should all load highly on the same factor (Huba and Hamilton, 1976). Table 2 reports that the four guilt adjectives do load highly on the same four factor solution (VARIMAX rotation). These findings provide preliminary support for the first hypothesis. Guilt does appear to be a separate and distinct construct in this experimental setting.

TABLE 1
Multitrait Matrix

Items	1	2	3	4	5	6	7	8	9	10	11	12	13
	1.00												
Guilt	2	.38	1.00										
	3	.27	.40	1.00									
	4	.34	.32	.38	1.00								
Fatigue	5	.23	.10	.41	.15	1.00							
	6	.25	.07	.13	.16	.02	1.00						
	7	.16	.13	.38	.09	.63	.15	1.00					
Joy	8	.33	.23	.27	.20	.28	.04	.13	1.00				
	9	.19	.06	.04	.09	.09	.59	.19	.07	1.00			
	10	.05	.03	.17	.04	.03	.44	.14	.09	.58	1.00		
Annoyance	11	.09	.08	.19	.07	.24	.07	.17	.64	.03	.02	1.00	
	12	.30	.14	.22	.17	.46	.25	.34	.25	.15	.10	.32	1.00
	13	.25	.01	.19	.32	.31	.37	.12	.31	.21	.25	.38	.56	1.00

TABLE 2
Varimax Rotated Factor Matrix¹

Adjectives	Factor 1	Factor 2	Factor 3	Factor 4
Guilt	1	.66		
	2	.91		
	3	.44		.39
	4	.37		
Fatigue	5		.79	
	6			.82
	7		.75	
Joy	8			
	9			.77
	10			.66
Annoyance	11			.73
	12		.51	
	13			.42

¹Loadings less than .30 have been omitted.

Message Effects of Guilt Arousing Marketing Communications

A series of univariate and multivariate analyses of variance (ANOVA, MANOVA) were performed on the data. During the first analysis tests were made for significant differences between treatment groups with respect to the premeasures. No significant differences were found between the treatment groups for any of the premeasures in both the univariate and multivariate analyses. This suggested that the randomization procedure was successful.

Measures of Guilt Arousal

Two sets of measures were used as indices of guilt arousal. One set was comprised of the guilt related adjectives in the adjective list and the other set consisted of three measures of individual self-attitudes relevant to the content of the communication (e.g., the ad makes me feel partly to blame for the plight of the poor). In the univariate analysis three of the four guilt related adjectives showed significant differences between treatment groups ($p < .02$), with the high guilt treatments yielding higher measures of aroused guilt. Overall multivariate tests also indicated highly significant differences between the treatment groups based on a linear composite of the four measures ($p < .0022$). (Table 3 summarizes these findings.) Analysis of the self-attitude measures indicated significant group differences in both the univariate and multivariate cases. Two of the

three univariate analyses were at or near significance ($p < .07$) and the overall multivariate tests combining the measures were highly significant ($p < .003$). Again, the high guilt treatments yielded mean score differences in the expected direction. (Table 4 summarizes these findings.) It should be noted, however, that the efforts to modify the original stimuli were not entirely successful. In fact, for the guilt arousal adjectives the results of the modifications were often opposite from what was expected. Nonetheless, the overall pattern of the results, from control to low treatments (averaged) to high treatments (averaged) do provide some support for the second hypothesis although more testing is clearly in order.

TABLE 3A
Guilt Arousal Adjectives
Cell Means (5 point scales)

Measure	Control	Low Guilt		High Guilt	
		modified	original	original	modified
ashamed	1.25	1.52	1.42	1.76	1.75
guilty	1.35	2.10	1.73	2.11	2.50
repentant	1.55	1.78	1.36	1.52	2.31
remorseful	1.30	1.94	1.63	2.47	2.06

TABLE 3B
Univariate Analyses of Variance
for Guilt Arousal Adjectives

Measure	SS	MSE	F Value	Probability > F
ashamed	3.50407	.595	1.47	.2177
guilty	13.81600	.881	3.92	.0057
repentant	9.18287	.700	3.28	.0149
remorseful	14.40164	.869	4.14	.0041

TABLE 3C
Multivariate Analysis of Variance
for Guilt Arousal Adjectives

Test	Probability > F
Wilk's Criterion Test	.0022
Roy's Maximum Root Test ¹	
$\theta = .2210067$	Probability > θ
$(4, -.5, 91) = .1125$	< .01
$\chi_{.01}$	

¹Adapted from D. L. Heck, "Charts of Some Upper Percentage Points of the Distribution of the Largest Characteristic Root," The Annals of Mathematical Statistics, Volume 31, (1960), 625-642.

TABLE 4A
Measures of Guilt Arousal
Cell Means (5 point scales)

Measure	Control	Treatment		High Guilt	
		Low Guilt modified	original	original	modified
personal blame	1.55	1.68	1.89	1.58	2.43
personal regret	1.60	2.31	2.52	2.64	3.31
clear conscience	3.25	3.10	3.36	3.35	3

TABLE 4B
Univariate Analyses of Variance for Self-Attitude Measures of Guilt Arousal

Measure	SS	MSE	F Value	Probability > F
personal blame	8.92429	.987	2.26	.0692
personal regret	27.45562	1.034	6.64	.0001
clear conscience	1.76151	.812	0.54	.7051

TABLE 4C
Multivariate Analysis of Variance for Self-Attitude Measures of Guilt Arousal

Test	Probability > F
Wilk's Criterion Test	.0016
Roy's Maximum Root Test ¹	
$\theta = .265649$	Probability > θ
$\chi_{.01}^2(3, 0, 91) = .105$	< .01

¹ Adapted from D. L. Heck, "Charts of Some Upper Percentage Points of the Distribution of the Largest Characteristic Root," *The Annals of Mathematical Statistics*, Volume 31, (1960), pp. 625-642.

Measures of General Attitudes Toward Charities and Donating Behavior

Three measures were included to assess post-exposure attitudes toward charities and donating behavior. No between group differences were found in either univariate or multivariate analyses. It was evident that there were no meaningful changes in global attitudes following processing of the guilt arousing communication. Although differences in self-blame and other guilt related self-attitudes were observable between the treatment groups, the more global (and possibly value-bound) attitudes were not affected by the experimental manipulations. As a result, the third hypothesis could not be confirmed.

Measures of Behavioral Intention

Three measures were used to assess behavioral intentions relevant to the ad content. The measures included a general reactive measure (i.e., I would like to do something about the way I feel about...), a measure of anticipated future donating behavior, and a measure of interest in obtaining further information on the underprivileged. Of the three measures, only the general reactive measure showed significant differences between treatment groups ($p < .03$). Overall multivariate tests approaches statistical significance ($p < .07$) but the patterns of group means were irregular and less predictable than in prior analyses. As a result, the findings for this section of the analysis were inconclusive and it is not possible to confirm the fourth hypothesis of meaningful treatment group differences for the measures of behavioral intentions.

Discussion

Four major findings emerge from this study. First, there is preliminary evidence of an "aroused guilt" construct which is separate and distinct from several other constructs. A set of adjectives were developed which operationalized this construct and which can now be used in future research in this area. Second, it was shown that guilt can be aroused by persuasive communications. More importantly, it was shown that guilt can be aroused in a predictable manner. Those ads designed to arouse the least guilt did so, while those ads designed to arouse the

most guilt also did so. It was further shown that the level to which guilt can be aroused is sufficient to change message-relevant self-perceptions or self-attitudes. This means that guilt arousing communications can be designed which create guilt feelings that surpass the individual's guilt tolerance threshold and therefore result in certain changes in cognitive structure.

Third, it was also shown that guilt could not be aroused to the extent that general or deep rooted attitudes and behavioral intentions will change. This finding should not be totally unexpected. It may be unrealistic to expect a single presentation of a guilt arousing communication or for that matter, any persuasive communication, to impact upon broad based attitudes or behavioral intentions. A more realistic test would require multiple presentations, ideally over an extended period of time.

Another reason for the lack of any changes in general attitudes or behavioral intentions may be due to the sample used. It may be unrealistic to expect university students to change behavioral intentions regarding the plight of underprivileged children until they have started to raise children of their own. It may also be unrealistic to expect students who tend to have limited financial resources to favorably change their attitudes toward charities and donating behavior or increase their intentions to donate to charities, due to guilt arousal. Rather, students with aroused guilt emotions can be expected to feel some guilt but simply cannot change their behavior because of financial considerations.

A further explanation for the failure to find any general attitude or behavioral intention changes in light of the significant guilt arousal may be that the subjects engaged in some mediating cognitive responses such as counterarguing. A wide array of counterarguments are possible when one is confronted by an advertisement soliciting charitable donations. Examples may include the arguments that there are poor people in the United States who should be helped first, that students cannot afford to help others, that most of the money donated never reaches the intended recipients, or that the underprivileged are responsible for their own plight.

It is appropriate at this point to consider two possible limitations of the experimental design which may impact on the above conclusions. Firstly, by having subjects examine advertisements and then rate their own guilt feelings there is the danger of a strong demand artifact. Although this may have taken place, the rival hypothesis of a demand artifact would not account for the higher levels of guilt indicated by the subjects in the high treatments (on average) as compared to the low treatments (on average) or the control treatment. Furthermore, although the subjects in the control treatment were given the same measurement instrument, in the vast majority of the cases they indicated the least aroused guilt.

Another point of interest is the low coefficient of power evident in this experiment. Although this is a limitation from a design point of view, it should be noted that as power decreases it may take larger differences in means of the dependent measures to show significance. Hence, one may choose to trade off power (or sample size) for the ability to detect truly meaningful differences in the operationalizations of the dependent variables. These limitations, however, have been recognized by the experimenters.

Implications

At the theoretical level, several implications flow from these results. First, given that another emotional appeal besides the fear appeal has been found, the question of how many other emotions such as envy, anger and so forth can be used in marketing communications is raised. Second, the

generalizability of the findings must be explored. It was suggested that other populations may have a greater propensity to change their behavior due to guilt arousal. Third, the issue of individual differences remains unanswered. It is entirely possible that there may be individual differences in susceptibility to guilt arousing communications. This has obvious segmentation ramifications. In addition, another unexplored area is the extent to which these findings can be generalized to other products and services. At the managerial level, this study suggests that advertising copy writers may have a new general strategy with which to work. Given ads can be purposefully designed to create guilt feelings which can on a single presentation change self-attitudes, guilt arousal should now be thought of as a potential copy strategy. What remains unanswered are the ethics of such a strategy. Whether advertisers should have the right to arouse emotions (negative or positive) in the public mind remains a deeply philosophical and troublesome issue.

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AN EXPLORATORY STUDY INVESTIGATING ORDER EFFECTS IN REPORTING
NEGATIVE CORPORATE COMMUNICATIONS

John C. Mowen, Oklahoma State University
Scott B. Pollman (MBA Student), Charles Machine Works, Inc.

Abstract

A 3 x 3 factorial experiment was developed to test consumer reactions to variations in the order of the presentation of information about the severity of a product defect. The results revealed that consumer's perceived a company most favorably when its first press release gave the worst possible outcome of the product defect and later releases reported the defect severity at moderate levels. The results also revealed that consumer reactions to a recall vary depending on the type of product recalled.

Introduction

Negative or unfavorable public information regarding a company and/or its products is of major concern to business. Exposure to unfavorable information results from such sources as reports of defective products, news media presentations of corporate earnings (e.g., the oil industry), and publicity concerning questionable competitive practices. An excellent case in point is the Three Mile Island nuclear incident. The negative information resulting from the incident has seriously jeopardized the future of the nuclear power industry in the United States. In a recent study regarding the effects of negative product information, Weinberger and Dillon (1979) found that: (1) unfavorable product ratings tended to have a greater impact on purchase intention than did favorable ratings, (2) unfavorable product information received from an independent testing agency or peer as a source had a relatively stronger effect on purchase intentions than did similar information communicated by the trade and professional association source, and (3) consumers probably place more reliance on outside sources of information when purchasing a service as opposed to purchasing a product. These findings emphasize the necessity of an organization to react effectively when consumers receive negative information concerning that organization.

Product recalls have become a common avenue by which consumers are exposed to negative corporate information. Approximately 25 percent of all consumer goods firms listed in Fortune's 500 were involved in recall campaigns in 1974 (Kerin, 1974). The Conference Board estimates that 25 million product units will be recalled every year (McGuire, 1975).

Because of the increasing number of product recalls, many articles have been written on the subject from a "corporate management" perspective. Researchers have written articles concerning the physical tracing and recall of the products (Fisk and Chandran, 1975; Warner, 1975), contingency plans for recalling products (Kerin, 1974), the impact of recalls on market share (Gray, 1978; Wynne and Hoffer, 1976), assessing the effectiveness of drug recalls in pharmacies (Gumbhir and Jamison, 1975), surviving product recalls (Snyder, 1974), and the high costs associated with product recalls (Tamarkin, 1978).

Research on Product Recall Reactions

As noted above, scholars have addressed the managerial questions of "how to" recall a product. Relatively little attention, however, has been focused on investigating

consumer reactions to the negative information resulting from a product recall.

Investigations of the impact of product recalls on consumer impressions of the company have been conducted by Mowen and his colleagues (Mowen 1980, Mowen and Ellis 1980, Mowen, Jolly and Nickells, 1981). Two types of methodologies were used in these studies. The experimental methodology consisted of constructing several variations of a fictitious magazine article within which critical pieces of information were varied. In the second type of methodology consumers were surveyed to determine their knowledge of product recalls and their reaction to companies making recalls.

Mowen and Ellis (1980) reported on an experimental study in which three variables were manipulated within a fictitious magazine article about a company recalling a coffee percolator. The level of injury was varied by indicating that either minor burns or two deaths had resulted from the defective product. The number of previous recalls was varied by indicating that since 1970 the company had conducted either zero or five previous recalls. The length of time to recall was manipulated by stating that management made the decision within either a two week period or a one year period. The results of the study revealed that each of the independent variables significantly influenced the subjects perceptions of the company and subjects interest in buying a new coffee pot from the company.

In a second study Mowen (1980) again varied three variables within the context of a magazine article about a percolator recall. The three independent variables were: (1) familiar versus unknown company making the recall, (2) action or inaction by the Consumer Product Safety Commission to force the recall, and (3) whether or not other manufacturers had made similar recalls. The results revealed that consumers perceived a familiar company as significantly less responsible for a defect than an unfamiliar company. It was also found, unexpectedly, that consumers perceived the company as more responsible when it acted prior to intervention by the Consumer Product Safety Commission.

In the survey research Mowen, Jolly, and Nickells (1981) interviewed 201 adults of both sexes about their reactions to recalls made by Ford, Firestone, Conair, and Corning Glass. Separate regression equations were run on each company with the subjects' perception of the company as the criterion variable. The results of the step-wise regression analysis revealed that for Conair the subjects' perceptions of the danger of the product and of the company's responsibility for the defect were significantly related to the impression of the company ($R^2 = .09$). For Ford subjects' impressions of the company's social responsibility to consumers entered the equation ($R^2 = .19$). For Firestone the danger of the product, the company's social responsibility, knowledge of recalls by other tire manufacturers, and knowledge of the recall by Firestone entered the equation ($R^2 = .32$). No significant effects were found in the analysis of the impressions of Corning Glass.

The results of the survey study partially supported the results of the experimental work. First, variations in the perception of the danger of the product were related

to consumer impressions of the company in two instances. Second, path analysis results revealed that the perceived time taken to recall the product may have influenced consumer impressions of the company by first influencing the perceptions of the corporations social responsibility to consumers. This prediction was derived from the theoretical base on which the hypotheses were developed in the Mowen and Ellis (1980) study. Third, the lack of effects for Corning Glass supported the results of Mowen (1980). Corning was rated significantly more positively than the other companies, and its impression was unaffected by having made a recall. Such results support those found in the Mowen (1980) study and suggest that if a company is highly respected the negative effects of a recall may be minimized. The survey work in one notable instance failed to support the experimental findings. No evidence was found that knowledge of previous recalls by other companies influenced perceptions of the company.

The purpose of the present exploratory study is to supplement current knowledge concerning negative corporate/product information by determining how consumers' perceptions are affected by the order in which a company presents information on the severity or extent of a corporate problem.

When a corporate incident occurs, management must release information to the public relatively quickly. During the first few hours or days of the incident, it may be impossible to assess the true severity of the problem. Yet, information on the sensitive issue has to be revealed. In the face of the difficulty, three alternatives are available: (1) give the worst possible outcome of the incident and then hopefully be able to decrease the level of the reported severity of the problem through subsequent press releases as more information becomes available, (2) give the best possible outcome of the defect and then face the possibility of having to increase the reported severity of the defect through subsequent press releases, or (3) take a middle ground and be prepared for subsequent press releases to move either in a more positive or negative direction.

In examining corporate behavior one generally finds that corporations understate the severity of the product defect or problem. That is, in the initial press releases, the company portrays the problem in the best possible manner. Examples are the Ford Motor Company's recall of the Pinto, the Firestone, Inc. recall of the "500" tire and the "Three Mile Island" nuclear incident. Several reasons probably exist for this tendency to understate the defect severity. First, by "playing down" the severity of the problem, a massive recall may be avoided. A second possibility is that management assumes that by portraying the problem in the most favorable manner, the negative impact of the incident on consumer perceptions of the company would be minimized.

From at least one theoretical perspective, however, it can be predicted that under-reporting the severity of an incident may lead to negative consumer reactions. Jones and Davis (1965) discussed how observers determine the believability of a message and hypothesized that, the less expected a communicator's position, given his personal characteristics and situational pressures, the stronger the perceiver's inference that the message corresponds to external reality. That is, by delivering a message against ones own best interests, in an "out-of-role" or unexpected (given the circumstances) manner, the belief that the message corresponds to the facts would be increased.

Applying the Jones and Davis (1965) analysis to corporate communications, one can predict that consumers would tend to expect corporations to deliver self-serving messages. Thus, a message which downgrades the severity of an incident would be perceived as expected or "in-role" and,

therefore, of low credibility. Conversely, a message perceived as opposed to the corporation's own best interest would be unexpected or "out-of-role" and, therefore, of high credibility. Based upon these considerations, the major hypothesis was formulated:

H₁: The order of the reported severity of a product defect will affect consumers' perceptions of the organization releasing the negative information. Specifically, perceptions will be most favorable when first reports give the worst possible outcome (overstate the severity) of the defect. Contrastingly, consumer perceptions will be least favorable when first reports give the best possible outcome (understate the severity) of the defect.

The second variable chosen for manipulation was the type of product recalled. It was desired to have different products in order to begin the process of testing the generality of any effects found. Therefore, the products selected for examination were lawnmowers, automobiles, and contact lenses.

Method

Experimental Overview

A 3 x 3 between groups factorial experimental design was used in which the factors of order of the reported severity of the defect (extremely low, to low, to moderate; very serious, to serious, to moderate; moderate to moderate to moderate), and the type of product recalled (lawnmower, automobile, or contact lenses) were manipulated.

In the experiment, subjects received information in the form of fictitious press releases concerning a product defect. Each subject received three press releases dated five weeks apart. Within the contents of the press releases, the manipulation of the severity of the reported defect was made. Three different sets of press releases were developed. In the "severe danger" condition, the first release depicted the defect as possibly highly dangerous. The next release described the defect as slightly less dangerous than first thought. The final release indicated a moderate amount of danger and the recall of the product. In the "low danger" condition, the first release indicated no problem with the product. The next release indicated that no conclusive evidence of a defect had been found. The final release was exactly the same as in the "severe danger" condition. In the "moderate" danger conditions, the first release stated that a defect may exist, but due to the uncertainty of the situation the extent of danger could not be determined. In the next release the uncertainty was again reinforced while indicating that a highly dangerous defect could exist or that complaints could prove groundless. The third release was identical to those in the "severe" and "low" severe conditions.

Subjects

One hundred thirty-four subjects of both sexes were drawn from undergraduate business classes at a large midwestern university.

Procedure

The subjects first read the directions of the study (all of the subjects read the same directions):

On the attached page are press releases from a fictitious company which recently had some problems with a product. As you will note, the three press releases occurred at about 5 week intervals.

After reading the press releases, please answer the questions on the last page. Examine how you would react to the press releases and the company. Indicate your feelings on the 7 questions provided.

Each subject then read the three press releases (dated at five week intervals) detailing the circumstances and procedure of the ultimate recall. Within these sets of press releases, the two independent variables of "reported severity of the defect" and "type of product recalled" were varied resulting in nine different treatment combinations.

The press releases for the three products were worded almost identically, except for the necessity to realistically describe the product defect and the corporate reactions. Presented below is the material which subjects read for the defective contact lenses. In the low severe conditions subjects read:

PRESS RELEASE
September 5, 1978

Specialty Optics, Inc. and the Federal Drug Administration have been jointly concerned with recent reported problems with some of Specialty Optics' soft contact lenses. Unconfirmed reports have revealed the possibility that problems may exist in the sterilization process of the lenses. The result is that harmful bacteria may be transferred from the lenses to the wearer's eye. Specialty Optics has sold 150,000 pairs of the lenses and has received 5 complaints of wearers contracting such an infection.

Specialty Optics believes that these lenses are trouble free and pose no danger. The low number of complaints in relation to the total units sold represents no greater problem with the lenses than with the company's other lenses or those of Specialty Optics' competitors.

Specialty Optics, however, recommends that people who purchase a pair of Specialty Optics' soft contact lenses pay particular attention to the possibility of eye irritation. If excessive irritation develops, contact your eye doctor.

PRESS RELEASE
October 10, 1978

On September 5, 1978, Specialty Optics announced that problems exist in their soft contact lenses. The preliminary analysis revealed that problems may exist in the sterilization process of the lenses. Since September 5, 3 additional unconfirmed reports have been received of wearers contracting a bacterial eye infection.

Preliminary tests performed by Specialty Optics have found some evidence that a batch of the lenses may have been omitted from the sterilization process. However, conclusive evidence has not been found that a problem exists.

Specialty Optics now regards the defect as slightly more dangerous than first thought. People who have purchased Specialty Optics' soft contact lenses are asked to pay particular attention to the possibility of eye irritation. If excessive irritation develops, contact your eye doctor.

PRESS RELEASE
November 21, 1978

On September 5, 1978, Specialty Optics, Inc. announced the possibility that problems exist in the sterilization process of its soft contact lenses. Since that time, extensive efforts have been made to determine if a defect exists in the lenses.

Early evidence of a possible omission from a necessary sterilization process has been confirmed. The final classification of the defect, according to the Consumer Product Safety Commission's categories, is that "a situation may exist in which the use of, or exposure to, the defective product may cause temporary or medically reversible adverse health consequences, or one in which the probability of serious adverse health consequences is remote."

People who purchase a pair of Specialty Optics' soft contact lenses during the months of June and July, 1978, are requested to return the lenses to their eye doctor. Individuals affected will be provided with a new pair of lenses free of charge.

In the high severe conditions, subjects read:

PRESS RELEASE
September 5, 1978

Specialty Optics, Inc. and the Federal Drug Administration have been jointly concerned with recent reported problems with some of Specialty Optics' soft contact lenses. Unconfirmed reports have revealed the possibility that problems may exist in the sterilization process of the lenses. The result is that harmful bacteria may be transferred from the lens to the wearer's eye. Specialty Optics has sold 150,000 pairs of the lenses and has received 5 complaints of wearers contracting such an infection.

Specialty Optics is treating these unconfirmed reports as revealing a potentially highly dangerous defect. Specialty Optics is tentatively classifying the potential defect in the Consumer Product Safety Commission's most serious category. While the classifications may change, the company follows the Consumer Product Safety Commission's category that a situation may exist "in which there is reasonable probability that the use of, or exposure to, the defective will cause serious adverse health consequences or death."

As part of Specialty Optics' corporate philosophy of emphasizing consumer safety, the company is suspending further sales of the lenses until further information may be obtained.

Specialty Optics recommends that people who have purchased a set of Specialty Optics' soft contact lenses pay particular attention to the possibility of eye irritation. If irritation develops, contact your eye doctor.

PRESS RELEASE
October 10, 1978

On September 5, 1978, Specialty Optics, Inc. suspended sales of its soft contact lenses. The suspension resulted from unconfirmed reports that problems exist in the lens sterilization process. Since September 5, 3 additional unconfirmed

reports have been received of wearers contracting a bacterial eye infection.

Preliminary tests performed by Specialty Optics have found some evidence that a batch of the lenses may have been omitted from the sterilization process. However, conclusive evidence has not been found that a problem exists.

Specialty Optics now regards the defect as slightly less dangerous than first thought. The suspension of sales, though, continues. People who have purchased a set of Specialty Optics' soft contact lenses are again encouraged to contact their eye doctor to determine if their lenses are among those affected.

PRESS RELEASE
NOVEMBER 21, 1978

On September 5, 1978, Specialty Optics, Inc. announced the suspension of sales of its soft contact lenses. Since that time, extensive efforts have been made to determine if the defect exists in the lenses.

Early evidence of a possible omission from a necessary sterilization process has been confirmed. The final classification of the defect, according to the Consumer Product Safety Commission's categories, is that "a situation may exist in which the use of, or exposure to, the defective product may cause temporary or medically reversible adverse health consequences, or one in which the probability of serious adverse health consequences is remote."

Individuals purchasing a pair of Specialty Optics' soft contact lenses during the months of June and July, 1978, are requested to return the lenses to their eye doctor. Individuals affected will be provided with a new pair of lenses free of charge.

In the moderate severe conditions, subjects read:

PRESS RELEASE
September 5, 1978

Specialty Optics, Inc. and the Federal Drug Administration have been jointly concerned with recent reported problems with some of Specialty Optics' soft contact lenses. Unconfirmed reports have revealed the possibility that problems may exist in the sterilization process of the lenses. The result is that harmful bacteria may be transferred from the lens to the wearer's eye. Specialty Optics has sold 150,000 pairs of the lenses and has received 5 complaints of wearers contracting such an infection.

As of September 4, 1978, the existence of and severity of the possible defect in the soft lenses cannot be determined. The possibility of a highly dangerous defect exists. However, the complaints may also be groundless. Because of the uncertainty surrounding the existence and extent of the defect, Specialty Optics recommends that people who purchased Specialty Optics' soft contact lenses, pay particular attention to the possibility of eye irritation. If excessive irritation develops, contact your eye doctor.

PRESS RELEASE
October 10, 1978

On September 5, 1978, Specialty Optics announced

that problems may exist in the sterilization process of its soft contact lenses. The investigation of the possible omission resulted from unconfirmed reports that some wearers of the lenses may have developed bacterial infections. Since September 5, 3 additional unconfirmed reports have been received of wearers who have developed eye infections.

Preliminary tests performed by Specialty Optics have found some evidence that the lenses may have been omitted from the sterilization process. However, conclusive evidence has not been found that a defect exists.

As of October 9, 1978, the existence and severity of the possible defect in the soft lenses still cannot be determined. Specialty Optics would like to emphasize to the public that a highly dangerous defect could exist. However, the complaints could be groundless. Because of the uncertainty surrounding the existence and extent of the defect, Specialty Optics recommends that people who purchased Specialty Optics' soft contact lenses during the months of June and July, pay particular attention to the possibility of eye irritation. If excessive irritation develops, contact your eye doctor.

PRESS RELEASE
November 21, 1978

On September 5, 1978, Specialty Optics announced that its soft contact lenses may have problems in their sterilization process. Since that time, extensive efforts have been made to determine if a defect exists in the lenses.

Early evidence of a possible omission from a necessary sterilization process has been confirmed. The final classification of the defect, according to the Consumer Product Safety Commission's categories, is that "a situation may exist in which the use of, or exposure to, the defective product may cause temporary or medically reversible adverse health consequences, or one in which the probability of serious adverse health consequences is remote.

People who purchased a pair of Specialty Optics' soft contact lenses during the months of June and July are requested to return the lenses to their eye doctor. Individuals affected will be provided with a new pair of lenses free of charge.

Dependent Variables

On seven-point rating scales (1 = most positive) subjects answered seven questions:

1. What is your general impression of the (Name) Corporation? ("Very favorable" to "Very unfavorable")
2. If you needed a new (product), how interested would you be in buying the new model which replaced the defective model? ("Highly interested" to "Completely disinterested")
3. How credible do you perceive the communications of the Corporation to be? ("Very credible" to "Not very credible at all")
4. How responsible is the corporation for the defect? ("Highly responsible" to "Not responsible")

5. How concerned with consumer welfare do you perceive the Corporation to be? ("Highly concerned" to "Not concerned at all")
6. Would the recall of the defective product influence your future purchases of the company's other products? ("Definitely yes" to "Definitely no")
7. How honest do you perceive the Corporation to be? ("Very honest" to "Very dishonest")

Results

In order to avoid potential alpha inflation due to the seven dependent variables, the data were first analyzed via factor analysis. The principle components analysis with varimax rotation yielded two factors with eigenvalues greater than one. Factor 1 accounted for 48.2 percent of the variance and Factor 2 an additional 17.1 percent. Five variables entered Factor 1, and only one variable entered Factor 2--the responsibility of the corporation for the defect. Question 6, which asked subjects to consider whether the recall would influence future purchases, loaded equally on both factors. (All factor loadings were above .61 except for question 6.)

The five variables loading on Factor 1 were analyzed via multivariate analysis of variance. Significant effects were found for both the order of severity and the type of product independent variables. The interaction was not significant. Tests of significance using the Hotelling-Lawley trace, Pillai's trace, and Wilks' criterion all yielded identical F scores [order, $F(10,240) = 1.85, p < .05$; product, $F(10,240) = 3.57, p < .0002$].

The univariate analysis of variance on the "order of severity" independent variable yielded a consistent pattern of results in which four of the five variables loading on Factor 1 were significant. Significant main effects were obtained for the dependent variables of impression of the company ($p < .01$), corporate credibility ($p < .07$), corporate concern with consumer welfare ($p < .07$), and corporate honesty ($p < .08$) (See Table 1). Duncan's Multiple Range tests revealed that in each case the corporation was perceived significantly ($p < .05$) more positively in conditions in which the first press release indicated that the defect posed severe danger than in the other two conditions.

Interestingly, the corporations in the low severe initial press release conditions tended to be perceived more favorably than in the moderate severe conditions. However, results of the Duncan Multiple Range tests revealed that only on the dependent variable assessing subjects' general impression of the company were the low severe conditions significantly different from the moderate severe conditions.

The univariate analyses comparing consumer perceptions of companies, based upon the type of product recalled, also revealed a consistent pattern of results (Table 2 presents the means). On the dependent variables of impression of the company ($p < .05$), concern for consumer welfare ($p < .01$), purchase of the company's other products ($p < .02$), and honesty ($p < .01$) one finds the company rated least favorably when it produced the automobile and of about equal favorability when it produced either the contact lenses or the lawn mower. Utilizing the Duncan's Multiple Range test, one finds for each of the above significant effects (except for consumer general impressions of the company) no significant differences between the lawn mower and contact lens conditions. However, the company was perceived significantly less favorably in the automobile condition than in the other conditions. The one exception was for ratings of the impression of the company in which the post hoc test revealed no significant effects between

the three product conditions, despite the significant overall effect.

TABLE 1

Mean Responses for the "Order of Severity" Independent Variable*

Dependent Variable	Order of Severity**		
	Severe to Moderate	Low to Moderate	Moderate to Moderate
Company Impression	3.0 _a	3.4 _b	4.0 _c
Company Credibility	3.3 _a	3.7 _b	4.0 _b
Company Responsibility	2.4	2.0	2.3
Company Concern for Consumer	2.9 _a	3.5 _b	3.6 _b
Company Honesty	3.0 _a	3.6 _b	3.6 _b
Interest in New Model	4.3	4.0	4.4
Interest of Other Products	3.0	3.2	2.7

*The means are collapsed across the three products.
**Means with different letters were significantly different.

TABLE 2

Mean Responses for the "Product" Independent Variable*

Dependent Variable	Type Product**		
	Contact	Lens	Lawn Mower Car
Company Impression	3.0	3.5	3.9
Company Credibility	3.6 _a	3.4 _a	4.1 _b
Company Responsibility	2.2	2.4	2.2
Company Concern for Consumer	3.0	3.5	3.5
Company Honesty	2.8 _a	3.1 _a	3.9 _b
Interest in New Model	3.8	4.4	4.4
Interest of Other Products	3.1 _a	3.1 _a	2.3 _b

*The means are collapsed across the three orders of severity.
**Means with different letters were significantly different.

Discussion

As predicted, a company was perceived more favorably, more honest, more credible, and more concerned for consumer welfare if the company in the first press release gave the worst possible outcome of the defect and in later releases gave less serious accounts of the defect. These results support the hypothesis derived from the work of Jones and Davis (1965). Messages which were in-role, such that they follow the obvious interests of the communicator, tended to be perceived as less credible and as made for the benefit of the sender and not the receiver.

The authors were surprised to find that subjects tended to perceive the low severe conditions more favorably than the

moderately severe conditions. The moderately severe messages were constructed to portray an honest and forthright appraisal of the situation. Thus, the early press releases stressed that the complaints could be either groundless or indicants of a highly serious defect. Subjects were further informed that the situation was uncertain and that they should be alert to the possibility of a defect. Two possible mediators of this result may exist. First, it may be that admitting uncertainty is perceived negatively by consumers. A second possibility is that the subjects perceived the statements indicating uncertainty as a delaying tactic and that management already had the answer. Future research is required to identify which of these possibilities or perhaps which other explanation(s) may be operative.

While the exploratory research was not conducted to specifically test a model of corporate impression formation, a model can be advanced for future testing. An elaboration of the hypothesis tested in the study, the model would view the consumer as: (a) receiving the messages, (b) inferring whether the messages represent in-role or out-of-role behavior, (c) making a determination of the credibility and honesty of the company, (d) forming an impression of the company, and (e) forming expectancies about intentions to purchase products from the company. The results of the study were consistent with steps c and d of the model. However, the evidence revealed that the order of severity variable did not impact upon intentions to buy (step e). Unfortunately, no measures were taken assessing the subject's perceptions of whether the managers represented in-role or out-of-role behavior.

When one examines the results of the manipulation of the type of defective product, it becomes apparent that an automobile defect is perceived highly negatively. Again additional research is required to identify the reasons for the outcome. Perhaps automobile defects (and in particular a steering defect) are perceived as more serious than defects in lawn mowers or contact lenses. Importantly, the injuries resulting from the defect were held constant across products. In addition, the extent of the problem as defined in terms of the Consumer Safety Product Commissions categories was described identically for each product. Thus, the subjects must have perceived something inherently different about the automobile defect. A second possibility is that consumers may expect defects in automobiles. Therefore, the problem described may have triggered previously held negative feelings about car manufacturers.

As sometimes occurs in exploratory studies, a number of problems exist which should be corrected in future research. First, future research should focus on replicating the study across diverse subject samples. While college students provided an adequate sample for this initial study (i.e., they have had familiarity with each type of product and clearly form opinions about companies), future studies should utilize nonstudent samples. Furthermore, the experience of the subjects with defective products should be assessed. Second, future studies should focus on attempting to more clearly delineate the theoretical mediators--particularly the perception of in-role/out-of-role behavior. Additional questions should be asked, such as: How dangerous is the defect? How expected or unexpected was the message from the company? How frequently do you find defects in this type of product? Third, future studies should track changes in perceptions over time by separating the reading of each press release by several weeks. The methodology used in the present study in which all messages were provided simultaneously may not be generalizable to conditions in which the messages are spaced. Fourth, testing of the model of corporate impression formation using path analysis would be a logical continuation of the research stream.

A last problem with the study is more serious and clearly indicates the need for additional work. In the severe to moderate condition, the company stated that it was suspending further sales in the initial press release. In the other conditions the suspension did not occur. This confounding variable could explain the results rather than the variations in the order of severity. The control of whether a suspension of sales occurs in future studies is imperative.

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THREATS AND PROMISES IN ADVERTISING APPEALS

Michael Menasco, University of California, Los Angeles
Penny Baron, University of Iowa

Abstract

The research reported here attempted to determine the persuasive impact of desirable and undesirable consequences of physical and social advertising appeals. Research on these kinds of appeals is distinct from that on strictly physical fear arousal. Results of the present research appear to conform to predictions from studies in protection motivation theory (Rogers and Mewborn, 1976; Mewborn and Rogers, 1979), particularly in terms of mediational responses and persuasive impact. The influence of measured personality variables (self-esteem, fear of physical and social consequences) on persuasion was also assessed. Results generally did not follow predictions.

Introduction

Most research on the impact of threats in persuasive communication has focused on the relationship between the strength of a fear appeal and the degree of persuasion. Due to difficulties in calibrating the amount of fear induced by different threat manipulations this work has yielded apparently inconsistent results across studies (See Sternthal and Craig, 1974, for a review).

The more interesting questions from an applied perspective concern which kinds of fear appeals are more effective, what groups of people are more persuaded by fear appeals and how fear appeals stack up against appeals promising benefits. Current practice and much research on the general effects of rewards vs. punishments suggests that promises usually work better than threats but controlled experimental comparisons in commercial mass persuasion contexts are rare. The experiment reported here investigates how the persuasive impact of advertising appeals is moderated when the claimed consequences are promises or threats, when the consequences are physical or social in character and when the audience contains people with different levels of self-esteem and choices of fear.

Physical Fear

With respect to kinds of fear appeals, most work has focused on the persuasive impact of physical threats. Early studies (Janis and Fishback, 1953; Haefner 1956; Leventhal, 1966; Leventhal et al., 1965; Evans et al., 1970), while yielding inconclusive results on amount of fear, did consistently produce some persuasive impact. Applied work investigating the potential of using fear appeals in advertising (Ray and Wilkie, 1970; Stuteville, 1970; Wheatly and Oshikawa, 1970; Wheatly, 1971), while less encouraging, suggests a similar conclusion. There is also some evidence that fear appeals involving threats to physical well-being are more effective when they advocate a particular coping response designed to avoid the bad physical consequence than when they simply seek to induce fear of the bad consequence (Rogers, 1975; Rogers and Mewborn, 1976). Results from Rogers and Mewborn (1976) also indicate that fear operates on mediational responses rather than upon intentions, directly.

Social Approval and Disapproval

Other work suggests the kinds of fear appeal that may interact with personality variables in determining degree of

persuasion. Results from Spielberger (1972), Denny (1966), and Spielberger and Smith (1966) suggest that people high in chronic anxiety react more extremely to social fear appeals but only when their self-esteem is threatened. Fear appeals involving strictly bad physical outcomes do not produce this differential response. Persuasability of a fear appeal may also be modified by self-esteem (Dabbs and Leventhal, 1960; Kormzweig, 1967; Leventhal and Tremblay, 1968) and by chronic fear of social and physical consequences (Spielberger, 1972). Thus, it would appear that social disapproval may operate differently than physical threat, particularly when certain personality variables are included. There is little experimental evidence in support of this contention, although one study did compare the persuasability of social approval and disapproval (Powell and Miller, 1967). Their experimental manipulations, however, appear to confound social and physical threats (donating blood vs. giving blood for payment).

Taken together this past work suggests that the kind of consequences, physical or social; its valence, positive or negative; and personality characteristics of the audience, level of self-esteem and chronic level of social and physical fear, may interact in determining the persuasive impact of a commercial message. The purpose of this research is to test this proposed interaction between main effects (social and physical consequences) and measured personality variables.

Self Esteem, Social and Physical Fear

Several theoretical bases for specific expectations about the form of this interaction exist. For example, according to Aronson and Linder's gain-loss theory (1965), gains and losses of positive outcomes have reward value in themselves, quite apart from the absolute level of reward represented by the outcomes. This suggests that high self-esteem people may be more persuaded by threats of negative social consequences, because such consequences are discrepant with own self-view and represent a potential loss to them. Low self-esteem persons may be more persuaded by promises of positive social consequences, since those outcomes are not consistent with their sense of self-worth and thus may represent potential reward.

Research by Rosenberg (1965) suggests an alternative set of predictions for the effects of self-esteem. Rosenberg found that low self-esteem people both thought poorly of themselves and expected others to think poorly of them as well. High self-esteem people thought well of themselves and expected others to hold similarly positive opinions of them. If so, low self-esteem people, because they expect others are likely to hold negative opinions of them, might be more persuaded by an appeal which threatened disapproval if an advocated action is not taken, and less persuaded by an appeal which promises approval, because the prospect of disapproval is more consistent with their expectations. Applying the argument to high esteem people suggests more persuasion when approval is promised for taking the advocated action than when disapproval is threatened for not taking it.

Differential effects of threats and promises of social consequences are likely to be stronger for people with high measured levels of social fear. For those with high physi-

cal fears, a stronger effect is expected for appeals threatening bad physical consequences for non-compliance. Appeals promising good physical outcomes for compliance are expected to be relatively more effective among those with low physical fears. Again, the rationale here is that those with high fear find threats more realistic while those with low fear find promises more believable and are thus likely to be more persuaded by them.

Method

Hypotheses

Given the discussion above, the following hypotheses are presented. Hypothesis two is based on expectations of behavior due to gains and losses (Aronson and Linder, 1965). Hypotheses two, three and four imply a three way interaction effect with measured personality variables. Thus, a main effects ANOVA, with the personality variables as covariates, is conducted first in order to assess any main effects due to covariates. Second, separate post hoc ANOVAs are conducted for each of the covariates employed as a between subjects factor.

Note that hypotheses indicate impact should be on variables measuring persuasion. Work by Rogers and Mewborn (1976), however, would predict greater impact upon mediational responses. Additional dependent variables therefore are included as a partial test for possible mediational effects.

H₁: Positive outcomes of proposed product use should produce greater persuasive impact than negative outcomes (This is represented by a main effect in the experimental design).

H₂: Persons high in self-esteem should be more persuaded by threats of social disapproval, while persons low in self-esteem should be more persuaded by promises of social approval.

H₃: Persons high in social fear should be more persuaded by threats of social outcomes, while those with low levels of social fear should be more persuaded by positive social outcomes.

H₄: Persons high in physical fear should be more persuaded by threats of bad physical consequences, while persons low in physical fear should be more persuaded by positive consequences.

A 2 x 2 x 2 factorial experiment involving 160 college students varied two products, deodorant vs. shampoo; desirability of the consequences of their use, promise of good outcomes for using the product vs. threat of bad outcomes for not using the product; and type of consequence, physical outcomes vs. social outcomes. Desirability of the consequences and type of consequence were between subject variables. Product was a within subject variable.

Recruitment of Research Participants

Students who had filled out a battery of psychological tests in connection with filling requirements for Introductory Psychology were recruited by phone. Students participated for a \$1 participation payment and the chance to see and evaluate the experimental ads, which turned out to be an enjoyable task. Participants also received a free sample of one of the advertised products of their choice,¹

¹Products were donated by the manufacturer but all advertising claims, while consistent with the benefits offered by the product advertised, were executed by the experimen-

although they were not told about this prospect until they finished the experimental task.

Independent Variables

Each participant was randomly assigned to see four 40 second commercials, two deodorant ads and two shampoo ads. The four ads seen by a participant represented one of the four treatment combinations, yielding a total of 16 different advertisements. The two ads seen by a participant for a given product each depicted a different usage situation, one experienced by a male and the other by a female. Half the participants saw usage situations involving physical consequences. Each usage situation was taped twice, once depicting positive consequences and once depicting negative consequences. Participants saw either all positive or all negative versions.

Below is a schematic of these possibilities:

	Situation	
	Shampoo	Deodorant
Condition 1-Positive Physical consequences	Sit. 1-Female a Sit. 2-Male a	Sit. 3-Male b Sit. 4-Female b
Condition 2-Negative Physical consequences	Sit. 1-Female a Sit. 2-Male a	Sit. 3-Male b Sit. 4-Female b
Condition 3-Positive Social consequences	Sit. 5-Female a Sit. 6-Male a	Sit. 7-Male b Sit. 8-Female b
Condition 4-Negative Social consequences	Sit. 5-Female a Sit. 6-Male a	Sit. 7-Male b Sit. 8-Female b

Because of the expense and time required to produce the ads, elaborate counterbalancing typical of treatments involving verbal or paper and pencil manipulations was prohibited. Instead, actors are confounded with situations x products and situations are confounded with products. Some informal protesting indicated that order effects were likely to be trivial, e.g., usage situations they saw

Advertisement Composition

As mentioned above, desirability of consequences varied whether the protagonist in the ad experienced a negative consequence for not using the advertised product (a threat) or a positive consequence for using it (a promise). Type of consequence varied whether the protagonist experienced a physical consequence (smooth, shiny, easy to brush hair vs. tangled, dull, hard to brush hair) or a social consequence (people approaching and hugging in new arrival at a party vs. ignoring and drawing away from him). Virtually the same verbal copy was used in both the negative and positive version of a given commercial. In the social consequence conditions, positive social responses were visually portrayed by having other people in the situation approach the protagonist, pat him on the back, hug him, smile at him and otherwise make accepting responses appropriate in the situation depicted. Negative social consequences were visually portrayed by having other people in the situation ignore or withdraw from the protagonist. Physical consequences were varied by portraying the protagonist's personal response to using the product as pleasurable or painful, e.g., smiling and nodding while stroking and combing smooth,

ters to meet the requirements of the experimental design. first. To cut final production costs, four final tapes were produced, each containing 4 ads appropriate to each condition in fixed order, ad situations 1-4 for the physical consequences conditions and ad situations 5-8 for the social consequence conditions.

shiny hair vs. frowning and whining while trying to comb tangled, dull hair. Verbal messages were designed to be appropriate across both positive and negative versions of an ad and across type of consequences from using a given product. The meanings which varied across conditions were conveyed by the visual portion of the ads. Illustrative excerpts from an ad for each product indicates the type of verbal copy used:

Deodorant--"Sometimes a deodorant lets you know it's on your side and sometimes it lets you know it isn't . . . with _____ deodorant you don't have to worry. It's always on your side . . ."

Shampoo--"Shampooing your hair can improve your life a little or make it a little worse. If you want a definite improvement, shampoo with _____ . . ."

Dependent Variables

The principle dependent variables were measured with 10 point semantic differential type scales. Responses were coded from 0 to 9. The principal dependent variables measures for each product were: (1) preference for the advertised brand in comparison to other brands; (2) intentions to buy the brand; (3) how well the brand compares to other brands; (4) how believable the ads were; (5) how interested subjects were in more information about the brand; (6) importance of product use; (7) likelihood of experiencing usage situations seen in the ads; (8) how interesting the ads were; and (9) how comfortable subjects felt while viewing the ads.

Several manipulation checks were obtained: (a) ratings of how the people in the commercials felt on a 10 point scale; (b) four recall measures of message content; (c) the subject's rating of the quality of results experienced by the people in the ads on a 5 point scale, from 1 equalling terrible to 5 equalling excellent and a similar rating of how the sponsor of the ad would evaluate the results experienced. These measures were obtained separately for the shampoo ads and the deodorant ads.

Subject Variables

Participants' chronic level of self-esteem was measured by a series of 17 semantic differential type scales (e.g., interesting-dull, likeable-unlikeable, competent-incompetent). Levels of social and physical fear were measured by items taken from the Fear Survey Schedule (Rubin, et al., 1969) and three additional items, "being disliked" on the social fear component of the measure and "being hurt or injured," and "taking medicine" on the physical fear component. Responses to the scales were obtained six months prior to the experiment in an otherwise unrelated project.

Procedure

Participants, recruited by phone, were asked to take part in a research project designed to test the relative effectiveness of different kinds of appeals used in television advertising. When they arrived at the testing room, they were informed of the procedures involved and signed standard informed consent agreements. Each participant was then randomly assigned to watch one of the 4 video tapes on a monitor in a viewing booth. Immediately after viewing the tape, the participants filled out the questionnaire, were debriefed, paid their \$1 and given a card entitling them to a free sample of either of the advertised products. There were 4 monitors in 4 separate booths allowing all four conditions to be run at each experimental session. Approximately equal numbers of males and females were run in each condition (the products used in the experiment were targeted to sell to both males and females in college age populations). Similar efforts were made to counter counterbalance for measured levels of self-esteem and social and physical fear. The experiment was run dur-

ing a single week prior to the products advertised being widely available in the local market (Both were new products, making it unlikely that many subjects had prior experience with them).

Results

A 2 x 2 x 2 ANOVA with repeated measures and three covariates was used by employing the BMD P2V analysis of variance program of the UCLA biomedical software package. This program follows a mixed effect design given by Myers (1972) in which the between factors are considered fixed and the within factor is random. All analyses of variance reported below included, in addition to the subject variables, the two between experimental terms (desirability and type of consequences) and the within (product) term. There are 160 subjects x 2 products = 320 observations in all repeated measures analyzed.

Products Effects

Products were found to be significantly different ($p < .05$) on seven of the nine dependent variables. In all cases but one, the largest mean values were associated with deodorant. These results may be due to deodorant being inherently more visible as a product class. Further, the deodorant ads may simply have been viewed as more interesting by subjects. Significant mean differences in variable 5 measuring interest in the ads show this to be the case (shampoo = 3.53, deodorant = 3.79, $p < .02$). Subsequent analyses from the BMD P2V program treats the between subject effects as averages over the product factors. Separate ANOVAs on each of the products did not produce results generally different from the repeated measures design.

Manipulation Checks

Of the 160 subjects, all correctly identified the brand names of the two test products. All correctly identified the manufacturer of the shampoo product and all but one correctly identified the deodorant manufacturer. Similarly, only four people incorrectly identified the product the protagonist in the ad was using (The brand advertised was the correct choice in the positive consequence conditions and "unidentified competitor's brand" was the correct choice in the negative consequences conditions). The results for "how pleased the people shown in the ads appeared to feel," also suggest that the manipulations were successful (See Table 1). Similarly, the mean ratings for quality of the results experienced by the protagonist and the sponsor's opinion of these results also indicate successful manipulation of consequence desirability (See Table 1).

TABLE 1

- a. How did the people shown in the commercials appear to feel about the results they got with the shampoo (deodorant) they used?*

Type of Consequence	Consequence Desirability (PN)		
	Positive	Negative	
Phy (P)	7.3	1.2	4.4
Soc (S)	7.7	2.7	5.3
	7.5	2.0	

Significant Effects: PN $p < .001$
PS $p < .001$
PN x PS $p < .006$

*mean value on a 10 point scale where very pleasant = 10

- b. How would you describe the quality of the results experienced by people in the shampoo (deodorant) commercials?*

Type of Consequence	Consequence Desirability (PN)		
		Positive	Negative
Phy (P)	2.7	2.0	2.4
Soc (S)	3.3	2.2	2.7
	3.0	2.1	

Significant Effects: PS ns
PN p < .001
PN x PS ns

c. How do you think the sponsor of the commercial would describe the results?*

Type of Consequence	Consequence Desirability (PN)		
		Positive	Negative
Phy (P)	3.8	1.9	2.9
Soc (S)	4.1	1.7	2.9
	3.9	1.8	

Significant Effects: PN p < .001
PS ns
PN x PS p < .1

*mean ratings on a 1 - 5 scale where 5 = excellent

Between Subjects Results

The between subjects ANOVA revealed no significant main effects for any of the three covariates. The two primary dependent measures (intention and preference) also revealed no significant effects. Hypothesis 1 is not supported. Other dependent measures, however, did exhibit significance. These results are presented in Tables 2a through 2d. Each analysis is based upon one degree of freedom per treatment effect (and interactions) and 153 degrees of freedom for error. For the between subjects analyses, the error term is defined as a nested term. Mean square error is estimated by measuring the variability among subjects given a level of a between factor interaction. Mean scores reported in Table 2 are the adjusted means due to the effects of covariates. The adjustments are small since the covariates exhibited no significant effects.

Although no significant results were found for the main dependent variables (preferences and intentions), the effects on the other dependent measures are consistent with results reported by Rogers and Mewborn (1976). That is, an appeal influences intentions via mediating variables. Measures on

TABLE 2
Significant Results for Between Subject Effects

a. Believability

Type of Consequence	Valence (Positive-Negative)	
	P	N
phy (P)	3.20	2.62
soc (S)	3.96	2.12
	3.58	2.37

significant effects: PN, F = 15.83 (p=0.000)
PS x PN, F = 4.06 (p=.046)

b. Likelihood

Type of Consequence	Valence	
	P	N
phy (P)	3.03	2.74
soc (S)	2.88	2.00
	2.96	2.37

significant effects: PN, F = 3.90 (p=.05)

c. Comfort

Type of Consequence	Valence	
	P	N
phy (P)	6.60	6.18
soc (S)	7.02	6.02
	6.81	6.10

significant effects: PN, F = 4.26 (p=.041)

d. Message Interest

Type of Consequence	Valence		
	P	N	
phy (P)	3.18	3.09	3.14
soc (S)	4.78	3.53	4.18
	3.98	3.32	

significant effects: PN, F = 3.43 (p=.066)
PS, F = 8.00 (p=.005)

TABLE 3
Significant Effects for Social Fear (SF)
and Physical Fear (PF)

Variable	PF	Variable	SF
1. Preference		2. Intentions	
PF, F=2.96 (p=.085)		PN x SF, F=5.77 (p=.018)	
PS x PF, F=7.11 (p=.009)		3. Brand Comparison	
2. Intentions		PN x SF, F=7.92 (p=.006)	
PS x PF, F=3.76 (p=.055)		5. Product Interest	
3. Brand Comparison		PS x PN x SF, F=4.16 (p=.043)	
PS x PF, F=4.29 (p=.04)		6. Importance	
5. Product Interest		PN x SF, F=3.21 (p=.075)	
PS x PF, F=3.82 (p=.052)		PS x PN x SF, F=4.31 (p=.040)	
6. Importance			
Product x PF, F=5.99 (p=.016)			

these variables represent cognitive (coping) responses that mediate the fear appeal. This schematic is represented in Figure 1. Using the variables comfort (9), believability (4), likelihood (7), comparison (3) as surrogates, similar path analyses were conducted as those reported by Rogers and Mewborn (1976). The variable, believability, is a close surrogate for appraised severity in the sense that subjects were asked to respond to the believability of consequences depicted in the ads. The other variables (comfort, likelihood of experiencing consequences, and brand comparisons) are close replicates of those used by Rogers and Mewborn to measure fear arousal, expectancy, and efficacy, respectively.

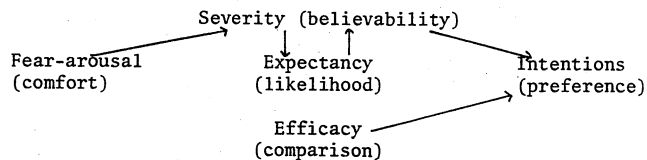


FIGURE 1. Path analyses reported by Rogers and Mewborn (1976)

Analyses were conducted by experimental cell and by product. Pearson correlations between variables (paths) shown in Figure 1 conformed closely to results given Rogers and Mewborn (1976),² with exception of reported comfort and be-

²Results reported here are purely exploratory in the sense that only simple path coefficients are reported. The authors have completed analyses using compound paths (Asher,

lievability (range -.12 to .35).

The correlations between believability and intentions and preferences were all significant ($p < .10$) in three cells (range .27 to .57) except for shampoo under the social-negative condition ($r = .24$ and $.26$ between believability and intentions and preference). Only one product correlation was significant under the remaining physical-positive condition, and that was for shampoo (believability and preference, $r = .38$).

Path correlations for believability and likelihood and for brand comparison (efficacy) and preference and intentions were significant over the two products ($p < .07$, range .29 to .73; and $p < .03$, range .34 to .75, respectively).

Other path coefficients were generally not significant between likelihood (expectancy) and brand comparison (efficacy) and between comfort and brand comparison with the exception of the social positive condition. Here, most inter-correlations between variables tended to be higher than in the other three conditions. These results are probably due to the generally positive nature of the messages presented in this condition (positive results of using the product within a group setting). Two of the three other conditions involve negative social and physical outcomes and conform closely to results on physical threat. Rogers and Mewborn studied the mediating effects due to cigarette smoking, driving safety and venereal disease.

Thus, it would appear that the positive or negative outcomes of social or individual (physical) appeals operate primarily on mediational responses and not directly upon preference or intention. Note that significant main effects occurred for believability, likelihood and, comfort; all significant variables included in path analyses.

Measured variables (self-esteem, social fear, and physical fear)

Since each of the measured variables showed no significance as covariates, a separate post hoc ANOVA was conducted for each variable. Variables were split at the median and subjects were assigned to high and low groups. These median splits resulted in another factor added to the design and with unequal cell sizes. The ANOVAs were again conducted on repeated measures (over the two products) in the event measured variables interacted with the product variable (repeated measure).

Self Esteem. Effects due to self-esteem were nil. Results do not support hypothesis 2. Products interacted with self-esteem on message interest (variable 5; $F = 5.36$, $p = .022$), and self-esteem interacted with positive-negative consequences on importance of product use (variable 6; $F = 4.05$, $p = .046$). High self-esteem subjects rated deodorant higher on message interest than low self-esteem subjects. The opposite was true for shampoo. For product importance, high self-esteem subjects reacted more favorably to positive consequences, while low self-esteem subjects reacted more favorably to negative consequences. This result conforms to the expectations concerning self-esteem and valence of consequences, however, for only one variable (importance of product use).

Physical and Social Fear. Results on physical and social fear are a little more encouraging. These results are presented in Tables 3 and 4. Nearly the same dependent variables show significance for both PF and SF (Table 4). Fur-

ther, significance is found for interactions on the primary dependent measures of preference and intentions; thus, it would appear that the appeals did operate directly on intentions and preferences once these measured variables were considered. Results reported in Tables 3 and 4 indicate that physical fear interacts with physical-social consequences, while social fear is more likely to interact with positive-negative consequences. These results are a partial confirmation of hypothesis 4, but not hypothesis 3.

TABLE 4
Means for Significant Interactions Involving Measured Variables (PF and SF)

Variable	Physical Fear (PF)			Variable	Social Fear (SF)		
	PF	PHY	SOC		SF	P	N
1.	High	2.81 (n=40)	2.01 (n=37)	1.			
	Low	2.54 (n=41)	3.21 (n=42)				
2.	High	2.61	2.50	2.	High	3.45 (n=43)	2.31 (n=37)
	Low	2.42	3.38		Low	2.39 (n=40)	2.69 (n=40)
3.	High	4.21	3.65	3.	High	4.96	3.57
	Low	3.90	4.58		Low	3.66	4.07
5.	High	2.23	2.13	5. PHY	High	1.97	2.22
	Low	2.07	3.18		Low	2.54	1.86
6.	High	Product		6. PHY	High	3.65	3.14
		Shampoo	Deodorant		Low	3.22	2.48
6.	Low	Product		6. SOC	High	4.00	2.34
		Shampoo	Deodorant		Low	1.77	3.36

Measured social fear interacted significantly with the desirability of the consequences portrayed on the one basic measure of persuasion (buying intention). A similar significant interaction also occurred for how well the advertised brand compared with other brands. Those with high measured social fear levels were more persuaded by the commercials which portrayed positive rather than negative consequences of using the advertised brand. Those whose measured level of social fear was low displayed opposite responses. They were more influenced by negative consequences. On two measures, product interest and product importance, there is a significant 3-way interaction (Tables 3 and 4).

Measured physical fear interacted similarly as SF but with physical-social consequences instead. Those with high measured levels of PF were persuaded by physical consequences rather than social consequences. The tendency was opposite for those with low levels of measured PF. They were more persuaded by social consequences. The direction of interactions was the same for all significant variables reported in Tables 3 and 4. A product and PF interaction also occurred for product importance, with high PF types rating shampoo much lower on importance of product use (Table 4). No significant three-way interactions involving PF were obtained on any measure.

Discussion

Mediational Responses

On the principal measures, preference for the advertised brand and buying intention, no significant main effects were observed for either type or desirability of the consequences portrayed, nor was their interaction significant. Additional analyses on path correlations, however, con-

firmed the possibility that desirability of physical and social consequences may operate only indirectly on measures of persuasion through mediational responses. This is consistent with work in protection motivation theory (Rogers, 1975; Rogers and Mewborn, 1976; Mewborn and Robers, 1979). Further research might address this question directly for appeals of this kind. That is, specific dependent measures should be constructed to test the hypothesis that certain mediational responses will influence preference and/or intentions for social and physical appeals. Causal path analysis can be utilized to determine the mediational effects upon persuasion. Traditional wisdom might predict a direct effect upon persuasion (intentions and preference). Evidence from this study, however, does not lead to that inference.

Subject Variables

For the specific personality characteristics measured in this study, the results are not entirely consistent with expectations. No three-way interactions on the principal dependent measures were obtained. With respect to self-esteem, it appears expectations of results were not confirmed. Threats and promises appear equally effective across the whole audience for both social and physical types of consequences.

The results for the two types of chronic fear were also unexpected. Differences in social fear interacted with desirability of consequences, positive or negative, but not with type of consequence. This result contradicts hypothesis 3. The form of the interaction, however, was consistent across dependent measures. Those high in social fear were more persuaded by positive consequences than by negative ones, i.e., promises worked better than threats, while people low in social fear seemed to be more persuaded by negative consequences. For physical fear only type of consequences, physical or social produced differential responses. In the physical consequences condition, both physical fear groups responded somewhat similar while in the social consequences condition, preference and buying intention ratings were definitely lower among the high physical fear people.

The findings, overall, suggest that segmentation of the potential audience by such personality characteristics may be worth considering when trying to achieve optimal persuasive impact across the total audience. It also suggests that, within the range of the independent variables included in the experiment, the best appeal may depend on these audience characteristics. Since this range is not likely to be greatly exceeded in actual commercial advertising situations, these results have applied implications. Choosing the best appeal may require assessment of the predominant personality characteristics of the intended audience. From an applied perspective, the appeal which produces the best response is not always intuitively obvious. For instance, greater differences in response among those measured high and low in physical fear occurred in the social consequences conditions in comparison to the physical consequence conditions.

Additional research should clarify the role such personality variables play in ads promoting promises or threats.

Evidence from this experiment does not conform to expectations. It does appear, however, that people may self-select themselves to certain persuasive conditions, i.e., high PF persons were more persuaded by physical outcomes, while high SF persons were more persuaded by promises (probably in a supportive context). Given that results from this study are contradictory to previous research (Spielberger, 1972; Powell and Miller, 1967; Leventhal and Trembly, 1968), perhaps future research should concentrate on the mediational effects upon persuasion as in the studies by Rogers and Mewborn (1976) and Mewborn and Rogers (1979). Their work is much more appealing in comparison

to the traditional approach of directly measuring attitudinal and behavioral responses to fear appeals.

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RELIGIOUS DIFFERENCES IN COGNITIONS REGARDING
NOVELTY SEEKING AND INFORMATION TRANSFER

Elizabeth C. Hirschman, New York University

INTRODUCTION

Religious affiliation is one of the fundamental elements of social behavior (e.g. Gurvitch 1971, Merton 1931, Greeley 1977, Patai 1977). In various behavioral paradigms, religion has been cast as a palliative used by the ruling class to subjugate and pacify the proletariat (Karl Marx, A Contribution to the Critique of Political Economy, 1833); or conversely as a system of social values that spurs economic growth and industrial development (Max Weber, The Protestant Ethic and the Spirit of Capitalism, 1905).

Regardless of one's theoretical perspective, however, the relationship of religion to consumption behavior must be acknowledged. In United States society, as in most cultures, a consumer's religious affiliation is strongly tied to what Duncan et al (1972) term "life chances." Religion links us through a variety of connections to a style of life that determines not only what and how much we consume, but why we consume (Hirschman 1982). Composing this life style are the SES components such as income, education and occupation (all strongly related to religious identity) and also a set of consumption values, expectations and beliefs that affect behavior (Hirschman 1982).

Religious affiliation has been a major topic of investigation in several of the behavioral sciences. Within sociology there have been studies of the correlation between religious affiliation, socioeconomic status and fertility (Anderson 1970, Greeley 1977, Lenski 1963, Roof 1979). Psychologists have studied relationships between religious affiliation and various personality characteristics (Arieti 1976, Patai 1977); and causal linkages between religion and political orientation have been a major focus in political science (Davidowicz 1977). Findings from these investigations provide evidence that religious affiliation may substantially affect a variety of consumption processes. Yet, despite the empirical linkage established between religious affiliation and consumption, virtually no studies have been conducted on this topic within the consumer research tradition.

Lack of attention to religious affiliation within consumer research may spring from at least three sources. First, it is possible that researchers are unaware of the substantial evidence accumulated linking religion to consumption. This may be because many studies of religion relevant to consumer behavior are conducted within the fields of sociology, anthropology, and political science. Since consumer research infrequently draws from these aggregate social sciences, it is possible that prior investigations of religion are unknown to many in the field.

A second reason may be an implicit normative sanction against the investigation of religious affiliation within consumer research. Perhaps religion is viewed as a subject too sensitive to submit to investigation. If this is the case, it is unfortunate. Topics may be perceived as sensitive, because they are inherently salient to behavior. To avoid studying such an area may act to restrict the accumulation of valid knowledge about consumer behavior.

A final reason for the lack of consumer research incorporating religious affiliation may be the ubiquity of religious influence. Religion is pervasive; it permeates life, whether one is a believer or a nonbeliever. Because religion is an economic force, a political force and social force, it directly or indirectly affects every consumer. The ubiquity of religion provides a major rationale for its investigation. If religious affiliation provides an influential belief system to the consumer, then it is

important that we examine its effects.

RELIGIONS AS COGNITIVE SYSTEMS

The purpose here is to investigate three religions - Catholicism, Protestantism, Judaism - as cognitive systems (Gurvitch 1971). A cognitive system is a set of beliefs, values and expectations that are shared by members of a group (Berger 1961). In this perspective, adherents to a particular religious creed (e.g., Catholicism) are viewed as possessing an identifying cognitive system. The theological and social characteristics giving rise to the Catholic, Jewish, and Protestant worldviews are described in detail in Hirschman (1982). The present research focuses on differences in the cognitive systems possessed by Catholic, Jewish and Protestant consumers regarding two key consumption dimensions: inherent novelty seeking and information transfer.

These two areas were selected for investigation because they are central to several important consumption processes: Innovation diffusion and adoption, promotional effectiveness, interpersonal influence, and decision making. Hence, if differences are found in the cognitive structures underlying novelty seeking and information transfer across these three religious groups, then the utility of religion as a relevant influence on consumer behavior will be lent preliminary support.

THE STUDY

Sample

The sample for the study consisted of 96 Catholic, 120 Jewish, and 114 Protestant consumers who responded to survey questionnaires concerning their religious and nationality identification, marital status, socioeconomic status, novelty seeking predispositions, and information transfer frequencies. Subjects were recruited on a systematic, stratified basis from the New York City metropolitan area in a balanced cohort design (Lehmann 1979).

In order to control for SES differences known to exist among these religious groups¹ (Hirschman 1982), questionnaires were administered to consumers drawn from the Upper Middle social class and above.² All respondents earned \$25,000 or more per year in household income, were college-educated, and were drawn from households headed by persons having a managerial or professional occupation; thus they constituted an SES cohort (Glenn 1977). As desired, there were no significant differences among consumers within the three religious groups along any of the demographic variables (e.g., income, education, occupation) measured. Thus, although the sample is representative of a relatively upscale group of Catholic, Jewish, and Protestant consumers, it is not hampered by the SES inequalities that would be present if a random sample of these three denominations were drawn from the population at large.²

¹ This is important, since education and occupation have been found strongly related to cognitive structure and complexity.

² This was necessary since over 80% of Jews are found in these SES strata.

The second common factor across all three groups is represented by F1 among Protestants, F2 among Jews, and F3 among Catholics. The coefficients of congruence were .76 C to J, .81 J to P, and .80 C to P. This factor loaded primarily on movies, books, and magazines and appeared to represent Mass Media novelty seeking. In contrast with the first common factor, this second factor exhibited a great deal more religious idiosyncrasy, as is reflected in the lower levels of interdenominational congruence. For example, among Catholics, the factor correlated with shopping, among Jews with apparel, but with no other types of inherent novelty seeking among Protestants. As before, there were interdenominational discrepancies in the amount of variance accounted for by this factor. The highest was 26% for Protestants; the lowest was 11% for Catholics.

The third common factor is represented by F4 among Catholics, F3 among Protestants, and F4 among Jews. The coefficients of congruence were .81 C to J; .73 J to P; and .64 C to P, which represent low to moderate levels of factor compositional similarity across the religious groups. The amount of explained variance ranged from 12% for Protestants to 8% for Jews. Because the factor loads on religious and political novelty seeking across all three groups, it appears to represent Ideological novelty seeking. Among Catholics, this factor also correlates with sports activities, among Jews with apparel, and among Protestants with home furnishings. Thus we again find a common factor displaying several denominationally-linked unique loadings and different levels of explained variance.

From an examination of these three common factors we may tentatively conclude that inherent novelty seeking is primarily oriented toward Sensory/Experiential consumption among Jews and Catholics, and toward Mass Media consumption among Protestants. Ideological novelty seeking tendencies, while present, do not appear strongly characteristic of any of the three groups.

In addition to these three common factors, Catholic consumers shared a factor with Protestants. This was F2 for Catholics, F4 for Protestants. The calculated congruence for this shared factor was .88. Catholics also exhibited two specific novelty seeking factors; the first had a high correlation with home furnishings and the second with transportation. Jewish consumers exhibited two specific factors. The first had a high correlation with shopping, and lower correlations with apparel and hair styles; the second factor loaded on dances, home furnishings, hairstyles and sports. Finally, Protestant consumers exhibited one specific factor with a high correlation with sports activities and lower correlations with dances and political ideas.

Thus, it appears that while an underlying common structure of novelty seeking may be found across these religious groups on three dimensions, this structure displays ample idiosyncrasy both in the pattern of specific loadings and proportion of explained variance. Further, there are present within each religious group specific factors which are unique to that group. Therefore, support is given to the proposition that religious affiliation may influence the structure of inherent novelty seeking exhibited by consumers.

Information Transfer: Factor Analysis Results

The factor pattern (Tables 5, 6, 7) emerging from analysis of the fifteen information transfer items bears some similarities and dissimilarities to that obtained for inherent novelty seeking. As before, both common and specific factors were obtained for the three religious groups. However, these were generally not analogous to those obtained for inherent novelty seeking.

There appear to be two common factors of information transfer that are exhibited by all three religious groups, al-

though with different proportions of explained variance and with somewhat idiosyncratic loading patterns. The first is represented by F1 for Catholics, Jews, and Protestants, and explains between 24 to 30 percent of the variance in each data set. The computed coefficients of congruence were .86 C to J; .63 J to P and .71 C to P (Table 8). Thus, the level of interdenominational congruence is not high; especially for Catholic and Jewish consumers. This factor loaded commonly on Foods/Restaurants across all three groups. Among Catholics it also correlated with home furnishings, movies, magazines, and vacation spots. Among Jews, the factor was strongly associated with vacation spots and religious ideas, and to a lesser extent with movies. For Protestants, it was additionally associated with books. Thus, although there are some similarities between religious groups in the structure of the dominant factor of information transfer, there are several loadings unique to each group.

A second factor of information transfer that displayed some inter-denominational commonality was F2 for Jews and Protestants, and F3 for Catholics. Computed coefficients of congruence were .71 C to J; .67 J to P; .74 C to P; not a strong pattern of congruence. This factor loaded on Shopping Places/Apparel for all three groups. It additionally loaded on restaurants for Catholics, home furnishings and restaurants for Jews, and home furnishings and hair styles for Protestants. This factor accounted for 12% of variance among Protestants, 14% among Jews and 11% among Catholics.

In addition to these two common factors, each religious group displayed three specific factors that exhibited loading patterns unique to that group. The specific factors each accounted for from 15% to 7% of variance in a given data set. For Catholics, the first specific factor (F2) loaded on movies, books, magazines and sports; the second specific factor (F4) on political ideas, religious ideas, and transportation; and the third specific factor (F5) on dances and hair styles.

For Jews the first specific factor (F3) was associated with dances, home furnishings and hair styles; the second specific factor (F4) with magazines, political ideas and sports; and the third specific factor (F5) with books and transportation.

For Protestants, the first specific factor (F3) was positively associated with information transfer concerning political ideas and transportation; the second specific factor (F4) had high positive loadings on vacation spots and sports; and the third specific factor (F5) was most highly related to dances, movies and hairstyles.

Hence, it is apparent that the factor structure underlying information transfer displays substantial dissimilarity between these three religious subcultures. As was found for novelty seeking, the dimensions typifying each denomination are to some extent unique. This was expected based on the cognitive differences found in prior research to characterize these three groups (Hirschman 1982). While prior research (e.g., Greeley 1977) has sometimes attributed these differences largely to the SES discrepancies between Catholics, Jews and Protestants, the findings reported here indicate that religious differences are present in factor structure even when social class is controlled for, at least among the Upper and Upper Middle class consumers examined here.

Inherent Novelty Seeking: Mean Comparisons

A second perspective regarding cognitive differences in inherent novelty seeking among these three religious groups may be obtained by a direct comparison of group means. To generate these comparisons, an analysis of variance (ONEWAY--SPSS) was performed on each of the 15 items composing the inherent novelty seeking measure.

Therefore, denominational differences in the cognitive structure of novelty seeking and information transfer among the subjects should be primarily attributable to religion-based variation and not to SES factors.

Measuring Religious Affiliation

Respondents were asked the following questions to measure their religious affiliation (Hirschman 1981):

"Do you have a religious affiliation, for example: Catholic, Jewish, Protestant? Please indicate which one and the strength of your affiliation."

- | | |
|---------------|-------------------------------------|
| 1. Catholic | 4. Other _____ (other, please list) |
| 2. Jewish | |
| 3. Protestant | 5. None |

"Is the strength of your religious affiliation:"

Very Strong	Very Weak
5	4
3	2
1	

Measuring religious affiliation this way has the advantage of allowing the consumer to label himself/herself and also to express the strength of religious identity she/he feels (Cohen 1977). This insures that consumers who may have been "born into" a particular religious tradition, but who no longer feel any ties with it, are not arbitrarily labeled by the researcher. The "strength of affiliation" measure is also valuable in this research, because it allows us to determine if there are differences in the level of identification among members of the three religious groups. This might affect the results because one group may be more/less influenced by its religious philosophy than another; therefore affecting the comparisons. Fortunately, this was not the case; the mean religious strength for Catholics was 3.1, for Jews 2.9, and for Protestants 2.7. These means were not significantly different at the $p = .15$ level (Scheffe test for multiple comparisons). Hence, each group displayed approximately the same level of religious identification.

Inherent Novelty Seeking/Information Transfer

The measurement of inherent novelty seeking was based on responses to the following question series (Hirschman 1980, 1981)

"How willing are you to try something new in each of these consumption areas?" This question was followed by a list of fifteen different products ranging from hairstyles to political ideas, given in Table 1. Responses were measured on a 5-point scale anchored by the terms "very great willingness" (5) to "very little willingness" (1) (Hirschman 1981).

Information transfer was measured using the same fifteen item product set with the statement, "How often do you give information to others about each of the products listed below?" A 5-point, "very great frequency" (5), to "very low frequency" (1) anchored scale was used in measuring consumers' perceptions of their information transfer (Hirschman 1981)

It should be noted that both of these measures are oriented toward assessing the consumer's self-perceptions and not actual behavior. To the extent that self-perceptions and actual behavior are not congruent, this measure will be a biased indicator of consumption activity. However, since the focus of the research is on cognitive structure (i.e., beliefs about oneself) rather than upon behavior patterns, such measures are deemed appropriate.

A further assumption of both measures is that the topics covered were germane to the respondents. This assumption appears reasonable given that the sample was drawn from

adult households having Upper Middle class socioeconomic status. Product classes such as magazines, vacations, restaurants, political ideas, and apparel should be active consumption areas for most, if not all, respondents.

ANALYSIS AND FINDINGS

Of primary interest in this research was whether Catholic, Jewish and Protestant consumers would vary systematically in their cognitive structure for inherent novelty seeking and information transfer. That is, would certain beliefs about novelty seeking and information transfer characterize the members of one religious group; while a different set of beliefs typified members of another group? To answer this hypothesis, two types of analysis were conducted -- (1) factor analysis to measure structural similarity and (2) direct mean comparisons across groups to determine relative rankings. Factor analysis (principal components coupled with varimax rotation to achieve simple structure) was first conducted on the fifteen items in each construct measure on an intra-denominational basis, i.e., the responses of Catholic, Jewish, and Protestant consumers were factor analyzed separately. The factor analysis results for inherent novelty seeking are given in Table 2 (Catholic), Table 3 (Jewish), and Table 4 (Protestant); those for information transfer are in Table 5 (Catholic), Table 6 (Jewish), and Table 7 (Protestant). All factors exhibited a substantial level of simple structure - that is, almost all loadings are above .30 or below .10. (Due to space constraints, these tables are available from author.) In each of these tables are given the factor loadings of the fifteen novelty seeking and information transfer items, the proportion of variance accounted for by a given factor, its eigenvalue, and the total variance accounted for by the factors extracted. (An eigenvalue in excess of 1.0 was used as the criterion for factor extraction). Table 8 contains the coefficients of congruence calculated between pairs of religious groups for both constructs. Discussion will first center on the results obtained for inherent novelty seeking.

Inherent Novelty Seeking: Factor Analysis Results

Examination of the inherent novelty seeking factor structures for the three groups (Tables 2, 3, 4) reveals that there are three "common" factors exhibited by each denomination, albeit with somewhat varied loadings. There was also one additional specific factor present for Jews and Protestants, one common to Protestants and Catholics, and two additional specific factors for Catholics. The first common factor is represented by the F1 factor for Catholics and Jews, and by the F2 factor for Protestants. The coefficients of congruence for this factor are .90 (C to J), .98 (J to P), and .97 (C to P). Reflecting the high interdenominational congruence, the factor has high loadings on vacation areas, food, and restaurants for all three religious groups. It also correlates positively with transportation for Jews and Protestants; with movies and books for Catholics, and with home furnishings for Jews. Although factor labels are to some extent arbitrary and subjective, this factor might be appropriately termed Sensory-Experiential novelty seeking, since it involves primarily the consumption of sensorially-experienced products, such as food.

Despite the fact that this factor displays generally high commonality among the three religious groups, it also possesses some loadings unique to each group, indicating the presence of interdenominational differences in its manifestation. Further, while this Sensory-Experiential factor is the major factor in novelty seeking among Catholics and Jews (explaining over 25 percent of the variance in each data set), it is a secondary factor among Protestants, accounting for only 14 percent of the variance within this group.

Post hoc contrasts using the Scheffe' test were used to compare group means on each item. The results are given in Table 9.3.

The data indicate that in seven out of fifteen instances, Jewish consumers exceeded Catholic and/or Protestant consumers in self-perceived inherent novelty seeking. The areas in which this condition held were: apparel, books, magazines, vacation spots, foods, restaurants, and political ideas. Catholic consumers were found to exceed their Jewish and/or Protestant counterparts in inherent novelty seeking for three consumption areas: dances, transportation, and sports activities. Protestants were found to exhibit higher self-perceptions of inherent novelty seeking in two consumption areas: religious ideas and hairstyles. Thus, Jewish consumers appear to exhibit a substantially higher level of inherent novelty seeking, as compared to Catholics and Protestants.

A discussion of several social and cognitive reasons for the above average levels of inherent novelty seeking among Jewish consumers is put forward in Hirschman (1981, 1982). Basically this rationale centers around normative pressures in Jewish families and religious institutions favoring the acquisition of knowledge by the individual. It is interesting to note that the acquisition of two types of knowledge strongly supported by Jewish norms is present here: Intellectual (e.g., books) and sensory (e.g., food).

Information Transfer: Mean Comparisons

The cross-group mean comparisons for information transfer are given in Table 10. Here again a rather striking pattern of subcultural differences emerges. In eight out of fifteen comparisons, Jewish consumers exceeded Catholics and/or Protestants in self-perceived information transfer. These included: movies, books, magazines, vacation spots, foods, restaurants, transportation, and hairstyles. Catholic consumers exceeded their Jewish and/or Protestant counterparts in five out of fifteen areas: dances, places to shop, political ideas, religious ideas, and sports activities. In no instances did Protestants exceed the other two religious denominations in self-perceived information transfer.

The above average level of Jewish information transfer is believed attributable to ethnic norms advocating such activity (Hirschman 1981). No rationale is immediately apparent, however, for the discrepancy between Catholic and Protestant consumers in reported levels of information transfer. It is possible that the consumption areas covered were, for unknown reasons, especially germane to the Jewish and Catholic subcultures.

Thus, we may conclude this section by noting that distinct religious affiliation differences are present in self-perceptions regarding inherent novelty seeking and information transfer. These differences indicate a higher level of inherent novelty seeking among Jewish consumers vis-a-vis Protestants and Catholics, and a higher level of information transfer among Jewish and Catholic consumers vis-a-vis Protestants.

CONCLUSIONS AND LIMITATIONS

The results reported have limitations which should be noted. First, the ethnic nationality of the respondents was not controlled for and may have affected the results obtained. The Catholic group was composed of approximately equal proportions of persons having Irish and Italian nationality; there were few Hispanics in the sample. The Protestant group was made-up primarily of consumers having English nationality, although some German and Scandinavian Protestants were present. The Jewish group was likely (given the sampling site) to be primarily composed of first or second generation Ashkenazic

Jews, although some Sephardic Jews and Israeli nationals may also have been included. Should the nationality proportions be radically altered from those present in the data, it is possible that the structural patterns and group means will be affected.

A second limitation is that of the sampling site. Although the obtained sample is desirably homogeneous with respect to urbanicity and SES, it is well to remember that the New York City sampling site possesses some rather unique qualities vis-a-vis the United States, generally. First, it is a very ethnically-conscious city, which may serve to intensify subcultural boundaries--perhaps serving to enhance the strength of the religious affiliation differences found here. In environs where ethnicity possesses less salience, the observed differences may be more subdued. Second, New York City has large concentrations of Catholic and Jewish consumers⁴, which is atypical of most of the United States--65 percent of which is Protestant. This atypical proportionality may serve to alter somewhat the self-perceptions of Catholics and Jews, who in New York constitute "majority" groups, but who elsewhere constitute "minority" groups.

Keeping these potential caveats in mind, let us now consider what was learned from the research. First, it was found that although some common factors underlie the structure of cognitions regarding novelty seeking and information transfer, these factors display ample religious affiliation idiosyncrasy in both loading pattern and explained variance. Further, for each religious group examined, several unique factors were found, which were not generalizable across groups. Hence, cognitive dimensionality appears to be influenced by religious affiliation.

Second, the mean levels of self-perceived inherent novelty seeking items and information transfer items varied significantly across the three religious groups. Jewish consumers were found to exceed Catholics and Protestants on more specific aspects of both constructs. This was attributed to norms characterizing the Jewish subculture.

To the extent that these self-perception differences translate into actual behavior, then religious affiliation may act as a powerful determinant of consumer innovativeness, information acquisition, media exposure, and opinion leadership--all of which are linked to the constructs of inherent novelty seeking and information transfer. The data presented are not conclusive evidence that such a pattern of causation exists, yet the results are strongly suggestive of the importance of pursuing religious affiliation as a source of influence on consumer behavior. It is hoped that the present findings are sufficiently intriguing so as to stimulate further inquiry.

⁴ The two million Jews residing in New York City comprise the largest concentration of this subculture living outside of Israel.

TABLE 9

INHERENT NOVELTY SEEKING: MEAN COMPARISONS

	\bar{X} Cath.	\bar{X} Jew.	\bar{X} Prot.	Contrasts	\bar{X} Cath.	\bar{X} Jew.	\bar{X} Prot.	Contrasts
Dances	3.4	2.9	3.0	C > J, P ²	2.6	2.0	2.2	C > J, P ²
Places to Shop	-	-	-		3.8	3.7	3.5	C > P ¹
Apparel	3.1	4.3	3.8	J > C, P ²	-	-	-	
Home furn.	-	-	-		-	-	-	
Movies	-	-	-		4.0	4.7	3.9	J > C, P ³
Books	4.1	4.2	3.7	J > P ²	3.6	3.9	3.2	J > C, P ³
Magazines	3.9	4.5	3.7	J > C, P ³	3.4	4.6	3.2	J > C, P ⁴
Vacations	3.0	4.1	3.5	J > C, P ³	3.5	4.1	3.2	J > C, P ⁴
Foods	4.1	4.4	3.9	J > C, P ²	4.2	4.5	3.7	J > C, P ³
Restaurants	4.0	4.5	3.8	J > C, P ³	4.3	4.6	4.1	J > C, P ²
Political ideas	3.1	3.7	2.8	J > C, P ⁴	3.1	3.0	2.4	C, J ² > P
Religious ideas	1.9	2.0	2.2	P > C ¹	2.3	2.2	2.0	C > P ¹
Transportation	3.7	3.4	3.4	C > J, P ¹	3.3	3.6	2.7	J > C, P ³
Hair styles	2.2	2.5	2.7	P > C ²	2.5	2.6	2.2	C, J ² > P
Sports	4.2	4.0	3.5	C > P ³	4.0	3.6	2.9	C ² > J ³ > P

¹p = .20
²p = .10
³p = .05
⁴p = .01

¹p = .20
²p = .10
³p = .05
⁴p = .01

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TABLE 1

PRODUCT CLASSES EXAMINED

Dances	Foods
Shopping	Restaurants
Apparel	Political Ideas
Home Furnishings	Religious Ideas
Movies	Transportation
Books	Hair Styles
Magazines	Sports Activities
Vacation Sites	

TABLE 8

COEFFICIENTS OF CONGRUENCE

<u>Sensory-Experiential Novelty Seeking</u>			<u>Mass Media Novelty Seeking</u>		
C to J	J to P	C to P	C to J	J to P	C to P
.90	.98	.97	.76	.81	.80
<u>Ideological Novelty Seeking</u>			<u>Foods/Restaurants Information Transfer</u>		
C to J	J to P	C to P	C to J	J to P	C to P
.81	.73	.64	.86	.63	.71
<u>Shopping Places/Apparel Information Transfer</u>					
C to J	J to P	C to P			
.71	.67	.74			

(Tables 2 through 7 available from author)

SITUATION AS AN INFLUENCE ON ANTICIPATED SATISFACTION

Kent L. Granzin, University of Utah
Kathryn H. Schjelderup (student), University of Utah

Abstract

This study investigates the influence of situation, as well as situation-influenced intervening variables and non-situation-influenced variables on one form of consumer satisfaction. The results show situation to play a part in determining anticipated satisfaction in the case of car repair decisions. Its influence appears to operate through self-confidence, perceived risk, anxiety, and expected benefits, but not through information search style.

Introduction

Consumer satisfaction has recently claimed increased attention from researchers concerned with consumer behavior. The rationale for this research emphasis is a recognition that satisfaction furnishes a particularly useful criterion measure for the decision process leading to and including consumption. That is, satisfaction is a state of the individual which summarizes the influences which act to produce such other widely-studied criteria as attitudes, preference, intention, and purchase. In some ways, satisfaction provides a more comprehensive indication of the degree to which the consumer anticipates and finds success from his decision making.

At present, this research into consumer satisfaction has progressed to the point where many researchers have gone beyond merely studying the influence of individual predictor variables taken in isolation. Current empirical investigations often reflect conceptualizations which integrate the various findings of earlier research efforts into models of the decision process leading to satisfaction (Day and Hunt 1979; Hunt and Day 1980).

Despite the progress made in the conceptualization and testing of these models of the factors contributing to consumer satisfaction, one predictor found useful in other studies of the consumer decision process has been heretofore ignored. While the influence of situation has been conceptually and empirically linked to such criterion measures as preference and product/service choice (Belk 1974; Miller and Ginter 1979), research into satisfaction has bypassed consideration of this potentially important predictor variable. To remedy this omission, the present study investigates the influence of consumption situation on the anticipated satisfaction associated with the product/service choice.

To incorporate and further test the findings of previous studies, it appears desirable to do more than merely determine whether situation influences anticipated satisfaction. Assuming that this relationship can be supported, we can better understand the nature of its influence by also investigating the process that links situation to satisfaction through a sequence of intervening variables which lie intermediate to situation and satisfaction. Therefore, this study uses the context of an automobile repair decision to investigate the nature of the relationships between situation and anticipated satisfaction and between these variables and intervening states in the consumer decision process.

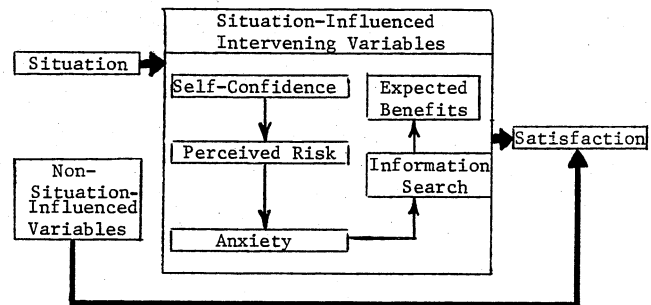
A Conceptualization Of The Decision Process Leading To Consumer Satisfaction

The model underlying this research portrays the process leading to consumer satisfaction as composed of four main elements: (1) Situation; (2) Situation-influenced intervening variables; (3) Non-situation-influenced predictor variables; and (4) Satisfaction. The second and third elements of the model are themselves composed of a number of separate variables hypothesized to affect the level of satisfaction. Figure 1 presents this model in diagrammatic form. The four elements are now discussed in turn.

Situation

Within the context of consumer behavior research, situation as an exogenous variable (Lutz and Kakkar 1976) has been studied primarily in terms of its influence on preference for or choice of a consumption alternative (Belk 1974, 1975; Lutz and Kakkar 1975; Miller and Ginter 1979; Granzin and Miller 1980). Because of the aforementioned usefulness of satisfaction as an alternative criterion variable, the logical extension to hypothesizing situation to be predictive of satisfaction is a relatively short one. As stated, the influence of situation is held to operate through the consumer's decision process. Lutz and Kakkar (1975, 1976) discuss the importance of intervening variables in providing the link between situation and a criterion measure.

FIGURE 1
A Model Of The Decision Process Leading To Consumer Satisfaction



Situation-Influenced Intervening Variables

As shown in Figure 1, the linkage from situation to satisfaction may be viewed as proceeding through a network of intervening variables. The network presented here is based on a number of research studies of the consumer decision process both within and without the context of consumer satisfaction.

The pivotal construct in the model of the decision process leading to satisfaction is perceived risk, which may be considered as a negative factor in the consumer decision process (Nicosia 1969; Ross 1974). Perceived risk is influenced by the consumer's self-confidence (Cox 1967; Schaninger 1976). As his confidence in his knowledge of how to act within a given situation increases, his perceived risk will decrease (Bettman 1973).

Risk also interacts with information search (Roselius 1971). As an individual perceives more risk, he engages in information search as a means of reducing this risk (Hisrich, Dornoff and Kernan 1972). The link between these two constructs acts through anxiety (Schaninger 1976). Greater risk brings greater anxiety, and the consumer employs information search to reduce his anxiety (Taylor 1974).

The information the consumer gains helps him form expectations about how well the product/service will suit his needs (Cardozo 1965). He will use information from personal and non-personal sources (Newman and Staelin 1973; Berning and Jacoby 1974) to form expectations as product-specific, pretrial beliefs (Olson and Dover 1979). By extension, these benefits he expects are held to be situation-specific, as well. Based on his expectations, the consumer forms pretrial attitudes (Sheluga, Jaccard and Jacoby 1979). The attitude of special importance to the present study is anticipated satisfaction.

Satisfaction

Satisfaction has been variously treated as a criterion construct in consumer decision process models (Day and Hunt 1979; Hunt and Day 1980). One such treatment of particular relevance to this study is that of Ortinau (1979), whose model elaborates the variation in the psychological state of satisfaction which occurs over time as part of a continuing consumption process. Ortinau posits four stages in this consumption process: new ownership, early consumption, subsequent consumption, and disposition. However, all four stages suggested by Ortinau lie posterior to the purchase of a product/service. As presented, the Ortinau model would thus apply only to the special case of post-trial satisfaction. In other words, a consumer cannot use post-trial satisfaction in making a choice until he has first consumed the product or service in question. A more general model would include the case of pre-trial, anticipated satisfaction and would therefore also apply to the decision process leading to the first (and possibly only) purchase of a product/service,

Perhaps the most extensively developed treatment of the role of anticipated satisfaction in a decision making process comes from work by researchers in the field of organizational behavior. Specifically, the expectancy theory formalized in the Vroom model of workplace motivation considers anticipated satisfaction to be the decision criterion for selection of a course of action from among a set of competing behavior alternatives (Vroom 1964; Mitchell 1974). The present study similarly conceives anticipated satisfaction as the decision criterion for selection of a behavioral alternative within the context of a consumer decision process, whether the decision involves an initial or a repeat selection from among consumption alternatives. Based on expectancy theory, the anticipation of greater satisfaction should accompany higher levels of expected benefits.

Non-Situation-Influenced Predictor Variables

Previous studies have investigated the influence on satisfaction that comes from personal characteristics that themselves cannot be expected to be materially influenced by the situation that the consumer faces. In particular, demographics such as age, education, and socioeconomic status have been found to affect satisfaction (Miller 1976, 1977; Westbrook and Newman 1978), as well as influence other consumption criterion variables. While the power of these variables for predicting satisfaction has been heretofore somewhat inconsistent, the successes cited above and their traditional usefulness for understanding consumer behavior dictate their inclusion in this conceptualization.

Method

Data came from 180 adult males residing in a large western metropolitan area who responded to a personally-administered, self-completion questionnaire. This questionnaire featured operational measures of the above constructs referred to the context of car repair decisions. Males were selected because of their greater involvement with car repair decisions. Actual selection was determined by a quota sample which matched the age composition of the sample to that of the most recent census. Respondents were screened for car ownership and were questioned about the car they drive most of the time.

The instrument featured three sections: (1) information on the respondent's car and where he would seek repair service if he encountered the problem with the fuel system described at the beginning of the first section; (2) situation-dependent measures of the constructs elaborated in the previous section of this paper; (3) information on socioeconomic, household, and car ownership variables, media habits, and lifestyle measures.

Information in the first and third sections of the instrument was collected without reference to a specific situation. Measures in the second section were obtained by reference to three situations within which the same automotive malfunction was supposed to occur. Each situation description featured five elements of the objective situation proposed by Belk (1975): time of day, place, mood, persons present, and plans. These are the situations into which role-playing respondents were asked to project themselves:

9 o'clock on Saturday morning. You are at home and well-rested. You are by yourself and have nothing planned for the day. You decide to run your engine for a moment and notice the trouble.

1 o'clock on a Wednesday afternoon. You are leaving a restaurant with friends who have ridden with you. You feel relaxed, but must get back to work. You notice the trouble as you leave the parking lot.

3 o'clock on a Tuesday afternoon. You are in a medium-sized city 150 miles from home and are tired. You are by yourself and want to get home that day. The trouble develops as you are driving into the city limits.

The second section used four- and six-point scales to collect information on the presumed situation-influenced variables. Self-confidence was measured by a six-point scale representing knowledge about what to do to get the car repaired. Risk reflected the importance and uncertainty of gaining seven different benefits of repair service: low price, guaranteed work, quality parts, nearly-new performance, little time wasted, good treatment, and available credit. Importance was operationalized by six-point scales based on the question "In this situation, how important would it be to get each of these benefits from the repair facility where you would take your car?" Uncertainty was measured by reversed six-point scales referred to the question "How certain are you that you could get each of these benefits somewhere?" The two components for each element of risk were multiplied together (Peter and Tarpey 1975) to give 36-point scales for the seven dimensions of risk. These dimensions were designed to cover the four elements of risk given by Roselius (1971) and the overlapping five elements listed by Vincent and Zikmund (1976). For example, the time dimension of risk was represented by "little time wasted," and the ego dimension by "treatment you deserve."

Information search measures used six-point scales to reflect the relevant categories of Andreason's (1968) information source typology. These items referred to the

projected likelihood of using four sources of information or advice on where to take the disabled car for repair: telephone book, stranger, telephoning a friend, and contacting at least two repair facilities. Anxiety was measured on a four-point scale in terms of the respondent's concern about having made the right decision.

Expected benefits were operationized using the dual questioning approach proposed by Alpert (1971). Respondents were asked to consider eight types of repair facilities as alternatives for service. Measures of the perceived difference in performance levels for the set of eight alternatives were obtained for the seven benefits listed above. These scales were multiplied by the importance of the corresponding dimension of service to give seven 36-point determinant attribute measures of expected benefits. Anticipated satisfaction was measured by the omnibus, four-point item "Having made your choice of a service facility, how satisfied would you reasonably expect to be with the service you were going to receive?"

The analysis proceeded as follows. First, correlation analysis and ANOVA were employed, as appropriate, to examine the existence of links between anticipated satisfaction and the variables conceptualized as non-situation-influenced predictors. Then, correlation was used to investigate relationships between anticipated satisfaction and the hypothesized situation-influenced variables. The latter analysis considered relationships for each of the three situations, taken singly, to determine whether these variables could be considered to influence anticipated satisfaction. The final analysis used ANOVA to determine the extent to which these intervening variables were themselves affected by the situation.

Results

The analysis of the relationships between non-situation-influenced variables and anticipated satisfaction failed to support the conceptualized connections between these variables. For the 81 correlation coefficients and F-ratios computed for the hypothesized relationships involving socioeconomic, household, and car ownership variables, media habits, and lifestyle measures (27 for each of three situations) only four coefficients reached significance at the .05 level. Test by means of the cumulative binomial distribution showed the probability of gaining no more than four significant correlations to be greater than .05.

The analysis of the relationship between anticipated satisfaction and the situation-influenced variables fared considerably better (Table 1). Almost half, 27 of 60, of the within-situation correlation measures reached significance at the .05 level. The conceptualization was best supported for the after-lunch situation, where 13 of 21 correlations reached significance.

Given this success in relating supposed situation-influenced variables to anticipated satisfaction, the final analysis investigated the extent to which these intervening variables and the criterion variable were themselves influenced by situation. Table 2 presents the results of the repeated-measures ANOVA's used with the 20 measures of self-confidence, risk, anxiety, information search, expected benefits, and anticipated satisfaction. All the constructs were found to be affected by situation. In fact, all measures differed significantly across situations with the exception of three of the seven measures of expected benefits: parts, performance, and credit. The main difference for anticipated satisfaction lies between the means for the away from home situation and the two hometown situations, and it is highly significant.

Discussion

Given the lack of relationship between anticipated satis-

faction and the non-situation-influenced variables, the value of considering the situation-influenced variables appears heightened. That is, failure of such commonly employed measures as demographics to predict anticipated satisfaction underscores the usefulness of situation for understanding this aspect of consumer behavior.

Turning to the findings for the situation-influenced variables, expected benefits is related positively to anticipated satisfaction. This result indicates that those who foresee a greater latitude of choice among alternative service choices, especially with respect to important benefits, anticipate greater satisfaction.

TABLE 1
Correlations Between Anticipated Satisfaction And
Situation-Influenced Intervening Variables
For Three Situations

Variable	Situation					
	At Home		150 Miles Away		After Lunch	
	r	p	r	p	r	p
Anxiety	-.15	.023	*	*	-.28	.000
Self-Confidence	.17	.010	*	*	.22	.002
Expected Benefits						
Low Price	*	*	*	*	.13	.037
Guaranteed work	*	*	.16	.016	.13	.047
Quality parts	.15	.026	.14	.026	.13	.041
Nearly-new performance	.16	.014	.18	.008	*	*
Little time wasted	*	*	*	*	*	*
Good treatment	.18	.009	.18	.009	*	*
Available credit	*	*	.20	.004	*	*
Risk						
Low Price	-.15	.021	-.17	.013	*	*
Guaranteed work	*	*	*	*	-.17	.013
Quality parts	*	*	-.13	.045	-.15	.022
Nearly-new performance	-.16	.019	*	*	-.13	.037
Little time wasted	*	*	-.23	.001	-.14	.027
Good treatment	*	*	*	*	-.18	.008
Available credit	*	*	*	*	-.14	.031
Information Search						
Phone book	*	*	*	*	*	*
Stranger	*	*	*	*	-.15	.022
Friend	*	*	*	*	*	*
Visit facilities	*	*	*	*	*	*

* Indicates non-significant correlation coefficients, $p < .05$, one-tailed test.

Hypothesized relations between use of information sources and anticipated satisfaction were not supported by the data. Only one of twelve coefficients reached significance by one-tailed test. Thus, it appears that the propensity to use alternative information sources does not influence a motorist's anticipated satisfaction with the repair facility he selects.

Perceived risk and anxiety performed as expected. The strongest links occurred in the after lunch situation, where only price risk failed to reach significance. Greater risk and anxiety related negatively to anticipated satisfaction. Thus, as the motorist's concern with his plight becomes stronger, he anticipates less satisfaction in a repair service.

Also as expected, greater self-confidence relates to greater anticipated satisfaction in the two situations within the motorist's home area. The feeling that he knows what to do about the malfunction appears to presage a happy ending to the situation.

TABLE 2
Analyses of Variance For Situation-Influenced Variables
Across Three Situations

Variable	Situation Means				F	p
	At Home	150 Miles Away	After Lunch	Ratio		
Anticipated Satisfaction	2.49	2.16	2.42	23.37	.000	
Anxiety	0.67	2.34	1.85	27.01	.000	
Self-Confidence	1.97	1.80	1.93	11.78	.000	
Expected Benefits						
Low Price	18.78	15.56	16.60	11.56	.000	
Guaranteed work	22.94	20.32	21.87	6.32	.002	
Quality parts	21.47	21.31	20.59	.90	.405	
Nearly-new performance	19.67	18.84	19.25	.86	.425	
Little time wasted	20.32	23.07	22.36	6.94	.001	
Good treatment	22.22	20.02	21.73	4.42	.013	
Available credit	14.06	15.21	13.61	2.45	.088	
Risk						
Low price	14.13	15.12	13.58	3.14	.044	
Guaranteed work	12.96	17.46	13.23	28.77	.000	
Quality parts	12.83	17.59	12.41	39.01	.000	
Nearly-new performance	13.73	16.91	13.52	18.57	.000	
Little time wasted	14.97	22.09	16.56	45.78	.000	
Good treatment	14.36	17.05	13.81	12.83	.000	
Available credit	9.12	13.40	9.38	32.30	.000	
Information Source						
Phone book	2.63	4.73	2.79	123.94	.000	
Stranger	1.29	2.80	1.54	90.59	.000	
Friend	3.77	3.21	3.72	6.73	.001	
Visit	3.35	3.63	3.07	6.36	.002	

With the exception of the predictive value of the use of four varied information sources, the conceptualization of influences on anticipated satisfaction finds empirical support. Given this evidence that variables supposed to be influenced by the situation in which the consumer finds himself do indeed predict his level of anticipated satisfaction, an understanding of how situation affects these predictive influences becomes relevant.

The among situations analysis sheds light on how the situation affects the decision process of the consumer. In general, the greatest distinctions for the variables shown in Table 2 involve the differences between the away from home situation and the other two situations. In particular, anticipated satisfaction is lowest when the motorist is far from home. This reduced satisfaction may be interpreted in terms of the expected benefits. In this supposed most stressful situation, expectations are low for price, guarantee, and treatment benefits. But the traveling consumer emphasizes the determinance of little time wasted in his choice of a repair facility.

Although they were not influential in the formation of anticipated satisfaction, the information source usage variables all differ across situations. In particular, the use of a phone book rises markedly for the away from home situation. Not surprisingly, the traveler also favors physical search and turning to a stranger for aid.

Consistent with the above findings, anxiety increases for the motorist away from home, while it decreases when the malfunction occurs at home. Perceived risk follows the pattern of anxiety, with higher risk occurring along all seven dimensions when the motorist is away from home. This perception of risk conforms to the level of self-confidence which the respondent projects into the situation, as this measure indicates his self-confidence is lowest for the away situation and highest for the instance at home.

Conclusions

The conceptualized influences on the anticipated form of satisfaction appear to be largely confirmed by empirical test. The findings indicate situation exerts an important force in determining how a motorist faces the decision to select an automobile repair alternative. While situation affects all the constructs conceptualized to lie between situation and satisfaction, it appears the information source projected for use does not alter anticipated satisfaction. In any case, the importance of situation in influencing the decision process is substantiated, which knowledge appears especially useful in view of the inability of the various non-influenced variables to predict anticipated satisfaction.

Acceptance of the findings of this study must be tempered by realization that the data came from pencil-and-paper responses to an instrument which requested the respondents to project themselves into three situations which could be expected to have varying degrees of reality for these persons. However, to the extent the respondents were unable to adequately project themselves as requested, this inability should tend merely to lessen the impact of the situation statistically and thus decrease the significance of the results. For example, Sobel and McGuire (1977) found weaker relationships when they used anticipatory satisfaction than when they used post-experience satisfaction.

In another vein, situation could be expected to have differing levels of impact depending on the particular service (or product) introduced as the object of consumption. For example, the situation in which the consumer purchases a shoeshine would likely have less influence on his decision process than the situation in which he selects from alternative means of health care delivery.

Finally, the present emphasis on anticipated satisfaction, while broadly applicable because it is the relevant construct for decisions on both initial and repeat purchases, probably has reduced relevance to the repeat decision process. Repeat purchases, of course, furnish an important source of revenues for many marketing organizations.

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ATTACKING THE KNOWLEDGE GAP PHENOMENON

Donald P. Robin, Mississippi State University
Louis M. Capella, Mississippi State University
S. Roland Jones, Mississippi State University
Brenda S. Harmon (student), Mississippi State University

Abstract

Formulating an information strategy in which information is designed and distributed to bring about a greater increase in knowledge for all groups is an important task. The purpose of this study was to examine selected information strategy factors, determine the effect on the level of knowledge for the upper-lower socioeconomic segment, and judge the communicator's ability to close the knowledge gap.

Attacking the Knowledge Gap Phenomenon

Formulating an effective strategy in which information is designed, packaged, and distributed to bring about greater increases in knowledge for all groups is an important task for many organizations. Theoretically, the end result of these organizations is the dissemination of public information so that people can make more intelligent decisions about everything from purchases to politics, and tax structures to legal aid. However, research and experience have shown that simply making more information available is not enough, even when that information would appear to be beneficial to recipients.

The Knowledge Gap Phenomenon

A study conducted by Thorelli, Becker, and Engledow (1975) concerning subscribers of Consumer Reports in the United States provided a revealing profile of information seekers. Their data depicted the subscriber as the person with the money, communications skills, and motivation to use intensive, objective product information. The subscriber also exhibited a general preference for the print media. Since subscribing requires money and effort, and the print media requires communication skills, a firm could infer that selecting a different channel might make information more generally accessible. Evidence gathered in a study by McEwen (1978) of toll-free telephone number users suggested that the solution is not so simple. In this study the profile of the information seeker was consistent with Thorelli, Becker, and Engledow in that the toll-free number user was found to be active, involved, and socioeconomically elite. It was found that the toll-free number user solicits information from a variety of sources, not primarily the print media. The implication is that eliminating the need for subscribership, thereby increasing accessibility, suggests a somewhat lesser print-oriented seeker/user but not a less active or less knowledgeable information use. In addition, increasing the accessibility of information does not broaden the user base.

These findings demonstrate that the size and nature of the gap between information seekers and non-seekers cannot be reduced by a strategy which focuses only on information availability or accessibility. Unless audience members are shown that information is relevant and meaningful, information will not be sought even if it is highly accessible. Successfully disseminating information requires a thorough understanding of what information is needed and how it can best be organized and delivered for acceptance and understanding by audiences.

With respect to both the absolute level of knowledge and changes in the level of knowledge which individuals exhibit regarding a particular subject, organizations can benefit from considering evidence gathered on the knowledge gap phenomenon. As originally introduced by Tichenor, Donohue, and Olien (1970), the knowledge gap hypothesis holds that:

"As the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments, so that the gap knowledge between these segments tends to increase rather than decrease." (1)

The significant implication of this hypothesis for organizations trying to disseminate information is that some groups are more difficult to effectively reach than others. Thus, reaching the lower socioeconomic groups is a task that maybe more difficult for both commercial products and social ideas. The causes of knowledge gap phenomenon have been categorized into two groups.

- (1) audience-related factors such as ability, motivation and media behavior which cause widening gaps; and
- (2) message-related "ceiling effects" which cause narrowing gaps (Ettema and Kline, 1975).

An important hypothesis for use in trying to reach the lower socioeconomic groups and close the knowledge gap was formulated in an article by Cole and Bruner (1971) in the American Psychologist and called the "difference interpretation". The thrust of this theory is that people in various socioeconomic groups and/or from various cultures utilize their abilities differently (Ettema and Kline, 1977; Cole and Bruner, 1971). In this difference interpretation Cole and Bruner maintain, for example, that members of a higher socioeconomic class may exhibit their expertise in situations difference from members of a lower socioeconomic class. An implication of this explanation is that the knowledge gap phenomenon can be reduced by focusing on situation differences between higher and lower socioeconomic persons. The theory identifies situations in which (1) the individual is motivated to exercise their abilities; and (2) those in which it is functional for the individual to do so. Hence, it is predicted that segments of the population motivated to acquire the information and/or for which that information is functional tend to acquire the information at a faster rate. If the situation presented is attractive to the upper socioeconomic classes, then the knowledge gap tends to increase rather than decrease. If something intervenes to alter the motivation and/or function patterns of the lower socioeconomic groups it is reasonable to expect that the knowledge gap will continue to widen. Can the lower socioeconomic groups be effectively reached? If an information strategy could be developed to reach these groups, what components of the strategy would be more important? These were the questions pursued in this study.

Objective of the Study

The objective of this study was to examine selected approaches for disseminating information and determining the effect on the level of knowledge for a target lower socioeconomic group. A situation was selected in which the higher socioeconomic groups were expected to exhibit greater gains in the level of knowledge. Then, by analyzing the impact of the different information strategies on the target group, the researchers hoped to determine which if any of the strategies produced knowledge gains for the target socioeconomic group. If Cole and Bruner's difference interpretation hypothesis is essentially correct, different products or services and different media might provide different motivations for the lower socioeconomic classes. Of course, it must be functional for the class members to accumulate the information. For this reason, the study focused on a segment designated as the "upper-lower" socioeconomic class. Although the "lower-lower" socioeconomic class does save, it has the lowest savings rate and would not represent as good a market opportunity as the "upper-lower" socioeconomic class (Cunningham and Cunningham, 1981). For reasons that should become apparent, the "upper-lower" segment should have the motivation to accumulate information.

The "products" involved in this study were commercial bank services, two different types of savings accounts and a home improvement loan program. These services were selected because of their perceived social as well as commercial importance. It is important both on a moral and economic base, that lower socioeconomic segments have the financial information to make sound judgements.

The other components of the information strategy was media selection, and for this study the media involved was radio and newspaper. Two local radio stations (both AM and FM) were used for the study. Bank advertisements were scheduled during "drive times" each day. The one local newspaper was used for print advertising. All of the advertisements were one-eighth page in size and were located Run of Paper (ROP). Choosing the most appropriate media to carry the information to the target group, it is a potentially important factor. As noted previously, McEwen (1978) found that simply making information more accessible to all groups is not enough. Because different groups have different media preferences, organizations must understand and incorporate the media habits of the target group if they are to be reached. Thus, the use of specific media or media blends may better enable the organization to reach the upper-lower socioeconomic group.

Of particular importance for the upper-lower segment is that radio is an inexpensive oral medium and makes no assumption about the literacy of the listener. While the McEwen study required active participation on the part of the interested party, radio is a passive instrument. Obviously, the newspaper does require that the audience be able to read. Thus, it does not seem unreasonable for these media types to produce significant differences for the upper-lower socioeconomic segment.

Hypotheses

Can communicators with control of the available media and other important environmental events produce a significant change in the level of knowledge in the upper-lower socioeconomic group? To determine the potential effectiveness of the information strategy, the impact on other socioeconomic groups, several objectives are achieved. First, the basic impact on the knowledge gap can be appraised. Second, the degree and nature of the influence on the lower socioeconomic groups can be estimated. Third, the importance and impact of socioeconomic segmentation can be determined.

Incorporating the three objectives with the evidence gathered from the knowledge gap literature, the following

null hypothesis were developed for testing in this study:

- H₁: No difference in the level of knowledge occurs over a two week exposure period in the upper-lower socioeconomic segment when potentially important services are explained and different media are used.
- H₂: No difference in the level of knowledge occurs over a two week exposure period in the lower-lower, lower-middle, upper-middle, and upper socioeconomic segments when potentially important services are explained and different media are used.

Methodology

All four banks serving a small community were used in an experiment with advertising campaigns designed to inform the public of the three banking services. The campaigns were conducted over a six-week period using a Latin Square rotation of three banking services, combinations of available media, and three two-week time periods. Surveys were taken for each interval to measure changes in the level of knowledge about the three banking services. This process provided information which was used to determine the impact of different banking services and media selection. Recall posttesting techniques attempt to determine what individuals retain from advertisements. According to Runyon (1979) recall measures are particularly useful when the objective of an advertising campaign is to impart specific information. While the recall technique is appropriate in this study the ability to recall information under interview pressure may underestimate actual recall.

The community used in the testing the hypotheses was a town of approximately 12,000 in a county with population slightly over 31,000. The major source of employment is a state supported university with a student enrollment of 12,000 (not included in town and county population figures) although several small industries are also part of the community. The banking market for the area is clearly defined by the county lines. All four banks which service this market cooperated in the study by controlling their advertising in a prescribed manner over a six-week period. Three types of banking services used and title identically by all four banks selected as potentially important to the receiver.

- 1) Silver Savings - a relatively new type of savings account which earns compounded daily interest at 5 1/4 % per annum;
- 2) Golden Savings - an older, more established type of savings account which earns interest quarterly at 5 1/2 % per annum and has withdrawals restricted to the first ten days of the calendar quarter; and
- 3) Home Improvement Loans.

Silver Savings accounts were relatively new thus had no advertising history. Golden Savings accounts had been established for the past ten years and had primarily been advertised through newspaper and some local radio, but not to a great extent. Home improvement loans have been part of the banking services offered for some time but had received very little advertising attention in the past. The advertisements for each of the three services were "straight-forward" and focused on providing information. All of the copy simply stated the information the bank wished to convey with a minimum of body copy or pictures.

Residents surveyed in the study were selected using a stratified random sampling technique. Areas of the city were sectioned off into probable socioeconomic segments

Findings

based on occupation and income of residents and property values in the area. The are city directory was then marked indicating these areas and a systematic random sampling process was used to select those residents to be surveyed from each socioeconomic group. Data were collected by means of telephone interviews conducted during the early evening hours at the end of each time period. Telephone interviews were used because the questions were short and straight-forward, and the sample size was reasonably large. In each household an adult member of the family was questioned.

The sampling procedure used systematic replacements for those people who would not respond or who were not at home. An overall 82.2 percent of those contacted (all groups over all four surveys) participated in the study. The not-at-home rate was somewhat higher at 23.4 percent of all calls placed by interviewers, but neither rate was felt to be damaging to the study. Replacement was handled by randomly selecting more names from each stratum than was necessary and using them in the order selected. A total sample of two hundred was used for each of the four interview periods and that total was divided equally for each of the five strata leaving a sample size of forty per stratum per interview period. Since there were four interview periods, a total of eight hundred people were interviewed.

A 3 X 3 Latin Square design was used to test the hypothesis because it allowed the researchers an opportunity to study variations from an overall mean created by more than one variable. Every treatment was used once each category of each blocking variable as follows.

BANKING SERVICES			
TIME PERIOD	SILVER SAVINGS	HOME IMPROVE- MENT LOANS	GOLDEN SAVINGS
1 (2 weeks)	Newspaper and Radio	Radio	Newspaper
2 (2 weeks)	Newspaper	Newspaper and Radio	Radio
3 (2 weeks)	Radio	Newspaper	Newspaper and Radio

To determine the level of knowledge concerning each of the three banking services, four measurements were made. (Sample questions for the Golden Savings accounts appear in Appendix I.) Prior to the advertising programs, a pretest was conducted to gather information concerning prior knowledge about the three services. At the end of each two-week interval, another survey was conducted to again determine level of knowledge. In order to eliminate resampling previous respondents and thus avoid the learning which might occur from the questioning process after each person responded their name was "checked" to insure they would not be questioned again.

Analysis of variance (ANOVA) was used to test the significance of any variations from the overall mean. Analysis of variance was also completed on the mean scores for each time period, service type, and socioeconomic group. ANOVA is an appropriate technique because knowledge is the one metric dependent variable that represents the focus of this study, and because the predictor variable, banking services and media are nonmetric. F-ratios for each source of variation were calculated and each F-ratio was evaluated for significance to determine the confidence for each variation. The test produced a measure of variations in the average level of knowledge about those aspects of the banking services tested in the survey. Finally, multiple comparison tests were performed on the group means using the Tukey procedure.

In order to assess the changes in the level of knowledge, it is essential to evaluate the general level of knowledge which serves as the base for these changes. The mean for the entire Latin Square, or the mean level of knowledge for all time periods, all services, and all media combinations was 47.0 on a scale of 0-300 with 0 meaning no knowledge and 300 meaning complete knowledge. Additional insight on the general level of knowledge can be gained by observing the plot in Figure 1. It is important to note that the lower-lower socioeconomic segment has a general level of knowledge about the banking services of 15.0 significantly below that of the other groups. The progression of knowledge level from lowest to highest socioeconomic group was as expected except for the upper-middle socioeconomic segment. No further explanation is offered for the differences exhibited by that segment except that it included a large number of university faculty members. The overall evidence, however, does indicate that the upper socioeconomic groups had a relatively stronger base for acquiring additional knowledge, thus substantiating the knowledge gap hypothesis.

Knowledge Change for All Socioeconomic Groups

As indicated in Table 1, total knowledge changed from a knowledge score of 47.0 in time period zero to 65.7 in time period three for all socioeconomic groups. A rapid increase in knowledge was apparent in the first time period with a gain of 20.5 points. This was followed by a decline of 10.3 for time period two and succeeded by a subsequent increase in the final period to 65.7. The analysis of variance total F was 3.78 (p<.01). Thus, the total knowledge change for all five socioeconomic groups and all three services was significant over the total testing period. Using Tukey's range test (.05) time period zero was significantly different than time periods one and three.

TABLE 1
TOTAL KNOWLEDGE GAIN
OVER THREE TIME PERIODS
FOR FIVE SOCIOECONOMIC GROUPS

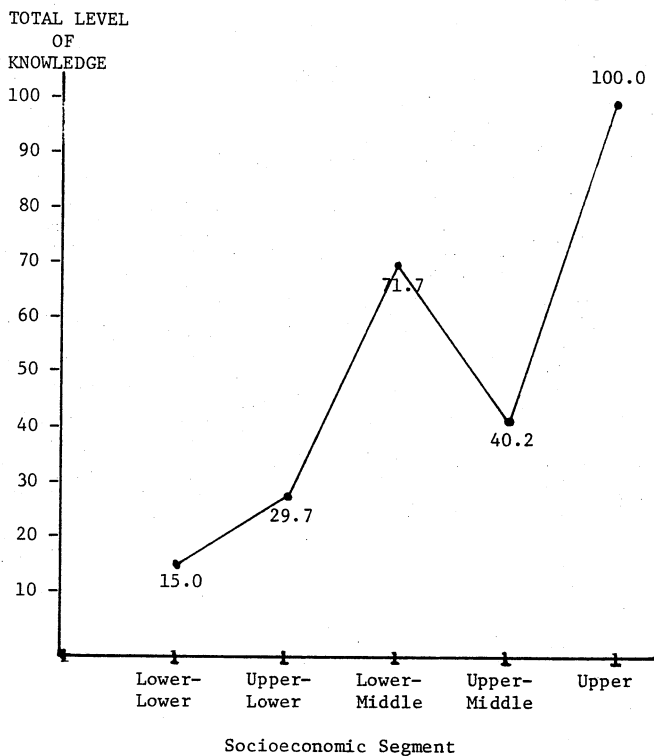
Socio-economic Group	Pretest	Time 1	Time 2	Time 3	F-Ratio
Lower-Lower	15.5	28.3	24.6	19.3	0.483
Upper-Lower	29.7	45.9	51.8	66.7	5.32**
Lower-Middle	71.7	88.5	55.6	96.1	3.24*
Upper-Middle	40.2	69.9	65.3	36.7	2.26
Upper	100.0	153.0	130.0	91.7	1.914
Total (All Groups)	47.0	67.5	57.2	65.7	3.78**
*P < .05 **P < .01	N=200	N=200	N=200	N=200	

The three services demonstrated various levels of knowledge growth during the testing period. The two savings accounts showed significant changes while the home improvement knowledge gain was not significant. Golden Savings knowledge increased gradually throughout all test periods beginning at 11.8 and ending at 22.4. The only significant difference was between time period zero and time period three. Silver Savings knowledge increased dramatically in

period one (to 18.6 from 10.1), however, leveled off to 14.4 at the final test phase. The only significant difference using Tukey (.05) was between period zero and period one. Home improvement knowledge increased only slightly over the entire test period from 25.2 to 28.9. No test periods were significantly different. It is interesting to note that level of knowledge increase and final knowledge levels varied by service with the greatest increases coming about in the savings accounts and the least change in home improvement loans. Initial knowledge level was highest for home improvement loans (25.2) while both savings had similar knowledge levels of around eleven points. It might be suggested that the initial levels of knowledge dictate a smaller increase in knowledge growth with some type of ceiling or "adequate knowledge" level operating to set a maximum on new knowledge gained.

Figure 1

Total Level of Knowledge of Banking Services Prior to Advertising Campaign by Socioeconomic Segment



Analyzing Reactions of Other Groups

Returning to the information in Table 1, total knowledge gains were undistinguished for all but two of the socioeconomic classes. The explanation for the lack of significant increase is undoubtedly different for the lower-lower socioeconomic group and the two upper groups. Cole and Bruner (1971) probably identified the reason for the lack of impact on the lower-lower segment when they suggested that the object must be functional or useful for the individual to exercise his information accumulation abilities. The lowest socioeconomic segment simply may not have enough funds to make the banking services highly meaningful.

The two upper socioeconomic groups were probably experiencing a "ceiling effect" where respondents were satisfied that they knew enough about the services to satisfy their needs. This explanation is probably especially appropriate for the highest socioeconomic segment because of the high levels of

knowledge it exhibited even in the pretest. As suggested previously the upper-middle socioeconomic segments idiosyncratic behavior is something of a puzzle and can be interpreted as a lack of interest when compared to the two groups that bracket it. An analysis of the demographic composition of the group revealed little to help explain its behavior except that it contained a large proportion of university faculty families.

The lower-middle socioeconomic group exhibited a growth in knowledge that was significant at the .05 level. Much of the explanation for the knowledge growth in the class can probably be extrapolated from the analysis of the target upper-lower group that follows. However, the level of knowledge for the lower-middle segment was considerably higher than that of the upper-lower segment throughout the testing period. Because of this substantially lower beginning level of knowledge, acquisition of information was much more important for the upper-lower segment.

Reaching the Upper-Lower Socioeconomic Group

This group was the one of primary interest to the researchers. Increasing the upper-lower socioeconomic group's knowledge of banking services was the intent of the communication. To some extent the effort succeeded in accomplishing its objective. Significant changes in knowledge levels were found for all three banking services using all three media combinations.

Table 2 reflects the significant knowledge increases with knowledge being greater at the end of the testing period for all three services and two of the media. The exception is a significant decline in knowledge via radio. This data suggests the first hint of the possible imprecision of the knowledge gap hypothesis. Although knowledge levels achieved by the upper-lower socioeconomic group do not reach the levels of the upper groups, the change in knowledge is significant. Thus, a "gap" exists but not an increasing gap as proposed by the hypothesis, and further, it is a gap that can be partly closed. From this data, it appears that over a period of time lower socioeconomic groups that have an interest in a topic area can close the knowledge gap if they are presented information in a clear concise manner. The longer term change is illustrated through the significant multiple range tests. Three of the service knowledge scores, total, silver savings, and gold savings were significant between the pretest measure and the time period three measure. Home improvement knowledge significantly increased in time period one. Newspaper were effective in changing knowledge significantly from periods one to three and two to three. Combined media efforts were effective from one to two while radio showed a significant decline in knowledge in periods two and three.

Table 2

Knowledge Level Changes for Upper-Lower Socioeconomic Group

TIME	PRETEST	1	2	3	F
Total Knowledge	29.7	45.9	51.8	66.7	5.32**
Golden Savings	9.6	5.9	14.9	23.3	4.386**
Silver Savings	4.0	9.6	11.8	15.7	2.963*
Home Improvement	16.1	30.4	25.0	27.6	3.122*
Newspaper	----	5.9	11.8	27.6	10.630**
Radio	----	30.4	14.9	15.7	4.148*
Newspaper & Radio	----	9.6	25.0	23.3	3.681

* Significant @ .05
 ** Significant @ .01

Conclusions

The results of this study partially confirm the existence of a knowledge gap phenomenon effect on the reception of knowledge. When comparing lower and upper socioeconomic groups over one time period and when comparing the lowest socioeconomic group with the other four groups over time the hypothesis has fairly high validity. However, this leaves the knowledge gap hypothesis incomplete. The phenomenon appears to be more complex than originally proposed. Certainly the type of information or knowledge involved has some effect on the increase in knowledge. More complex and more open-ended knowledge would probably be more susceptible to the knowledge gap phenomenon.

When viewed over time, the potency of the phenomenon declines. Future studies must involve several measurement periods to avoid the possibility of a methodological artifact problem. Further, information seeing may lend itself more toward the knowledge gap phenomenon than information dissemination and "passive" receiving. Finally, the ceiling effects of information or knowledge gathering may be important barriers for all socioeconomic groups not just lower groups. The knowledge gap hypothesis appears to have application in explaining differences in knowledge gains among audiences, but the situation and type of information can greatly influence the validity of this hypothesis, and in at least certain instances, the gap can be partly closed.

Appendix

SAMPLE QUESTIONS

Are you familiar with the Golden Savings accounts offered by local banks?

Yes _____ No _____ Uncertain _____

* If NO -- go to item "D".

* If YES or UNCERTAIN -- ask the following:

A. Do you know the rate of interest?

Yes _____ (Rate: _____) No _____
 Uncertain _____ Guess _____

B. Do you know how frequently the interest is earned?

Yes _____ (How? _____) No _____
 Uncertain _____ Guess _____

C. Do you know when during a calendar quarter you may make withdrawals?

Yes _____ (When? _____) No _____
 Uncertain _____ Guess _____
 (Only after premeasure on these)

*D. Have you notice this service being advertised lately? _____ Within the past month?

Yes _____ No _____ Uncertain _____

* If NO -- go to home improvement questions.

* If YES or UNCERTAIN -- ask the following:

A. Where did you notice the ad?

Newspaper _____ Radio _____ Both _____
 Other _____ Don't remember _____

B. If RADIO, which station? Don't remember _____

WKOR _____ WSSO _____ Both _____ Other _____

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PROVIDING INFORMATION FOR THE CONSUMER SEARCH PROCESS

Scott M. Smith, Brigham Young University

Abstract

Each of the three papers presented in this session focuses on issues related to the transfer of information. The Hirschman paper focuses on information transfer within three religious groups. Specifically, novelty seeking about consumption areas and the transfer of information to others are shown to differ across religious groups. Granzin and Schjelderup examine the anticipated satisfaction that comes from information transferred to the decision maker. The decision maker's anticipated satisfaction was shown to vary across situations given the level of self confidence, perceived risk, anxiety, and expected benefits. Robin, et. al., examined the impact of information transfer that was intentionally targeted toward members of a lower socio-economic group.

Gaining a Perspective on Information Transfer

Information transfer either from others to oneself (defined by Hirschman as novelty seeking), or from ourselves or from an institution to others occurs as a function of the desire for information. The consumer's desire for information may, in turn, be conceptualized to activate the search process. Each of the papers discussed operationalizes at least one construct related to the process whereby the transfer of information occurs. Little theoretical explanation of this process is, however offered in any of the three papers.

Numerous variables have been theoretically linked to information search. Many of these variables have been measured, including product related, situation related, and person related dimensions (see Table 1).

The Hirschman paper examines novelty seeking and the transfer of information to normative groups. Neither of these activities are rigorously defined in terms of the nature of or direct antecedents of the information search process.

The Granzin paper examines the dimensionality of information about the product and the respondent as correlates of anticipated satisfaction. Anticipated satisfaction is judged to be analogous to expectation as

defined by Oliver (1980). Although the dimensionality of "information" was related to expected satisfaction, causal linkages were not established.

The Robin paper measured the receipt of information using a knowledge index, given exposure to selected media and product advertisements. Although information was perceived, and knowledge gained, the dimensionality of this knowledge was not investigated.

In an attempt to integrate the viewpoints and objectives, and assess the theoretical contributions of the various papers, information search or transfer must be identified as a construct that is conceptually linked and even mediated by involvement (Newman and Staelin, 1972; Huston and Rothschild, 1977). Several forms of the involvement-search relationship may exist, with the level of mediation varying as a function of characteristics of the product, situation, or respondent.

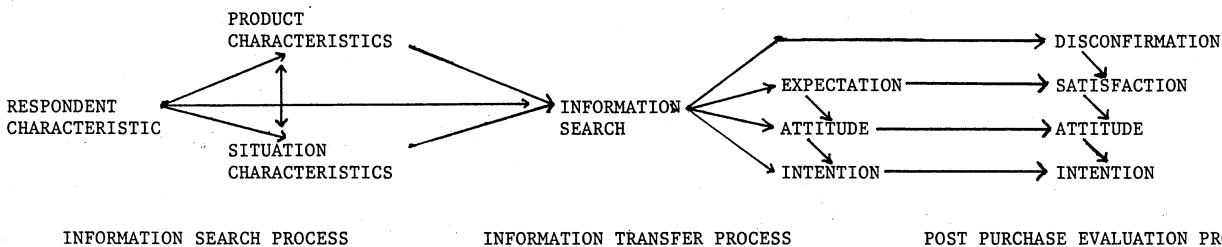
Product variables (Bettman and Park, 1980) that influence information search and information transfer may include price, guarantee, quality, performance, credit, and service (Granzin). Situation variables (Graham, 1981) to be considered might include urgency (Granzin), financial pressures, and special buying situations. Respondent variables (Kassarjian, 1981), include personality, enjoyment of shopping, anxiety, self confidence, and demographics such as religion (Hirschman), income (Robin, et. al.), and occupation (Robin, et. al.).

The absence of a conceptual framework identifying the dimensionality of information and relating it to information search or transfer is the major deficiency of the papers reviewed. The identification of these conceptual units and linkages is of primary importance if the conceptual and measurement rigor of this research stream is to be increased.

Churchill (1979) provides guidelines for increasing measurement rigor. Of prime importance is the specification of the domain of the construct, i.e., those variables that directly and indirectly influence the information search-transfer process. The specification of

TABLE 1

Information Transfer in a Search-Satisfaction Context



SOURCE: Adapted from Oliver, 1980.

the domain of a construct requires that a sample of items be generated. The dimensionality of the measures of the construct are next reduced or "purified" using alpha factor analysis (and coefficient alpha). Finally, validation of the measure is achieved by applying the multi-trait/multi-method approach to the collected data. Further analyses replicating the measures across situations, products, or patronage groups will lead to norms for expected results. It is with this foundation in mind that the information search-transfer papers are considered.

Religious Differences in Cognitions Regarding Novelty Seeking and Information Transfer

The Hirschman paper, through a brief review of interdisciplinary sources, makes it clear that religious differences impact on consumption. This relationship may be either direct, as when consumption of specific products varies as a function of the tenets held by the religious group, or indirectly, as a function of differences in fertility rates, political orientation, or even psychological constructs such as personality, self confidence, or aggressiveness.

Three religions - Catholicism, Protestantism, and Judaism - were investigated as cognitive systems. The term "cognitive systems" refers to beliefs, values, and expectations held and shared by the religious groups. The study design evaluated these systems while controlling for known differences in socio-economic status that existed across the religious groups. Strength of religious affiliation was similarly measured and assumed constant across religious groups. Unfortunately, this latter assumption may be questioned in that the large confidence interval associated with the Scheffe technique would tend to find no differences between the religious groups. A Student's t-test is suggested as the correct statistic for this analysis.

It is clear that the express purpose of the study is not to establish the dimensionality of information search or transfer. However, given the measures of novelty seeking and the transfer of information, a significant need for this conceptualization is present. Multiple measures, or a summative measure of the willingness to search for or share information would increase the validity of the conclusions.

The crux of the Hirschman study is a factor analysis of the 15 product areas, where the factors produced are indicative of product areas where a similar willingness to "try" or share exists. Although it is clear that factors should be labeled, the interpretation of these factors would seem to be overly strong. Because factors labeled "sensory experiential consumption," or "mass media consumption" differ across groups, differences in overall SEC or MMC are claimed to exist across religious groups. It should be recalled that the products included in the analysis were selected by judgmental sample. Confirmatory factor analysis using multiple measures of the resulting factors is suggested as an avenue for further research.

As a final methodological note, it is more expedient to conduct a three group discriminant analysis in lieu of comparing the three distinct factor structures, each of which was produced in a separate analysis. The discriminant analysis would provide a direct test of differences between the religious groups and avoid the problem of questionable inferences leading from the interpretation of the individual factors.

Situations as an Influence on Anticipated Satisfaction

The Granzin and Schjelderup paper is an attempt to model

satisfaction as a function of a variety of situation and enduring personal variables. Single measures of anxiety and self confidence, as well as multiple measures of product benefits, risks, and information search were included in the model and analysis.

The inclusion of multiple measures is a noteworthy methodological strength of the paper. This strength would be enhanced further, as would the model by incorporating multiple measures of the anxiety and self confidence constructs. Such a modification would provide for treating the multiple measures as random variables so that an alpha factor analysis could be conducted to purify the measures (Churchill, 1979). As a second benefit of the multiple measures approach, the dimensionality of the expected satisfaction could be established using path analysis.

The major question that can be raised about the study is a definitional question of the dependent variable: anticipated satisfaction. "Anticipated Satisfaction" measures the expected satisfaction resulting from the selection of one of eight types of car repair facilities given a particular car repair problem and situation.

Oliver (1980) would argue that the dependent measure is not a measure of anticipated satisfaction, but rather expectation. It is clear that the dependent measure is not a direct measure of satisfaction, but rather a measure of expectancy, and is defined as originating in expectancy theory. The difference would therefore appear to be one of semantics rather than one of substance, with "expected satisfaction" capturing the essence of the dependent measure.

As one final note, the results of the study reported as correlations between anticipated satisfaction and the situation influenced intervening variables are in many cases weak, but statistically significant. Individual correlations rarely exceed .20, explaining less than 4 percent of the variance. In conclusion, the strength of these findings may be increased by including alternative measures of the intervening variables. Alternatively, the intervening variables, if "purified," would provide single score or measure for the construct under investigation. This construct would necessarily provide greater explanation of the satisfaction variable. Finally, increasing the rigor of the definition of the dependent variable (an operationalization using actual satisfaction) is suggested.

Attacking the Knowledge Gap Phenomenon

The paper by Robin, et. al., is an applications paper demonstrating that differential acquisition of advertising information occur across social class groups. The increase in knowledge of three bank services was measured using telephone interviews of respondents from the respective social classes. As a preliminary issue, one must question why social class is investigated as an intervening variable in the dissemination of information. Similarly, the importance of the upper-lower social class must be questioned as an alternative to the lower-lower, or any other social class.

Market analysts would normally forego the ad hoc identification of any market group in favor of a market profile of patrons of each bank service. Unless members of the upper lower social class are an integral part of the bank services markets, the dissemination of information that occurs to the social classes is of little consequence.

The three papers show commonality when considered within the framework of using measures of information search. All too often studies are completed without consideration

of the theoretical linkages preceding or mediating the information transfer process being investigated. The methods of measurement refinement and path analysis provide useful insights for dealing with these problems.

Researchers and practitioners are urged to consider information search theory and measurement refinement techniques in dealing with the information transfer problem. Without search, there can be no effective transfer of information.

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DEALING WITH INDECISION - SHOULD WE ... OR NOT?

Ian Fenwick, York University
 Frederick Wiseman, Northeastern University
 John Becker, Becker Research Corporation
 James Heiman, Becker Research Corporation

Abstract

The treatment of "don't know", "no opinion" or other non-substantive responses is a problem in many consumer research surveys. This paper looks at the problem in the context of 1980 Presidential election opinion polls. An unusually high proportion of the electorate were "undecided" even in the final weeks of the campaign. Discriminant analysis is used to allocate undecided voters to candidates. The method is validated by a post-election follow-up survey.

Introduction

As a Presidential election year, 1980 produced the usual flood of political opinion polls. One noticeable aspect of many of those polls was the high proportion of respondents that could not, or would not, state a voting intention. Not only did there appear to be more undecided voters than in previous years, but their prevalence was particularly high in marginal states. Although the problem of "don't knows", "undecideds" and other non-substantive responses has often been discussed in consumer research literature and attempts have been made to characterize non-substantive responders (e.g., Ferber 1966; Bogart 1967; Sicinski 1970; Francis and Bogart 1975), few substantive methods have been developed to deal with the problem.

This paper uses discriminant analysis to allocate undecided voters to candidates. The method is applied to political opinion data collected two weeks prior to the 1980 election and is validated by post-election follow-up interviews.

Undecided Voters

Table 1 summarizes findings from some of the major national and regional polls conducted prior to the 1980 Presidential election. State wide polls for Pennsylvania, California, Michigan and New York all show undecided voters as more than 10% of the sample. Every poll in Table 1 estimates the gap between the leading candidates as less than the undecided vote. Clearly the action of undecideds has a major impact on the final election result, and the allocation of these undecided voters is crucial for successful election predictions and effective campaign strategy.

Two methods have been used to reduce the number of undecideds -- a secret ballot and a leading question. In the former approach, respondents are actually given a ballot and asked to indicate how they would vote if the election were held on the day the poll was being taken. Respondents, after choosing their candidate, place their ballot in a ballot box thus maintaining complete confidentiality of their preference. Perry (1960, 1979) indicates that the Gallup experience has been that when a secret ballot is used, the undecided percentage typically is reduced by as much as one third.

In the second method, undecided voters are asked the following question: "As of today, do you lean more to Candidate A or more to Candidate B?" Data from the Gallup organization indicate that this method is also effective in reducing undecideds, but not as effective as the secret

TABLE 1

Sample of 1980 Primary Polls*

POPULATION	DATES	POLL	ANDERSON	CARTER	REAGAN	UNDECIDED
National	Aug. 26-28	Gallup	15%	39%	39%	7%
National	Oct. 16-20	CBS/NYT	10%	43%	41%	6%
National	Oct. 14-16	ABC News	12%	39%	42%	5%
	Sept 3-7	Harris	17%	37%	41%	5%
National	Sept 4-6	Roper	13%	34%	40%	13%
Pennsylvania	Oct. 6	Pa. Poll	16%	33%	40%	11%
	Oct. 13-17	Gallup	12%	36%	41%	11%
California	Oct. 15-18	California Poll	14%	32%	39%	11%
	October	CBS News/NYT	11%	28%	40%	19%
Michigan	September	Opinion Research	17%	27%	29%	27%
	Oct. 14-16	Market Opinion Research	9%	34%	43%	14%
New York	Oct. 13-17	CBS News/NYT	10%	38%	29%	23%

*Sources: Time (October 13, 1980; September 15, 1980; November 3, 1980) and U.S. News and World Report (September 22, 1980, October 20, 1980, November 3, 1980).

ballot.

Each of the above methods has a major limitation -- the secret ballot can only be used in personal interview surveys; with the leaning approach, typically no more than 50% of the undecideds actually will express a leaning.

In summary, there is not now a satisfactory approach for allocating undecideds. This problem is increasing in magnitude since most polling organizations are now relying on telephone surveys where it is not possible to use the more efficient secret ballot approach.

The method that we propose is applicable under all modes of data collection and is described in the next section.

Methodology

Estimating the voting behavior of undecided voters is a two stage process. First, we fit a model to explain voting preferences of decided voters, using attitudinal, candidate evaluation and demographic data together with decided voters' stated voting intention. Second, this model is used to predict preferences for undecided voters given their attitudinal, candidate evaluation and demographic characteristics.

As voter preference is a categorical or nominally scaled variable, the appropriate analysis tool is multiple discriminant analysis. This technique uses a set of predictors to classify individuals into one of two or more mutually exclusive groups. This is done by estimating discriminant functions (linear weighted combinations of predictors) such that groups are maximally separated by their scores on these discriminant functions (discriminant scores). If there are only two groups involved this procedure is analogous to regression analysis with a dummy variable as the dependent measure. A single discriminant function will be estimated and its coefficients (predictor weights) can be interpreted as regression coefficients. If there are more than two groups the procedure is intuitively more complex, analogous to canonical correlation with dummy dependent variables. There will be more than one discriminant function to interpret: N groups will yield N-1 discriminant functions. In contrast to regression analysis, goodness of fit is measured not by variance explained but by the proportion of individuals that are correctly classified, the "hit rate".

For the 1980 Presidential election a 3-way discriminant analysis is appropriate. Decided voters can belong to any of three groups: intending Anderson voters, intending Carter voters and intending Reagan voters. Consequently two discriminant functions will be estimated.

Data for this study were obtained by telephone interview from a probability sample of 500 registered Massachusetts voters who were systematically drawn from all state-wide telephone directories. The sample was evenly divided between male and female voters. The actual interviewing was completed over a three day period, October 17-19, approximately two weeks before the general election. Clearly all the voter classifications presented here are as of that time and cannot reflect subsequent changes in voters, candidates or issues. Data collected included voting intentions ("If the November election for President were being held today and the candidates were John Anderson, Jimmy Carter and Ronald Reagan, for whom would you vote?"); candidate evaluations; opinions on a range of political issues, national and local; and demographic characteristics.

Results

Table 2 presents the results to the voting intentions question. Eleven percent of the sample reported that they did not intend to vote. Of those intending to vote 20% claimed they would vote for Anderson, 31% for Carter and 28% for Reagan. Twenty percent of all intending voters expressed no candidate intention. It is this 20% that we wish to classify.

A stepwise version of discriminant analysis was used allowing the best discriminators to be selected from 18 possible predictors. The final model adopted included 11 variables. These and their standardized coefficients are shown in Table 3. By far the best discriminators were candidate favorability ratings. These alone provided almost as good discrimination as the entire model.¹ As can be seen, there is a very marked division between those variables involved mainly in the first discriminant function and those involved mainly in the second. The first discriminant function relies only on variables involving Reagan and Carter; the second uses variables involving Anderson and Carter. In broad terms respondents intending to vote for Reagan are separated out by the first discriminant function. The remainder are then divided between Carter and Anderson by the second discriminant function. It is as well to point out that we make no attempt to attribute causality in this model. It is not intended to model how voters choose candidates, or even to assert that candidate preferences determine voting intention. Almost certainly there are major simultaneity problems. Candidate favorabilities both influence and are influenced by voting intention. The model in Table 3 is purely descriptive of the differences between groups of decided voters.

TABLE 2

Voting Intentions, Ma. Voters*
October 17-19, 1980

Candidate	Number	Percent
Anderson	94	19.7
Carter	148	31.0
Reagan	133	27.8
Other	6	1.2
Undecided	97	20.3
Not Voting	22	--
	n=500	100 %

*Response to question: "If the November election for President were being held today and the candidates were John Anderson, Jimmy Carter and Ronald Reagan, for whom would you vote?"

Classifying Decided Voters

The two discriminant functions can now be used to calculate two discriminant scores for each decided voter. The mean scores for intending Carter, intending Anderson and intending Reagan voters are plotted in Figure 1. These represent the group centroid, or position of the average voter of each type. Each decided voter is classified by plotting their discriminant scores in Figure 1 and assigning them to the group whose centroid is closest.² The effective boundaries between groups are shown by the broken lines in Figure 1. For example, respondent 102 (Figure 1)

¹Using candidate favorabilities alone produces a hit rate of 82%.

most closely resembles the average intending Carter voter and is therefore classified as an intending Carter voter. If this respondent has, in fact, reported the intention to vote for Carter this is a correct classification, a "hit".

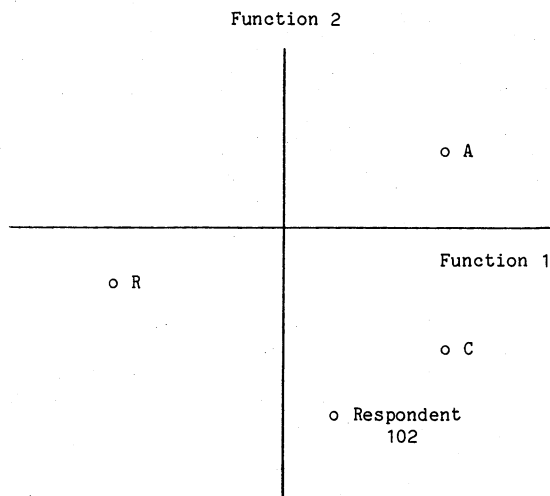
TABLE 3
Discriminant Analysis
Decided Voters

Variable	Standardized Coefficients	
	Function 1	Function 2
Favorability*		
Anderson	-.12	-.43
Carter	-.47	.27
Reagan	.46	.11
Likely to keep US out of war:**		
Anderson	.13	.23
Carter	.16	-.00
Reagan	-.13	-.07
Best against inflation**		
Anderson	-.01	.57
Carter	.12	-.16
Reagan	-.50	.04
Registered Republican**	-.14	.01
Expect Carter to win**	.15	-.07

*Coded: 1=Very favorable, ..., 5=Very unfavorable

**Dummy variable

FIGURE 1
Candidate Centroids



²This assignment rule assumes groups are of equal sizes. If it is known a priori that groups differ in size the allocation rule can be improved (Anderson, 1958). In all that follows equal sized groups are assumed. Use of a priori probabilities to reflect unequal sizes could improve hit rates.

Explanatory power of the discriminant analysis can be judged by the classification matrix, or "hits table", shown in Table 4. Diagonal elements give the number of correctly classified voters. Overall, 86% of decided voters were assigned to the correct candidate. This hit rate was highest for intending Reagan voters (93%) and lowest for intending Anderson voters (80%). The greatest confusion was between Carter and Anderson: 28 voters were misallocated between this pair compared to 12 between Carter and Reagan and 11 between Anderson and Reagan.

TABLE 4
Classification Table

Preference	Discriminant Classification			Total
	A	C	R	
A	75*	10	9	94
C	18	125	5	148
R	2	7	124	133
Undecided	19	35	40	94

*Read, 75 of the 94 respondents who said they planned to vote for John Anderson were correctly classified by the model.

Although there are some problems in the direct interpretation of hit rates (Morrison, 1969), in particular we are fitting and testing the model with the same set of data, the 86% hit rate is much higher than would be expected by chance alone and reassuringly high over all three voter groups.

Classifying Undecided Voters

The hit rate shows the discriminant model fits well for decided voters, however our major concern is undecided voters. Undecided voters can be classified by following exactly the same procedure as outlined above. A pair of discriminant scores are calculated for each undecided voter and plotted in Figure 1; again the voter is allocated to the candidate whose decided voter centroid is closest. This procedure assigned 20% of undecided voters to Anderson, 37% to Carter and 43% to Reagan.³

External Validation

Although the discriminant model fits the data well for decided voters, there is no immediate way to test its classification of the crucial undecideds. Thus, it was decided to conduct short follow-up interviews with a sample of the original respondents. This follow-up sample included 47 undecided voters and 52 decided voters. Field work took place on November 18-20, two weeks after the election.

Amongst other questions, respondents were asked how they voted in the 1980 Presidential election. Of those undecided voters who claimed to have cast a vote for one of the three major candidates, 61% voted as classified by the model. Accuracy was particularly high for Reagan voters

³Three undecided voters have missing values on one or more of the discriminating variables and were consequently dropped from the analysis.

(85%) and poorer for Carter (43%) and Anderson (46%).

References

Some part of the deviation between classification and voting behavior could be explained by changes in voter or candidate occurring between the initial survey (October 17 - 19) and the November 4th election; or by response bias in the follow-up survey. These non-model sources of error cannot be quantified directly for undecided voters. However it is possible to estimate these errors for decided voters. We can compare decided voters' intentions as stated on October 17 - 19 with their reports of voting behavior gathered on November 18 - 20. To the extent that decided voters are influenced by the same events and response biases as undecided voters, they may be used to calibrate predictions for undecided voters.

A comparison of pre and post election responses revealed that 24% of decided voters did not vote for the candidate that they had planned to vote for during the period October 17 - 19. Greatest switching occurred amongst intending Anderson voters of whom a third did not vote for Anderson. As voters claiming to be "undecided" on October 17 - 19 were presumably more susceptible to pre-election events than their decided counterparts, at least a 24 % error rate in classifying undecided voters could be attributed to voter/candidate changes between survey and election date. Consequently our 61% correct classification is very good: 80% of the suggested maximum.

Conclusions

Almost all opinion research produces some non-substantive responses. The way these responses are treated can have important implications for analysis conclusions. The 1980 Presidential election polls provided a useful environment for the study of this problem. Undecided voters were particularly prevalent and in many states held the balance between the leading candidates. However, the Presidential election was a temporarily fixed event such that the undecided were forced to reach a final decision by polling day. Consequently it was possible to arrange follow-up interviews in order to check the undecideds final actions. Although response error is a possibility (respondents may not report their true voting behavior), validation is more convenient than in many opinion research settings.

The model presented in this paper uses the characteristics of decided voters to estimate a discriminant function which then predicts voting patterns for undecided voters. Follow-up interviews show the model to be fairly accurate, correctly classifying over 60% of undecided voters. This is considerably better than could be achieved by chance and close to the accuracy achieved for decided voters (76%).

The key variables in this study were those related to candidate favorability. Whether or not such variables would be the major discriminating variables in future studies can only be speculated.

Clearly, the method needs further testing and validation. A successful application in one poll cannot justify widespread adoption. In particular it will be useful to compare discriminant classifications with alternative methods of allocating undecided voters.

The appeal of the method outlined in this paper is that it can be applied to any method of data collection. Existing methods such as the leaning approach and the secret ballot approach each has a major limitation, thus reducing their usefulness.

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LATENT TRAIT THEORY AND ATTITUDE SCALING: THE USE OF INFORMATION FUNCTIONS FOR ITEM SELECTION

Wagner Kamakura (student), University of Texas at Austin
Rajendra K. Srivastava, University of Texas at Austin

Abstract

This expository paper demonstrates the usefulness of Latent Trait Theory based procedures for purposes of attitude scaling. In particular, it is shown that different items provide different amounts of "information" (or discerning ability) for varying attitude levels. Consequently, items may be chosen according to their ability to provide information at specific attitude levels. Also, redundancy may be reduced by eliminating items presenting similar information.

Introduction

Traditional scaling procedures based on reliability measures have received the most attention for attitude scaling in the marketing research literature as evidenced by the articles in the special issue of the *Journal of Marketing Research* on measurement (February 1979). These procedures assume a constant standard error of measurement along the attitude continuum, i.e., reliability only indicates the overall efficiency of the scale across all attitude levels. Though the correlation of an item with the scale (for example, of a variable with the factor score) may help in choosing items that contribute the most to the scale, it is hard to decipher whether these items contribute to discerning ability at the high or low ends of the attitude scale. In addition, traditional procedures do not provide a measure for the specific contribution of each response category for measurement accuracy. For example, for Likert-type items, does "strongly agree" provide more information than "agree," given the item, along the attitude scale? Further, the alpha reliability coefficient leads to paradoxical rules for deciding which items, or how many items, to include in the scale: (a) items highly inter-correlated among themselves should be chosen to increase reliability, and (b) items with low intercorrelation among themselves, yet with high correlation with the major trait being measured should be included to enhance validity.

Finally, the "don't know" (DK) response categories have traditionally been handled by substituting the mean value (across respondents) or the middle category on a bipolar scale to reflect a difficult decision (Coombs and Coombs, 1977). Some research has also been conducted to determine if DK responses arise due to response style related to respondent's characteristics (Converse 1977, Francis and Busch 1975, Innes 1977). In general, however, research on the treatment of DK's is very limited: we don't know very much about how to handle "don't know" responses.

In this paper we present approaches based on Latent Trait Theory which allow the researcher to select items on the basis of their discriminant ability along the attitude continuum (thus if a researcher is particularly interested in increasing the accuracy at particular levels of attitude, for example, in the middle range to identify "switchable" prospects, s/he may do so by increasing the number of items which provide discriminating ability at those levels). An additional advantage of these approaches is the treatment of DK as nominal responses, thereby allowing the category to be represented by varying positions along likert-type measures, depending on the item. As is discussed in the next section, this provides additional information normally lost by treating DK's as missing values and potentially misrepresented by treating them as mean or middle categories.

Latent Trait Theory

In this section we examine the basic Latent Trait Models for dichotomous items and the later extensions for the polychotomous case. These models are based primarily on the stochastic approach for mental measurement introduced by Lord (1952) and Rasch (1960) in the early 60's.

Models for Dichotomous Responses

The theory developed by Lord (1952) is a variant on Lazerfeld's (1954) "Latent Structure Theory" restricted to a single dimension, where individuals are placed along a trait/attitude continuum, and the probability of them responding positively to a dichotomous item depends on the position of the item relative to the individual's position on this same dimension.

Rasch (1960) used a similar approach, but modeled the probability of positive responses as a logistic function of the individual's trait/attitude and the item characteristics, rather than a Normal Ogive function as used by Lord. Due to its simplicity and computational advantages, the Logistic Model has received greater attention in the literature than the Normal Ogive Model. An important extension of Rasch's Logistic Model is the 2-Parameter Logistic Model derived by Birnbaum (1968) which includes the possibility of items to differ not only on their position on the trait/attitude continuum, but also in their power to discriminate at different levels of that continuum.

In his 2-Parameter Logistic Binary Response (BR) Model Birnbaum defines the probability of a given individual j answering an item i positively as a logistic function of the individual's trait or attitude, and the item characteristics, such that,

$$P_{ij} = \frac{1}{1 + e^{-a_i(b_i - \theta_j)}} \quad (1)$$

where,

P_{ij} = probability of individual j answering item i with a positive response

θ_j = attitude level for individual j

b_i = position parameter for item i

a_i = discrimination parameter for item i

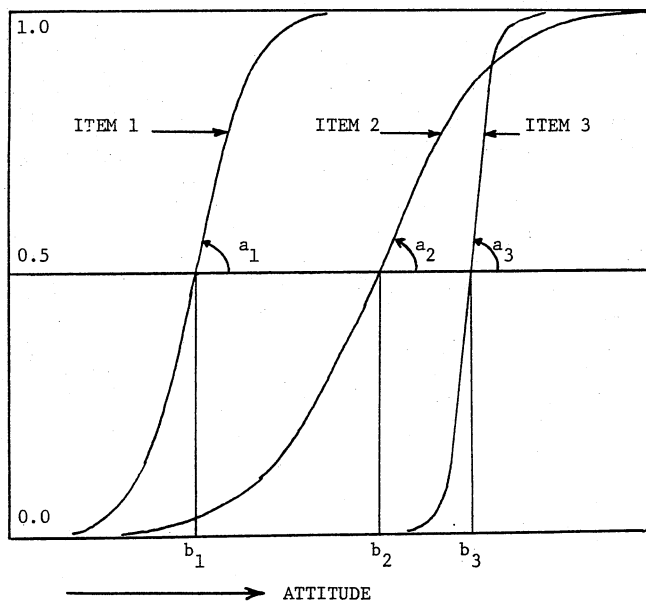
Following Rasch's original conceptualization, this model also placed items i and individuals j in the same attitude continuum. The position parameter b_i for item i is defined as the position of the item in the attitude continuum which would result into a 50% chance of a positive response. For an individual's attitude θ_j equal to the parameter position b_i , the exponent in Eq. 1 becomes null, and the probability of individual j answering item i positively results into $P_{ij} = 1/2$.

The discrimination parameter a_i for a given item i is defined as the maximum slope of the logistic function (also called Item Characteristic Curve (ICC)) defined in Eq. 1. The maximum slope of a logistic curve occurs at an attitude level θ_j equal to the item position b_i , i.e., at the midpoint as shown in Figure 1. And, the steeper the slope

(the higher the value of the discrimination parameter a_i) of an item, the better it discriminates among respondents with attitude levels θ_j in the vicinity of the position parameter b_i as a small variation in attitude will be detected by a large variation in the probability of positive response. The reader will note that when the slope $a_i = 0$, the item characteristic curve is represented by a straight line representing $P_{ij} = 0.50$, i.e., a 50-50 chance of a positive response, irrespective of the attitude θ_j of the respondent.

The definition of item parameters can be better understood in Figure 1, where item 1 and 3 are positioned on the lower and higher ranges of attitude respectively, while item 2 is positioned in the middle range. So, only individuals with high attitude levels θ_j will agree with item 3, since it is necessary to have an attitude higher than b_3 for a probability of positive response larger than 50%. On the other hand, only low attitude persons will disagree with item 1. Also, the reader can easily see that item 3 has the highest discriminatory power, since a slight variation of attitude θ_j around the item position b_3 results in a large change of the probability from almost zero to nearly one.

FIGURE 1
Item Characteristic Curves (I.C.C.): 2-Parameter Logistic Model (BINARY)



An important contribution by Birnbaum, besides his extension of the Rasch model, is the concept of Information Function (IF), which provides an indication of measurement accuracy for each level of attitude θ_j for each item in a scale. The information transmitted by an item at a given attitude level θ_0 is defined by Birnbaum as being inversely proportional to the square of the length of the asymptotic confidence interval for the estimate of θ_0 , or directly proportional to the square of the slope of the ICC at attitude level θ_0 . For the BR Model, Birnbaum demonstrated that the information transmitted by an item i of a given ability level θ_j can be calculated by

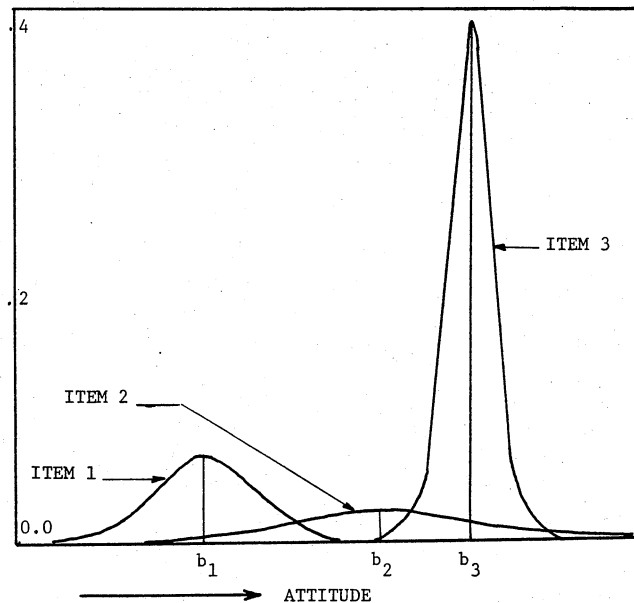
$$I_i(\theta_j) = [P'_{ij}]^2 / P_{ij}(1 - P_{ij}) \quad (2)$$

where P'_{ij} is the slope of the logistic curve at the ability level θ_j^{ij}

Hence, the concept of information is directly related to

the discrimination parameter a_i , and for the 2-parameter model, a more discriminating item will provide more information, with its maximum at the item position b_i . In Figure 2, the information functions of the same items in Figure 1 are plotted, and one can easily see that for the more discriminating item (Item 3) the information function reaches higher levels, and the peak occurs at the position parameter b_3 .

FIGURE 2
Information Functions: 2-Parameter Logistic Model



An important characteristic of the IF, as defined by Birnbaum is its additive property; the information transmitted by different items at a given attitude level can be added to obtain the total information transmitted by the scale at that attitude level. Hence it is possible to evaluate the contribution of each item and the total information transmitted by the scale. Moreover, the IF indicates the maximum accuracy attainable by each item at each level of the attitude, in contrast to traditional reliability measures calculated over the whole range. Thus, adding items with the same characteristics (item position b_i , item discrimination a_i) will improve the accuracy only in the attitude range already covered by the items, with no improvement on other levels of attitude.

Therefore, the concept of information function solves the reliability dilemma mentioned earlier in this paper. It provides objective means of selecting items for a scale, according to the researcher's objective. If a politician were interested in identifying voters with uncertain political attitudes, which might be susceptible to attitudinal changes, the scale should concentrate on items positioned in the middle range.

Models for Polychotomous Responses

Samejima's (1969) Ordered (Graded) Response (OR) Model provides a polychotomous extension for the case where there are two or more ordered categories. For example, in the case of an item scored on a scale of 1 to 3, two item response curves can be used to describe the conditional (on attitude level j) probability of responding to any particular category in a stage-wise manner. In the first stage, functions are obtained to represent the response in the first category versus a higher category (1 vs. 2 or 3), and

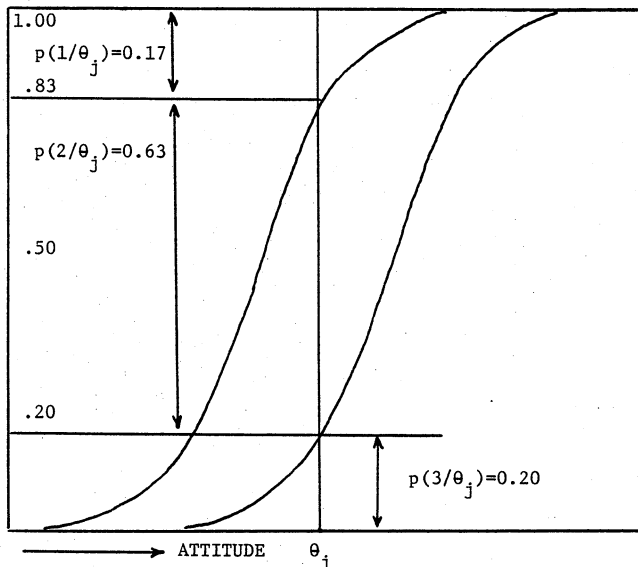
for a response in the first and second category versus the third (1 and 2 vs. 3). These response functions are represented by the curves in Figure 3. The second stage is merely to subtract the successive response functions from each other to obtain the desired response probabilities for each category. Note that the probabilities for the extreme categories are obtained by subtracting the response functions from 1.0 and 0.0. Then in Figure 3, for an individual with attitude level θ_j , the probability of responding with categories 1, 2 and three are 0.17, 0.63, and 0.20, respectively. The response functions in Figure 3 are easily modeled as:

$$F_{ijp} = \frac{1}{1 + e^{-a_i(b_{ip} - \theta_j)}}$$

where: F_{ijp} = probability of a person j with attitude θ_j responding to item i with category p or better. As in the binary model a_i may be interpreted as the discriminating power of item i and b_{ip} as the position of the p th category of item i on the attitude continuum.

The information function was defined by Samejima in a manner equivalent to Birnbaum's formulation. The OR model provides one information function for each response category of the item. Hence the contribution of each response category of an item to the measurement accuracy, at each level of attitude, can be assessed. The IF's can be summed across categories for an item to provide a measure of the items information value. Moreover, Samejima's OR Model makes no metric assumptions about the response categories; the interval between response categories is not fixed "a priori" and may even vary for different items. Even the

FIGURE 3
Example of Graded Response Model with Three Categories



rank order assumption about response categories is relaxed in the Nominal Response (NR) Model developed by Bock (1972). Bock developed his model as a polychotomous logit model, explaining the choice of one response category for a given item as a function of item-category parameters and the individual's attitude level. The model formulation, though somewhat more complex, is very similar to the binary model. This is because a 3-category rating scale may be represented by 2 binary rating scales or, in general, a n -category rating scale may be represented by $(n-1)$ binary scales. Bock's model provides ICC's and IF's for each nominal response category that can be interpreted in a manner similar to the binary model. For example, the ICC for each category (for a given item) represents the probability

that a respondent with a given attitude will respond with that category.

The main advantage of the NR Model over the OR Model is that since no assumption is made about the order of the response categories, their relative ordering is determined by the data itself and may vary for different items. Consequently, it is useful when there is no "logical" or intuitive order of the response categories, as it happens with "Don't Know," "No Opinion" and "No Answer" responses.

Methodology and Analysis

The data used to illustrate the use of Latent Trait Theory for attitude scaling is the "anomia" scale (Srole, 1956) drawn from the National Opinion Research Council (NORC) survey for 1973. Anomia is viewed as an individuals generalized, pervasive sense of social malintegration or "self-to-others alienation." The scale is unidimensional and consists of 9 items listed in Table 1, and three response categories (agree, disagree, don't know). 400 cases were selected at random from the total sample of approximately 1200. A larger sample was not necessary for computation accuracy and would have merely inflated the computing time/costs. The computational algorithm used was the LOGOG program (Kolakowski and Bock, 1973). The analyses and results are presented to illustrate: (1) item selection based on information functions, and (2) treatment of don't know responses.

First, the data are analyzed by means of the binary model which treats DK's as missing values. The derived parameters are used to develop ICC's and IF's. These curves are used to illustrate that (1) item positions vary along the attitude continuum, i.e., items provide information at different attitude levels, (2) items may be duplicative or redundant, i.e., provide the same information, and (3) items with lower slopes provide lesser information.

TABLE 1
Anomia Scale

1. Next to health, money is the more important thing in life
2. Sometimes you can't help wondering whether anything is worthwhile anymore
3. To make money there are not right wrong ways anymore, only easy and hard ways
4. Nowadays a person has to live pretty much for today and let tomorrow take care of itself
5. In spite of what some people say, the lot (situation and condition) of the average man is getting worse, not better
6. It's hardly fair to bring a child into the world with the way things look for the future
7. Most public officials are not really interested in the problems of the average man
8. These days a person doesn't really know whom he can count on
9. Most people don't really care about what happens to the next fellow

Source: Srole, L. (1956), "Social Integration and Certain Corollaries," *American Sociological Review*, 21, 709-16.

The results of the binary model are also compared with Alpha Factor Analysis (based on Cronbach's alpha) to illustrate the similarities and differences between Latent Trait Approaches and Traditional scaling techniques.

Second, polychotomous models are estimated treating DK's as middle values and then as nominal responses. The latter case allows DK's to "float", i.e., have a high, middle or low categorical position. The effect of the treatment of DK's on information is shown in two illustrative cases where it would be appropriate and inappropriate,

respectively, to treat DK's as middle or mean values.

Results

Selection of Items Using Information Functions

The first two columns on Table 2 presents goodness-of-fit statistics (Chi-Square and significance level α) for Birnbaum's 2-Parameter Logistic Model, applied to the 9-item Anomia scale, with Don't Knows keyed as missing values. The estimated item position parameters b_i 's and discrimination parameters a_i 's are shown in Table 2 and the corresponding ICC's and IF's are presented in Figures 4 and 5. From the ICC's in Figures 4 and the position parameters b_i in columns 3 and 4 in Table 2 one can see that the 9 items concentrate on the range of attitudes between $b_8 \approx -1.1$ and $b_3 \approx 1.6$. Therefore, this scale will provide its best measurement accuracy on this range of attitudes (since each item provides its maximum information near its position b_i). By comparing ICC's one can see that items 5 and 7 are somewhat redundant, ($b_5 = -.588$, $b_7 = -.562$; $a_5 = 1.132$, $a_7 = 1.032$), providing most of their information at the same levels of attitude. The IF's plotted on Figure 5 confirms this redundancy, showing items 5 and 7 with the same shape, peaking at the same attitude level. Also, items 2 and 4 have similar ICC's and IF's.

TABLE 2
Item Parameter: 2-Parameter Logistic Model
(Don't Knows as missing values)

ITEM	Goodness of Fit (Chi-Square)	Significance Level	Item Position (b_i)	Item Discrimination (a_i)
ITEM 1	24.1	.001	1.012	.676
ITEM 2	28.9	.001	.214	.702
ITEM 3	15.4	.050	1.592	.754
ITEM 4	13.0	.100	.092	.784
ITEM 5	15.4	.050	-.588	1.132
ITEM 6	16.9	.025	.405	1.330
ITEM 7	16.4	.025	-.562	1.032
ITEM 8	15.4	.050	-1.073	1.322
ITEM 9	5.5	.500	-.154	1.442

FIGURE 4
I.C.C. for ANOMIA Items: Binary Model

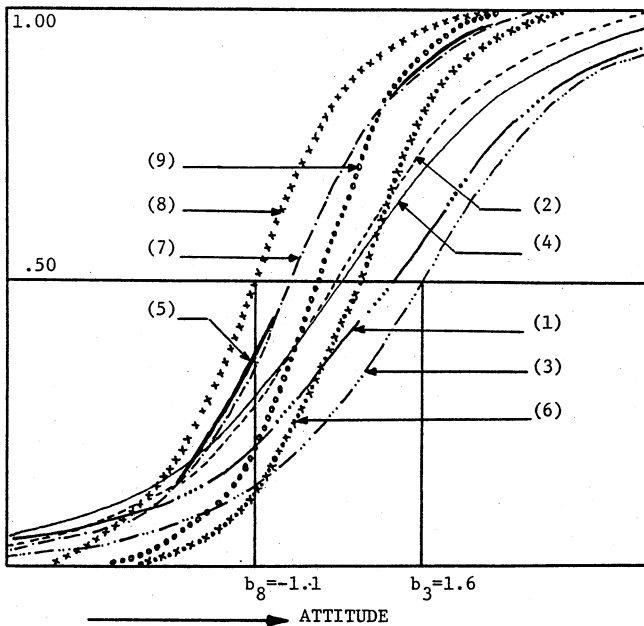


FIGURE 5
Information Functions for ANOMIA Items: Binary Model

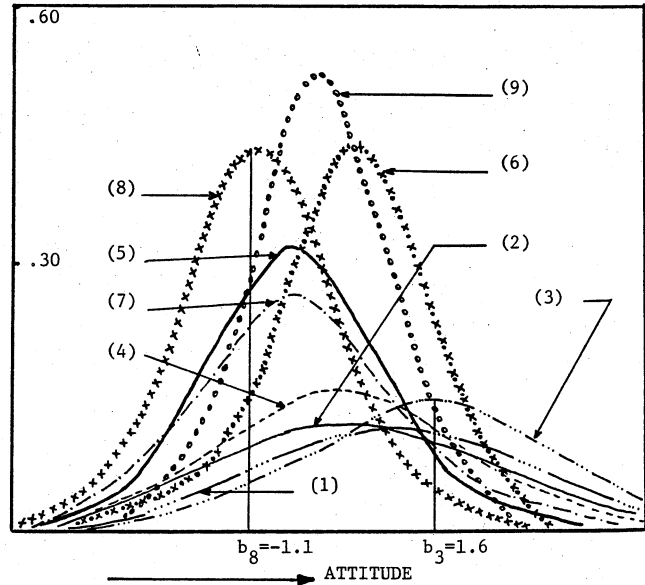


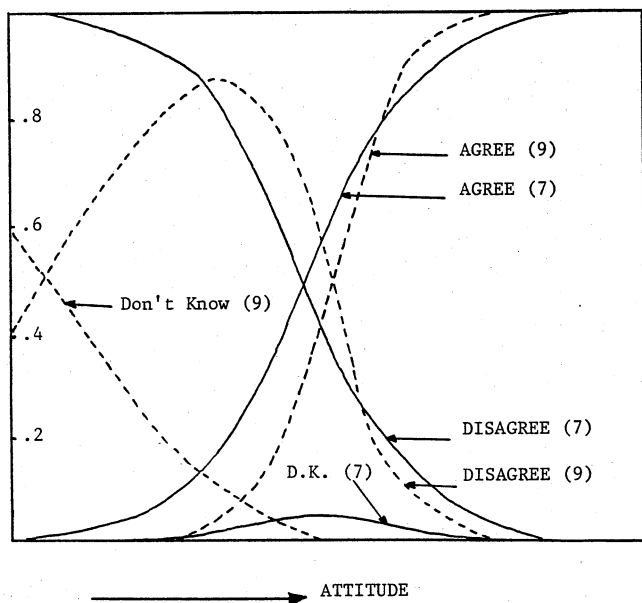
Figure 5 also shows a clear distinction between items 1 through 4, which provide low information, and items 5 to 9, which have IF's peaking at higher values (and higher a_i values). This difference between the two sets of items confirms the results of Alpha Factor Analysis performed on the same data (treating DK as missing values). Alpha Factor Analysis resulted in the derivation of only one factor (eigenvalue = 3.14) based on the elbow rule. The factor loadings for items 1 through 9 were, respectively, -0.004, 0.028, 0.074, 0.073, 0.330, 0.560, 0.418, 0.422, 0.495. It is easily observed that items 5 through 9 which have higher Factor Loadings also have higher peaks for their corresponding information functions (Figure 5). It would appear that either procedure (Alpha Factor or Latent Trait) would select the same items for the scale. However, the IF's provided by the Latent Trait procedure indicate the attitude levels where the items are most informative. As shown in Figure 5 item 8 provides its highest information at low attitude levels while item 6 is more informative at high levels. Besides that, the IF allows the researcher to identify redundant items (5 and 7; 2 and 4), which would not be detected by reliability measures. It would seem useful to retain item 5 (item 7 has a lower slope/IF peak) if the objective were to reduce redundancy of items. However, this would also lower measurement accuracy around attitude level $\theta_j \approx -0.57$.

Treatment of Don't Know Response Categories

The OR Model with DK between "Disagree" and "Agree" was applied to the anomia scale. To avoid this restrictive assumption, the NR Model was applied to the same data. Of the 9 items in the scale, only items 3 and 9 resulted in the categorization of DK's at the lower extreme (i.e., in the ordering DK, Disagree, Agree). To demonstrate the effect of considering DK as a middle category we present the ICC's derived from the NR model for items 7 and 9 in Figure 6. As the anomia increases the probability of agreeing with items 7 and 9 increases. However, with an increase in anomia the probability of disagreeing decreases monotonically for item 7 while it first increases and then decreases for item 9. Finally, the probability of answering don't know increases as anomia decreases for item 9 while it has a maxima at an intermediate level for item 7 indicating that DK is "ordered" as a middle category for item 7 and a lower extreme category for item 9.

Given the "orderings" based on the NR model we would expect the OR model to fare as well for item 7 and not quite as well for item 9. In the latter case (item 9) forcing DK as a middle category would lead to a loss of information. This is clearly illustrated by the IF's for items 7 and 9 corresponding to BR, OR and NR models in Figure 7. For item 7, the inclusion of DK as a middle category increases the information transmitted by the item compared to the binary model which treats DK as missing data. The relaxation of the rank order assumption in the NR model does not improve the information compared to OR model, which might be taken as an indication that DK is indeed a middle category. For item 9, the inclusion of DK as a middle category also results in a gain in the information transmitted by the item. However, when the NR Model is used (resulting into a low extreme position for DK's as mentioned before), even more information is gained, not only at the peak but also at low attitude levels where the probability of DK responses increases. This indicates that useful information (or discerning ability) is lost at the low end of the attitude scale by treating an extreme (low) value DK response as missing data or as the middle category. Of course it would be hard to define DK at the low extreme a priori. It should be noted that the NR model simply chooses the position of the DK category in order to obtain the "truth." However, if the ICC for DK fits a small range it is likely that its mean is consistent across respondents sampled. If the curve is spread out DK means different things to different people.

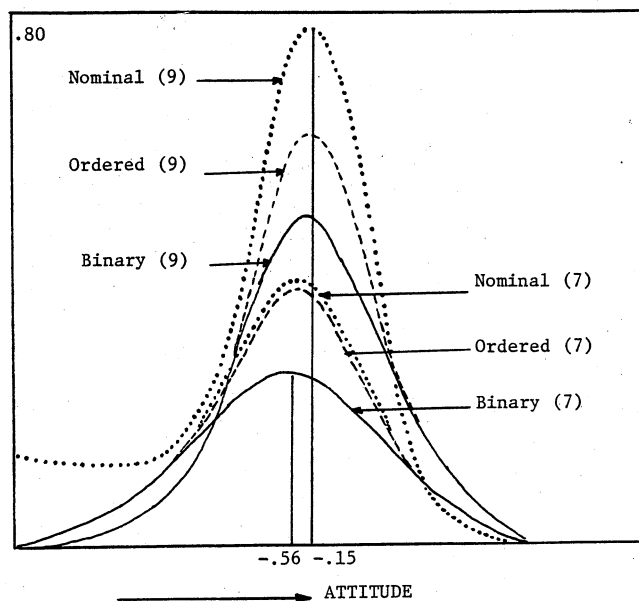
FIGURE 6
I.C.C. for ITEMS 7 and 9: Ordered Response Model
(D.K. at middle)



Conclusions

This expository paper serves to illustrate the use of Latent Trait Theory based procedures for attitude scaling. In particular, the item characteristic curves and information functions can be useful for item selection in scale construction. Latent Trait Theory models may be more useful than traditional scaling techniques because they not only provide measures of item information value, but also measures of the attitude levels at which items are likely to have the greatest discriminating ability. These measures may be used to delete redundant or duplicative items and/or to consciously increased the accuracy of the scale

FIGURE 7
Comparison of Information Functions - ITEM 7 and 9



at desired attitude levels.

Additionally, responses to multiple category rating scales may be analyzed by the Nominal Response Model which provides measures of contributions made by each response category of each item at each attitude level, rather than a general measure of the relationship between individual items and the scale. The Nominal Response Model does not require any metric assumptions about the data and "don't know," "no opinion" and "no answer" categories can be scaled and used as sources of information for attitude measurement. As shown (for items 7 and 9), "don't know" responses may contribute to measurement accuracy and their contribution may occur at different ranges of attitude, depending on the item.

Finally, it should be mentioned that the Latent Trait Theory based procedures have other advantages not discussed in this paper. The calibration procedures are independent of the specific items used (item-free attitude scaling) as well as the sample (sample-free scale calibration) as discussed by Wright (1968). Also, once the parameters are determined for each item-category composition, it is feasible to develop "tailored" procedures for data collection to be used on other samples. For example, if a respondent disagrees with an item having a low position parameter (b_i) along an attitude continuum, it is not going to be very useful administering items that have higher position parameters. This feature should become increasingly important with the advent of interactive, computerized data collection procedures. It is hoped that this paper will provide the impetus toward increased usage of Latent Trait Theory based attitude scaling procedures which furnish more objective scale construction criteria.

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AN EVALUATION OF THE CHARACTERISTICS OF RESPONSE
QUALITY INDUCED BY FOLLOW-UP SURVEY METHODS

P. J. O'Connor, University of Kentucky
Gary L. Sullivan, University of Cincinnati
Wesley H. Jones, E. I. Du Pont De Nemours

Abstract

A study was undertaken to determine the efficacy of using follow-up questionnaires in survey research. Results indicate that such a procedure is an effective tool for increasing response rate. While the number of items omitted is greater in follow-up waves, the reliability and validity of the data collected is not lessened.

Introduction

During the last few years, an increasing awareness of the problems inherent in the interpretation of survey response data has been evident in the published literature (Peterson and Kerin, 1980; Jones and Linda, 1978; Jones and Lang, 1980). In an effort to upgrade the quality of the literature in consumer behavior, explicit attention is now being paid by editors and reviewers in major journals to response rates in evaluation of manuscripts for publication (Ferber, 1980). Increasingly, sample composition differences seem to offer viable alternative explanations for contradictory findings in published research.

Much of the early research on survey methodology was highly singular in its focus on the issue of overall response rates. This early literature lacked a theoretical framework upon which to evaluate the nearly limitless procedural options available to the survey researcher (Kimball, 1961; Watson, 1965). As a result, much of this literature is of the trial and error variety. While many of the techniques studied in this fashion are widely used today, typically, the only criteria used to evaluate the suitability of the technique was its effect on overall response rate.

Recently, the set of criterion variables has begun to expand. In addition to overall response rate, attention is now being paid to item non-response in questionnaires, response bias in questionnaire completion, and sample composition bias as issues of concern in survey administration (Peterson and Kerin, 1980; Jones and Linda, 1978; Jones and Lang, 1980). This study addresses the as yet unresearched issues of test-retest reliability and convergent validity (Heeler and Ray, 1972) in survey methodology. Specifically, the effects of sponsorship and the use of follow-up questionnaire mailings are addressed on these two criterion variables.

Survey follow-up techniques which include supplying respondents with replacement questionnaires are generally recommended as a means of substantially improving response rates. However, it is important to ask whether the apparent reduction in sampling error might be accompanied by an increase in systematic response error. A respondent may hastily complete and return a questionnaire on the second or third mailing simply to avoid receiving further contact from the sponsor. The completeness of the returned questionnaires and the reliability and validity of subjects' responses would be suspect in such cases. This study was designed to explore these possibilities.

Method

As part of a larger research study, a mail survey of 1200 households was conducted in a midwestern state. The study

employed a two stage sampling procedure mandated by the study sponsor. First, eleven counties in the state were randomly selected. Then, within each county, 109 household addresses were selected at random from local telephone directories; except for one county where 110 households were selected.

The survey questionnaire was mailed to these 1200 households. Two weeks later, an identical questionnaire was mailed to the same 1200 households along with a note thanking the respondents for their cooperation if they had already returned the questionnaire and asking them to complete and return it promptly if they had not yet done so. Two weeks after that, yet another wave of questionnaires was sent out to these households. All of the questionnaires were numerically coded so that they could be identified by mailing wave when returned.

The questionnaire was twelve pages in length. The first page of which contained a cover letter providing a statement of the research purpose and necessary instructions for completing and returning the instrument. The organization sponsoring the survey was manipulated. Sponsorship of the study was attributed to one of two sources; either the major University in the respondents' state or the state's Department of Transportation. Nine pages of the instrument consisted of 99 questions which probed the respondents' attitudes and behavioral intentions with respect to a host of traffic safety issues. The eleventh page of questions queried the respondents about their media habits and, finally, the last page asked for demographic data.

Question 3 of the survey asked respondents to rate the seriousness of seventeen different traffic safety problems using seven point semantic differential-type scales. Eight pages later, question 98 exactly repeated eleven of the stimulus items from question 3 using the same measurement scales. The remaining six stimuli from question 3 were employed in question 99 which utilized a different measurement format; rather than the semantic differentials used previously. In this way an assessment of the test-retest reliability and convergent validity of these questionnaire items could be obtained.

Analysis

Response rate is the proportion of mailed questionnaires that were returned by the sample households. There were 494 total questionnaires returned from the 1200 households surveyed producing an aggregate response rate of 41.2% for the study. However, 34 of the questionnaires were unsuitable for analyses. Some people returned the survey along with a note stating that they felt unqualified to respond to the issues. Other questionnaires were received which were simply uninterpretable. Also, a few people cut off the numerical codes thus preventing determination of the wave to which they belonged.

This left a total of 460 useable questionnaires, an effective response rate of 38.3% for analyses. As can be seen in Table 1, there was virtually no difference in response rate due to survey sponsorship. However, only 254 questionnaires, or 55.2% of the total useable returns, were obtained from the first mailing wave. There were 139 (or 30.2% of the total) returns from the second wave and 67

(or 14.6% of the total) returns from the third wave. Thus a large percentage of the final sample available for analyses resulted from the follow-up mailing procedure employed in this study.

TABLE 1
Response Frequency

Wave	Sponsorship		Totals
	University	DOT	
First	131	123	254
Second	68	71	139
Third	38	29	67
Totals	237	223	460

Item omission refers to the total number of questionnaire items that a respondent left unanswered. There were 331 individual items contained in the questionnaire. The number of items omitted ranged from a low of 5 to a high of 281 with a mean omission of 36.72 across all three survey waves. There was a substantial increase in the level of item omission for questionnaires returned after the first wave, however. The mean number of omitted items for each wave was 32.01, 44.56, and 38.33 respectively.

Unreliability was assessed by the within subjects differences in ratings of the eleven items which were measured twice in the survey instrument. Due to the separation of the items in this lengthy questionnaire, a reasonable test-retest measure of reliability was available. The following unreliability index was constructed for use in analysis.

$$U = \left(\sum_{i=1}^n |F_i - S_i| \right) / n \quad (1)$$

where: F_i = first rating given the item
 S_i = second rating given the item
 n = number of items rated both times

The index computes the absolute magnitude of the difference in ratings of the repeated items. The differences were then summed and divided by the number of items rated both times by a respondent. In this way the index is standardized across respondents to account for item omissions. The theoretic range of this index is from 0 to 6, where higher numbers indicate greater respondent unreliability. In this study, the unreliability index values actually ranged from 0 to 3.91 with a mean of 1.41 across respondents. A frequency distribution of the unreliability index is presented in Table 2 indicating that there was a good deal of unreliability present.

TABLE 2
Index Frequency

	Unreliability	Invalidity
0	23	64
0.01 to 0.50	21	20
0.51 to 1.00	115	119
1.01 to 1.50	143	106
1.51 to 2.00	95	89
2.01 to 2.50	35	56
2.51 to 3.00	21	4
3.01 to 3.50	6	-
3.51 to 4.00	1	1
4.01 to 4.50	-	-
4.51 to 5.00	-	1

An index of invalidity was constructed in a similar manner after correcting for differences in measurement methods. The scale data for the remaining six items were rescaled for directionality in order to make them compatible with the original ratings in question 3 of the instrument. These were then used as input for the following invalidity index where the symbols are as above.

$$I = \left(\sum_{i=1}^n |F_i - S_i| \right) / n \quad (2)$$

Again the theoretical range of the index is from 0 to 6, with higher numbers indicating greater respondent invalidity. The actual invalidity index values obtained in this study ranged from 0 to 5.00 with a mean of 1.40 across respondents. Table 2 contains a frequency distribution of the invalidity index.

In order to determine the effects, if any, of survey sponsorship and the follow-up mailing procedure, item omission as well as the unreliability and invalidity indices were used as dependent variables in three separate analyses. Along with survey sponsorship and the wave from which the questionnaire was returned, a few demographic variables were used as covariates in an effort to determine if differences in these variables might account for some of the variation in the dependent measures.

The usual procedure is to analyze this type of data using analysis of variance (ANOVA) techniques. Use of such techniques requires that the effects be additive. Satisfaction of this requirement can be accomplished by cell size equality. However, due to the response rate variation (see Table 1), substantial differences in cell sizes were encountered in the analyses. Accordingly, it was necessary to adopt the general linear hypothesis (Namkoodiri, Carter and Blalock, 1975; Perreault and Darden, 1975) approach in testing for effects. The general linear hypothesis uses least squares analysis to compute partial regression coefficients as parameters of the additive model effects.

The significant regression coefficients for all three analyses are presented in Table 3. The independent variables of sponsor, wave, sex, and race were dummy variables coded as 0 or 1. University sponsorship was coded 1 as was male and non-white race. Education is the subject's report of the number of years completed in school and income is annual household income in thousands of dollars. Only the main effect results are listed since all interactions were found to be non-significant.

TABLE 3
Significant Regression Coefficients ($\alpha = .05$)

	Item Omission		Unreliability		Invalidity	
	β	Standard β	β	Standard β	β	Standard β
Sponsor	NS	NS	0.23	3.83	NS	NS
Wave 2	8.08	2.28	NS	NS	NS	NS
Wave 3	5.06*	1.67*	NS	NS	NS	NS
Education	-3.05	-5.56	-0.03	-3.00	-0.13	-4.33
Sex	NS	NS	0.14	2.33	NS	NS
Race	18.05	2.99	NS	NS	NS	NS
Income	-0.32	-2.29	NS	NS	NS	NS
Intercept	83.62	-	1.09	-	3.57	-
R ²	.13		.06		.05	

* significant at the .10 alpha level

Not surprisingly, there were significant beta coefficients for wave with respect to item omission. The follow-up method results in significantly more items left blank. There were also some significant differences due to demographic factors. As can be seen in Table 3, there were more items omitted among the lower educated, lower income and non-white groups.

The wave from which the questionnaire was returned did not

effect the unreliability index. Sponsorship did have a significant beta coefficient, however, with University sponsorship resulting in more unreliability. It was also found that unreliability was greater among the less educated and among males rather than females. Neither sponsor nor wave was significant in explaining the invalidity index. In fact, educational level was the only variable that had any effect. The lower the respondents' education levels the more invalid the data.

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Discussion

Based upon this research, the use of follow-up questionnaires to increase response rates in mail surveys seems to be a very effective tool. While the completeness of such follow-up questionnaire data is lessened, the quality of the data doesn't seem to suffer. Perhaps, respondents who reply to the second or third wave of a questionnaire are motivated more by a desire to end contact with the sponsor of the study than by their interest in the subject matter of the survey. Thus, they leave many more items blank. Further research is needed to determine the accuracy of this assumption. However, there was no evidence in this study to indicate that there is any systematic bias in the responses that these subjects do provide.

The follow-up procedure used in this study is recommended for survey researchers who need to assess accurately the composition of their sample, but from whom an increased level of item omission would not pose a serious problem. One aspect of the results which is somewhat enigmatic is that due to survey sponsorship. The two different sponsors used in this research were found to have a differential impact on the unreliability index, but not on the invalidity one. The reasons for this are not readily apparent. This is an issue that deserves further investigation.

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COMMENTS ON THE THREE SURVEY RESEARCH PAPERS

Seymour Sudman, University of Illinois

The paper by Fenwick, Weisman, Becker and Heiman gives us an imaginative use of discriminant analysis to allocate undecided voters to candidates. The procedure is validated by a post-election follow-up survey that obtained reported voting behavior. As the authors point out, this new procedure has several advantages over existing voter allocation procedures, among which is the fact that it can be used on the telephone.

I believe that this new procedure should and will have substantial use in future election studies. I would suggest one extension that may be even more important, especially in primary elections--discriminating between those registered voters who will and will not vote. When asked this question, particularly in primaries, a large number of respondents are usually undecided or uncertain and a method for making a forecast about this behavior would also be very useful. It may be, however, that it is more difficult to discriminate on intention to vote than on which candidate will be selected. Still, it seems worth exploring. Finally, let me congratulate the authors on what I think is the best title at this ACR conference.

The paper by Kamaura and Srivastava on the Use of Latent Trait Theory is an example of a new research method that is sweeping through social psychology and is attracting substantial interest. It may have major importance in consumer research measurement. I would suggest that at this stage in the development of Latent Trait Theory as discussed here one is better off with a middle position. The procedure is interesting, needs to be considered and tested in real world situations, may help to solve some problems, but is not the answer to all attitude scaling problems.

Since the authors have pointed out the possibilities, let me point out some of the problems. First, as with all attitude scales, the procedure assumes that the respondent has an underlying attitude. Many people may not have well-defined, reliable attitudes on certain topics and no scale wordings or mathematical procedures can solve this issue. The don't know that reflects this lack of interest in the topic is not resolved by this or any other scaling procedure. A second problem, is whether or not there is a single universe, or whether the values of a_i and b_i vary among different segments of the population. This, of course, is similar to the regression problem.

Another issue relates to the question of the sampling variances of the estimates. These are not universe values, but complex sample estimates that have variances attached. It is possible to measure this reliability by interpenetrating samples--that is, replication. As an aside, it is not clear to me what the authors mean by their concluding claim that the procedures are independent of the sample. The method may be, but the results certainly need not be.

I am also unclear about the authors' claim that the procedure may be used to eliminate redundant or duplicative items. To the extent one wishes to do this, at the expense of reliability, much simpler methods are available. What is clearly superior in this new procedure is the ability to evaluate items at different attitude levels.

The paper by O'Connor, Sullivan and Jones addresses the issue of response quality induced by follow-ups to mail

questionnaires. It has long been known that follow-ups improve cooperation, but less well known is whether there is an adverse effect on response quality. In analyses of data from personal surveys, most researchers do not find a decline in quality, so that it is comforting to see the same result in a mail survey. Only item omissions increased between the first and second wave, but even this finding is fuzzy since Wave 3's omissions were slightly lower than those from Wave 2. Given the length of the overall questionnaire and the relatively low salience as indicated by the low overall cooperation, the wave effects are fairly small on omissions.

One must ask whether it was really a good idea to send this questionnaire out by mail, since many mail surveys do very much better in overall response, as reported by Dillman in his book. It is also not clear whether the same lack of effects would occur if one were going from 50 to 75 percent cooperation instead of from 21 to 38 percent. Nevertheless, the procedure used was imaginative and is worth being used by others.

ROLE TRANSFERAL IN THE HOUSEHOLD:
A CONCEPTUAL MODEL AND PARTIAL TEST¹

Mary Lou Roberts, Boston University

Lawrence H. Wortzel, Boston University

Abstract

Changing life styles, including increasing labor force participation by women, have generated substantial interest in the subject of household task performance by males. This paper presents a conceptual model of household role transfer based on role transfer models from the organizational theory literature. It concludes, on the basis of a limited empirical test, that the model is worthy of further empirical testing.

Over the past few years considerable interest has been shown in the phenomenon of household task performance by males. Both academic (Hendrix, Kinneer and Taylor 1979; Roberts and Wortzel 1980) and commercial (Cunningham and Walsh 1980, Benton and Bowles 1980, Time undated) studies have suggested that increasing male performance of household tasks is an important trend which has numerous implications for the marketing of food and home care products. The usual assumption is that males perform household tasks differently from females; therefore products should be positioned differently for males and females.

A recent study (Hendrix and Qualls 1981) sounds a warning that males may not be doing as much household work as they claim, or perhaps as they think they do. Research which is yet unpublished finds that female performance of household tasks has lessened, not just as a result of increased male assumption of household tasks, but as a result of smaller families, use of time-saving products, and changed standards and values relative to household care principally among working women (Pleck 1981). A number of commercial studies, including those cited above, demonstrate that an increasing number of males shop for groceries, and that the shift from female to male performance of the shopping task frequently results in different brands being purchased (see also Newsweek 1979).

In behavioral terms, these (and other) studies suggest that both role transfer and changes in role performance are taking place. Some female roles are being transferred to men who perform them differently than women have in the past; some females who retain particular roles now perform them differently. The situation presents complexities with which research has not yet satisfactorily dealt.

This paper represents an attempt to establish a conceptual framework which may assist in unraveling some of the complexities in the area of changing household standards and roles. We will first present an overall model. We will then test some of its major components within the limits of an existing data set.

A Family-Oriented Model of Role Transfer

The consumer behavior literature does not yet include specific models of adult role learning or role transfer. Even the investigation of relationships between incumbents in different roles seems to be more

¹The authors wish to thank Needham, Harper & Steers Advertising Inc. for providing access to its 1980 Life Style Study data which were used in this project.

prevalent in studies of industrial buyer behavior than in studies of household or family consumer behavior. To the extent that the literature does deal with various aspects of roles, theories from the behavioral sciences are presented, with marketing studies being used to illustrate specific applications (see Zaltman and Wallendorf 1979, Chapter 7 for an example of such an approach).

For a conceptualization of role transfer² we therefore turned to the sociological and management literature in organizational behavior. Two models are especially useful, Kahn et al.'s (1964) role episode model and Schuler's (1979) transactional process model. In addition, we gained important insights from a paper by Israel (1966) on role learning. The result is the model presented in Figure 1.

The model assumes two actors -- a role sender and a recipient, or focal person. In a household role transfer situation the role sender would ordinarily be the wife and the husband would be the focal person. However, to the extent that women are assuming traditionally male tasks such as care of an automobile or financial decision-making, the sender/focal roles could be reversed. For the purpose of our discussion and subsequent data analysis we will assume a female role sender and a male focal person since that would appear to be the most common situation with respect to day-to-day household roles. The model is based on the perceptions and expectations possessed by both sender and recipient. The perceptual set is organized around the two basic dimensions of a role, its technical/instrumental aspects and its expressive/ideological aspects. The technical aspects relate to "knowledge and skills necessary or desirable to carry out the tasks" and the expressive aspects are composed of "attitudes, values, and ideals related to or being the basis of role-related task performance" (Israel 1966, p. 201).

The expectation set is also two-dimensional. One dimension consists of expectations concerning the manner in which the task will be performed. The other set of expectations, or standards, deals with the actual outcome, or result, of performing the task.

In discussing the application of this model to household tasks, we will concentrate first on women as role senders and then on men as recipients. In the discussion, both the content of the role and the transfer process will be considered. Although there is empirical support for the concepts used in the

²We are using the concept of role transfer rather than that of role acquisition because we are not so much interested in the general phenomenon of adding a role to an existing role set but in the more specific situation of a role being passed from one person to another. The original role incumbent could be defined either on the basis of previous role behavior, as in an established marriage which has maintained traditional patterns of role performance, or on the basis of traditional stereotypes, as in the case of a newly-married couple who are establishing non-traditional patterns of role performance.

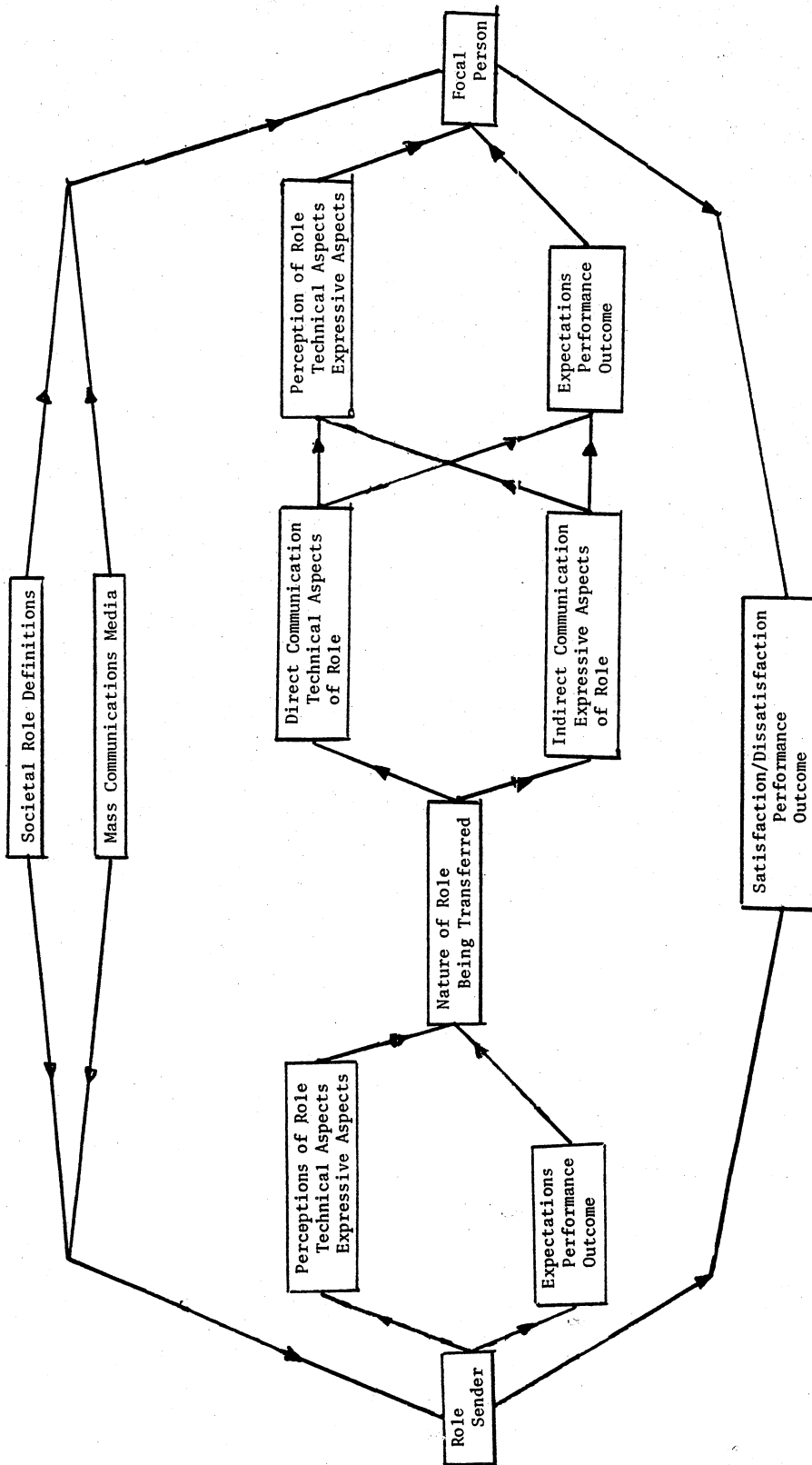


Fig. 1--A Family-Oriented Model of Role Transfer

literature on formal organizations, our application to household task performance represents an extension of these concepts to the area of consumer behavior. The discussion to follow will cover both sender's expectations and receiver's task performance; the subsequent partial test of the model will cover only receiver's task performance since we did not have data with which to test sender's expectations against receiver's task performance.

Women as Role Senders and Men as Recipients

Many women have learned the technical aspects of household roles in childhood. However, time-saving products of all kinds have greatly changed the manner in which household tasks are, or at least can be, performed. Therefore, much of women's early learning about the technical aspects of task performance may have been rendered potentially obsolete. Moreover, the mass media are probably very important in facilitating adult learning about more efficient ways of performing tasks.

The expressive aspects of roles and their related tasks are also learned in early childhood. Most women have been socialized, explicitly or implicitly, to regard the nurturing, supporting aspects of caring for their families as important components of their role and self-definitions. As a result, both task performance and outcome have had emotional connotations in addition to their technical dimension. Societal role definitions (or stereotypes, if you will) reinforce the importance of the expressive aspects of task performance. The mass media also subtly reinforce the expressive aspects of certain specific roles.

The nature of the role being transferred influences the nature of the process. The extent to which the task has been gender-linked, its complexity, and the extent to which it offers an opportunity for expressiveness will all affect the ease and manner in which it is transferred.

The two-dimensional nature of roles suggests the possibility of two types of communication, direct and indirect, in the transfer process. Direct communication via verbal instructions, by example, or by assistance with initial task performance seems more appropriate for the transmission of the technical aspects of a role. Indirect, probably even non-verbal, communication seems more likely to take place with respect to the expressive aspects of a role. For one thing, many people have probably never verbalized expressive role content, even to themselves. In addition, many of the expressive aspects of roles sound rather silly when actually put into words -- witness some of the findings of motivational research.

Because the expressive aspects of a role are not easily communicated verbally, there is great opportunity for ambiguity and conflict in their transferal. This is especially true since male perception of the nature of household roles is likely to be quite different from female perception of them. Most adult males have not been trained in childhood to perform these roles. Neither have they been socialized to recognize or to value the expressive aspects of performing these roles. As a result, the male focal person's initial understanding of both the technical and the expressive dimensions of a task are likely to differ from those of the sender. Since communications, both from role senders and the media are more likely to concern technical rather than expressive topics, senders and focal person's perceptions of the technical dimension are more likely

to be similar than are their perceptions of the expressive dimension.

Actual task performance will result in either satisfaction or dissatisfaction on two dimensions, the manner in which it was performed and the outcome, on the part of both the focal person and the role sender. Satisfaction of both actors on both dimensions results in a satisfactorily transferred role.

Except for roles with very high expressive content, such as child care, we can assume that the role sender is concerned more with outcome than with performance. However, performance that results in an outcome satisfactory to the role sender would ordinarily result in a desire to see the role filled permanently by the focal person. An unsatisfactory outcome could lead to another attempt to effect a satisfactory transfer or to a re-assumption of the role by the sender.

The focal person, since he is now performing the task, should be concerned about both performance and outcome. Satisfactory outcome/unsatisfactory performance could lead either to an attempt to acquire more technical information or to an attempt to shift the role back to the sender. Unsatisfactory outcome/unsatisfactory performance might result in similar strategies with perhaps more emphasis on attempting to shift the role. Unsatisfactory outcome/satisfactory performance is likely to be a null set.

To further complicate matters, the standards of sender and focal person for judging both performance and outcome may differ. Male attitudes toward performing many of these tasks are likely to be at least somewhat negative and males are therefore likely to find performance onerous. Their dislike of performing these tasks is probably not alleviated by pleasure in their expressive aspects as it has been for women -- or at least as women have been taught that it should be. Male outcome standards may or may not be lower with respect to technical aspects, but they may be quite different on expressive aspects.

Although many of the concepts used in our model can be supported by studies in other disciplines, the applications we are making to family behavior need to be empirically tested. The technical/expressive dichotomy appears especially promising in terms of increasing our understanding of consumer behavior.

In the absence of data which allows us to thoroughly test the model, we will state a few of the many hypotheses which could be drawn from it and test them with available data. Even limited support for these hypotheses will indicate that the model is worthy of continued research.

Hypotheses

- H₁: Women will show more agreement with statements which describe the expressive aspects of household task performance than will men.
- H_{1a}: Working women will show less agreement than non-working women with the expressive aspects of household task performance.
- H₂: Men and women who actually perform a particular role will not differ significantly in terms of reported performance of technical aspects of the role.

H₃: Men and women who actually perform a particular task will indicate similar levels of knowledge about the technical aspects of performing the task.

Sample and Methodology

The hypotheses just stated will be tested using data on the performance of one important household task, food shopping. The data to be analyzed are taken from the 1980 Needham, Harper & Steers Life Style study. This study uses the Market Facts mail panel. Needham, Harper and Steers describe the data base as follows:

"The Market Facts' mail panel is balanced for geographic region, age, income, and degree of urbanization. The very poor, the very rich, the transient, and minority populations are not well represented in the panel. Needham, Harper and Steers places a further restriction on the sample by requiring all individuals to be married. This latter restriction coupled with the general characteristics of the Market Facts' mail panel, tends to confine the representativeness of the Life Style sample to stable, middle class households... (it) has proven to be an effective barometer of mainstream middle America."

The data to be analyzed are from the AIO section of the questionnaire and consist of statements selected from that section which measure technical performance, expressive performance, and role knowledge. Some readers will undoubtedly wish to quarrel with the assignment of particular items to particular categories. But, as will be obvious from the results we present, the reassignment of questionnaire items will not materially affect the conclusions we have reached. It is possible to make comparisons between male and female respondents using these data because questionnaires were assigned randomly by sex within the sample of households. The statistical technique employed will be analysis of variance using sex of respondent and whether the wife works as independent variables. The analysis is confined to heavy shoppers of both sexes, defined as those who shop for groceries more than three times a week, (n = 195 for men and 441 for women).

Results

Tables 1 through 3 present the findings for each hypothesis. The items are listed according to the magnitude of the absolute difference in the percent of males and females agreeing with each item. The tables show the significance of the F statistic for the main effect of sex and wife's work, the significance of sex and wife's work separately, and the significance of

the interaction of sex and the wife's work. The table also shows the proportion of variance in each AIO item explained by the two independent variables and the percentage of both male and female agreement with each statement.

The analysis is based on individual AIO items. Because of the exploratory nature of the research, we did not construct scales for each dimension but chose rather to present item data with the hope that it would provide better insights into further research. The direction of the male/female differences is not consistent, and scales would have masked the avenues for additional research that are suggested by careful examination of the item data.

Table 1 shows results for the expressive dimensions (H₁ and H_{1a}). Only two of the five items showed significant differences between men and women and only one showed an interaction with wife's work. Moreover, both the two items which showed significant differences had low R²'s, and the differences between the percentage of males and females agreeing with each item is not large. Thus, it is tempting to suggest that hypotheses 1 and 1a should be rejected.

On the other hand, one item that intuitively might be considered the very best indicator of the expressive dimension in the set, "kitchen is my favorite room," showed both the largest difference between the sexes and an interaction with wife's work. This particular result suggests that items specifically designed to measure expressive aspects of the task might have shown much stronger differences between men and women, and we therefore conclude that H₁ and H_{1a} should not be rejected on the basis of this data and that they are worth further testing.

The results for the technical performance (H₂) items are shown in Table 2. Six of the ten items show statistically significant differences between the sexes (only three show differences between working and non-working wives). The R²'s are, once again, extremely low. However, the differences between the male and female agreement scores are rather large on most of the items. They also are rather consistent, with females showing more agreement with the attitudes or behaviors than males on nine of the ten items. This strongly suggests that men and women do perform the cooking and shopping tasks differently. Therefore H₂, which posits no difference, is not supported by these data. Moreover, the data suggest the character of the differences. Men appear to be more empirical in their performance, and at the same time spend less effort.

TABLE 1
Analysis of Variance of Expressive Performance-Related Items

Expressive Performance	Significance of F					
	Main Effects	Sex	Wife Works	Interaction	R ²	% Male* % Female
Kitchen my favorite room	.00	.00	.08	.02	.09	.03/.19
Save and redeem savings stamps	.00	.00	.09	.58	.03	.33/.49
Impulse buyer	.67	.68	.43	.89	.0	.21/.16
Trying to please people a waste of time	.63	.97	.34	.26	.0	.16/.12
Shopping no fun anymore	.65	.53	.50	.72	.0	.38/.35
Mean Absolute Difference in Male/Female Agreement						.084
Range						.16/.03

*Percent who "Definitely" or "Generally Agree" with each statement.

TABLE 2

Analysis of Variance of Technical Performance-Related Items

Technical Performance	Significance of F					% Male* % Female
	Main Effects	Sex	Wife Works	Inter-action	R ²	
Use recipes from ads	.00	.00	.62	.28	.23	.17/.48
Interested in spices and seasonings	.00	.00	.93	.61	.09	.08/.33
Make a shopping list	.18	.06	.96	.85	.01	.15/.37
Shop for specials	.00	.00	.04	.95	.05	.50/.69
Check prices on small items	.00	.00	.02	.56	.03	.60/.76
Replacing convenience foods with scratch	.00	.00	.13	.05	.04	.23/.37
Meal preparation takes little time	.15	.94	.05	.23	.01	.07/.17
Bake from scratch	.00	.00	.98	.99	.03	.17/.26
Select fortified foods	.07	.02	.77	.68	.01	.36/.42
Buy food in single-serving packages	.20	.28	.15	.27	.01	.21/.17
	Mean Absolute Difference in Male/Female Agreement					.157
	Range					.31/.03

*Percent who "Definitely" or "Generally Agree" with each statement.

Knowledge related items (H₃) are presented in Table 3. Four of 12 items showed statistically significant differences between men and women; only one showed a significant effect of wife's working, and the R²'s are once again extremely low. This lends support to H₃ which posits no difference in task-related knowledge between males and females who actually perform the task.

However, when the percentage differences between male and female agreement are considered, this conclusion becomes questionable. The differences, overall, are smaller than on the technical performance items, but their nature is intriguing. If one looks at the differences between male and female beliefs on the four items that relate to type of brands (national, store, generic), inconsistency is immediately apparent. Men are more likely to believe that national brands are better than store brands or generics but that generics are better than store brands. The intransitivity in the expected ranking of national, then store, then generic brands leads us to ask whether men or women are more likely to have perceptions of the quality of types of brands that differ from the expected ordering.

There are also differences between males and females that relate to information seeking and dissemination. Women seem to want and use more information from advertising, but are less likely than men to believe the test results that are used in advertising. Information from personal sources appears to be less important to both but males report a slight tendency to seek information more often while females report an equally slight tendency to give it more often. An explanation for these findings that would be consistent with the data is simply that women are more knowledgeable and experienced than men in dealing with cooking and with information about foods and cooking.

These differences are neither clear nor consistent enough to be used as a basis for managerial strategy at present. However, they do suggest that both the content of male/female beliefs about brands and the nature of male versus female information seeking and use should be further investigated. They also suggest that it would be inappropriate to accept H₃ on the basis of these data.

TABLE 3

Analysis of Variance of Knowledge-Related Items

Knowledge	Significance of F					% Male* % Female
	Main Effects	Sex	Wife Works	Inter-action	R ²	
Don't believe ads re test results	.49	.81	.24	.90	.0	.16/.34
Frozen foods as nutritious as fresh	.75	.45	.89	.64	.0	.11/.26
Have more self-confidence	.33	.15	.68	.40	.0	.12/.25
All food advertising should reveal calories	.02	.01	.20	.99	.01	.56/.64
Information from adv helps make decisions	.87	.90	.60	.87	.0	.11/.23
Generic brand better than store brand	.30	.12	.93	.76	.0	.30/.22
Try to stick to well-known brand names	.00	.00	.26	.38	.02	.41/.30
Store brand better than national brand	.39	.25	.45	.85	.0	.30/.39
Processed foods good as natural	.01	.06	.03	.55	.01	.19/.13
National advertised brand better than generic	.00	.00	.08	.99	.02	.19/.13
Friends and neighbors come to me for advice	.01	.00	.66	.22	.01	.20/.22
Seek advice of friends re brands and products	.51	.92	.25	.41	.0	.16/.14
	Mean Absolute Difference in Male/Female Agreement					.096
	Range					.18/.02

*Percent who "Definitely" or "Generally Agree" with each statement.

Discussion

We have tested part of a comprehensive model of role transfer using secondary data which were imperfect and confined to one task. We believe the results presented, while far from conclusive, suggest the model may be valid and therefore worth further testing. The most clearly expressive item on the expressive list showed the largest differences between men and women. The extent of the male/female differences on the technical performance dimension was unexpected as were both the nature and extent of the differences on the knowledge dimension. The fact that these items taken separately explained so little of the variance in actual task performance underscores the need for more carefully conceived and detailed empirical testing.

Further research should be both intellectually interesting and managerially worthwhile. Interesting research might be pursued in several directions. One direction would be to study more tasks. Food shopping is probably one of the easiest female roles for men to take on and may also have less significant expressive content than, say, child care or even cooking. A study which compared several tasks would be likely to pick up some of these considerations.

A second direction for further research is to look at within as well as between-sex differences, on both knowledge and technical performance and, even more importantly, expressive performance dimensions. As we suggested earlier, many women may not be as ego-involved with household tasks as they have been in the past. We attempted to control for this possibility by comparing working versus non-working wives, but this comparison is very rough and there is no reason to suspect a one-to-one correspondence between outside work and lack of involvement in household tasks. Whether men are ego-involved in these tasks at all is still an open question.

In addition, this study did not consider the outcomes dimension. It would be worthwhile to address future studies to this dimension for several reasons. One is to look at the relationship between desired outcome levels and the willingness to transfer a role. Another is to determine whether expectations change upon transferring (or accepting) a role.

All of the research just suggested should have managerial as well as intellectual utility. One important use of these findings would be in positioning. It is often suggested that much of the advertising for packaged goods which are used in the performance of household tasks concentrates on subjective benefits, using appeals that are clearly addressed to the task's expressive dimension. Obviously if there are now changes in the expressive nature of tasks, there need to be changes in advertising as well. These changes include more emphasis on objective benefits as well as more recognition of males as task performers.

Similarly, advertising often assumes that best outcomes are really important, e.g., the whitest clothes, the most spotless drinking glasses. To the extent that expectations for outcomes are lowered or changed as roles are transferred, then advertising must be changed. In some circumstances, product changes are indicated. For example, where there is a trade-off between ease of use and "superior" outcome, the trade-off should now be in the direction of ease of use.

This line of reasoning also suggests increased emphasis on point of purchase information which conveys technical performance information, especially ease of use. Males who lack both experience in task performance and knowledge about the products used in task performing and who are uninterested in traditional advertising messages may be much more prone to rely on point of purchase information.

Conclusion

The absence in the marketing literature of an organizing framework for research into the transfer of household roles and tasks has led us to develop this model. Even though our partial test was not definitive, we hope to encourage a more conceptual approach to research in this area. The information managers use as they make decisions on the attribute/benefit composition and the positioning of household products can be greatly improved by an approach grounded in tested concepts. We offer this paper as a step in that direction.

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CHANGING SEX ROLES:
ITS IMPACT UPON FAMILY DECISION MAKING

William J. Qualls, The University of Michigan

ABSTRACT

Major shifts in the lifestyles and role structure of the family have prompted researchers to reexamine decision making practices of the household. This paper reports findings on the effects of family members' sex-role orientation on influence patterns for several household decisions. The comparison of sex role modern and sex role traditional family members reveals differences in perception of family decision influence.

Introduction

The nature of family decision making has been characterized in terms of distinct role perceptions, role definitions, and role performances by family members. Each family decision is analyzed with respect to a set of family role norms and task assignment responsibilities. During the seventies, significant changes occurred in the role perceptions and role structure of the family. These changes, which have been attributed to various social and economic phenomena, have caused researchers to reconceptualize family roles in terms of sexual orientations. The long-term significance of sex roles is not totally clear, having surfaced only recently because of the increased visibility of women outside the home. It is the contention of this paper that the concept of sex role is central to the process of modeling family decision making.

The purpose of this paper is to discuss two related topics: (1) the role of an individual's sex-role orientation in the family decision-making process, and (2) the measurement of sex-role orientation and its impact upon family decision-making processes. The discussion of the second topic will include a brief presentation of some empirical evidence which lends support to the relevance of sex-role orientation (SRO) in a family decision-making (FDM) context.

Empirical findings reported during the last ten years have suggested a gradual shift in men's and women's perceptions of the appropriate distribution of labor within the household and the appropriate place for women in this society. These changes entail a new pattern of reported shared roles and joint decision making (Haas 1980). The literature suggests that men are becoming increasingly involved in household activities, while women are increasing their participation in the labor force (Haas 1980). The breadwinner/provider role, traditionally the domain of the male, and the housekeeper role, traditionally occupied by females, are no longer separate and distinct roles within the family.

Scanzoni (1975) suggests that changing sex roles and how they are perceived by family members has a tremendous impact upon family decision-making processes. The precise nature of these shifts in role perceptions and role behavior and the extent of their effect on FDM processes remains unclear. Green and Cunningham (1975) found that differences in contemporary and traditional female role perceptions had an effect upon family decision-making patterns. Alternatively, Roberts and Wortzel (1979) found that the general role orientation of the wife toward the household task, food shopping behavior, is not as effective a predictor variable as the specific attitude toward that household task. Today, the general belief among family researchers is that sex-role orientation has an impact

upon the family decision making process and not upon specific family tasks. Although the controversy continues and the jury remains out on the usefulness of sex-role orientation as a predictor or explanatory variable of family decision making practices, the present study differs from previous research in one important aspect. The role perceptions of both the husband and wife are collected and its impact upon family decision making is explored.

The discussion to follow centers on one variable, sex-role orientation, as part of a set of variables that can be used to explain family decision making. Empirical evidence is then presented as to how this variable affects the family decision-making process. Finally, managerial implications derived from the study's findings are used as the basis for suggesting future research issues.

THEORETICAL FRAMEWORK

It is proposed in this paper that a family member's sex-role orientation constitutes only one of many variables that can be used to characterize the environment of family decision making. Major shifts in family members' sex-role orientations are of particular interest to family researchers and consumer marketers because of the contention that the family is the most relevant unit for conducting consumer research and understanding buyer behavior.

The precise meaning of the term sex-role is often left undefined, but generally it is based on one of three commonly employed interpretations. The first of these and the most widely known is based on sexual gender. This approach holds that men, because of their physical stature and their status position in society, hold a dominant position, while females hold a subordinate position. This approach is similar to the sociological concepts known as "sex stratification" (Nielsen 1978) and "gender differentiation" (Holter 1970). Major changes in family member perceptions have caused a shift in the reliance on sexual gender as the basis for dividing household labor and decision-making responsibility.

Alternatively, division of labor has been utilized as a basis for defining a person's sex role. From this perspective, the female role is perceived to fall somewhere on an equality-inequality continuum (Meier 1972). Sex-role equality occurs when females are accepted in the labor force outside the home. Conversely, the belief that women's place is within the home is generally reflected in behaviors that are associated with the inequality end of the continuum. Studies utilizing this framework provide guidelines from which to develop methods for analyzing the impact of increasing numbers of women in the work force and the emergence of the working housewife.

The third approach, closer to the conceptualization of this study, entails a construct in which sex role is defined as a person's sex-role orientation. Other researchers have referred to this construct as sex-role preferences (Scanzoni 1970), gender norms (Holter 1970), and sex-role attitudes (Araji 1977). Sex-role orientation is defined as a person's evaluation of and behavior with respect to values, opinions, cultural beliefs, and behavioral standards which are based on sexual gender and division of labor practices. It is the practice of a person's sex-role orientation which provides the dynamic underlying pattern of family decision-making processes.

Regardless of which of the three approaches has been utilized to define the sex-role construct, the result has been a sex-role typology conceptualized as a continuum, the extreme ends of which are sex-role traditionalists (SRT) and sex-role moderns (SRM) (Tomch 1978). Sex-role traditionalists exhibit attitudes and behaviors consistent with past conceptions of the male-provider and female-housekeeper roles. Decision making within such a family is dominated by the husband, while the wife takes a more subservient role in the FDM process. Alternatively, SRM (nontraditional) family members are identified by their more equalitarian role perceptions and behavior. Spouses in this group tend to share decision responsibility and task performance on a more egalitarian basis.

METHODOLOGY

A total of 117 households were selected for participation in the study from a small midwestern university city. Couples for the study were solicited by direct mail leaflets and an advertisement in the local student newspaper. Only married couples were allowed to participate in the study. Of this group of 117 households, 102 completed usable questionnaires. Primarily a convenience sample, the selected study group closely paralleled the demographic makeup of a university town.

The study was conducted by way of in-home personal interviews including both paper and pencil tests and tape recorded observations regarding the hypothetical family purchase decisions for six product categories. The survey instruments contained measures of sex-role orientation, perceived influence, and socio-economic status. Sex-role orientation was measured by the Osmond-Martin Sex-Role Attitude Scale (Osmond and Martin 1975). On the basis of their sex-role orientation scores, husbands and wives were classified as sex role traditional or sex role modern. Measures of family member influence was used to label product decisions; husband dominated, wife dominated, or jointly determined.

Six product decisions were selected on the basis of their potential for being decisions jointly determined by husbands and wives. The six products included (1) family vacations, (2) family automobile, (3) children's education, (4) family housing, (5) family insurance, and (6) family savings. Specifically, the decisions to be determined included (1) where the family should go on their vacation, (2) what type of second automobile the family should purchase, (3) whether the children should attend public school or private school, (4) whether the family should live in a house or an apartment, (5) how much insurance the family should carry, and (6) how much money should be allocated to savings each pay period. These six product decisions are very similar to those employed in earlier studies (Blood and Wolfe 1960, Green and Cunningham 1975).

Sex-Role Orientation Measures

The sex-role measurement employed in this study is the Osmond-Martin (1975) 32-item sex-role attitude scale. The Osmond-Martin Sex-Role Attitude Scale has proven to be reliable in past studies, reporting a Cronbach coefficient alpha of .88, well above the recommended level of .60. Although the coefficient in the present study is not as high, the reliability of the instrument is confirmed by a reported Cronbach alpha of .67.

The scale is composed of four general components which are used to explore different types of perceived role attitudes and behaviors of the husband and wife. The scale is a Likert-type scale with five response categories (strongly agree to strongly disagree). The 32 scale items fall under one of four attitude-behavior descriptions: (1) familial roles, (2) extrafamilial roles, (3) stereotypical

male-female roles, and (4) social change as related to sex roles. On the basis of spousal responses to the sex-role orientation questionnaire, an average response to the 32-item scale was obtained.

Perception of Influence

The most widely used and commonly accepted measure of the outcome of family decision-making processes is the level of husband and wife influence (Davis 1976). In this study the level of spousal influence for a given decision task is used as the dependent variable to determine the impact of spouse's sex-role orientation.

Examination of past research in the area of family member influence reveals several problems in the measurement techniques employed. Specifically, past studies have failed to be sensitive to small but significant changes in a family's influence structure. In this study influence is measured on a 100-point constant-sum scale ranging from total influence (dominance) by the husband to total influence (dominance) by the wife. The midpoint on the continuum represents jointly determined decisions or equal influence by both spouses. The influence scale employed permits a spouse to indicate his or her own level of influence for specific decisions as well as his or her spouse's level of influence for the same decision. For each product decision, the question was asked of both husband and wife: "In my family, the fair proportion of husband influence/wife influence should be _____" (Burns 1973).

ANALYSIS

The following analysis and discussion were conducted in light of two previous studies on family role structure and its effect upon family decision making (Davis and Rigaux 1974, Bonfield 1978). The Bonfield study in particular investigates the question of whether marital roles and husband/wife perception of influence differ between traditional households and the more general population. Similarly, the question which guided the present analysis was: to what extent do husbands and wives who differ in their sex-role orientations differ in their perceptions of spousal influence?

Table 1 illustrates the mean ratings of perceived influence by both spouses. A comparison of husbands' and wives' influence ratings indicates that the patterns are similar and in the same general direction. It may be interesting to note that husbands' ratings of their perceived influence are consistently higher than the wives' reported perceptions. In a finding similar to those of Davis and Rigaux (1974) and Bonfield (1978), husbands perceived the insurance, savings, and automobile decisions to be their area of influence control, and decisions regarding vacations, children's education, and housing to be more jointly determined. By contrast, wives perceived only the automobile and insurance decisions to be dominated by husbands, and the remaining four decisions to consist of relatively equal influence, and thus to be jointly determined.

The evidence of these findings is presented in Table 2, which indicates the percentage distribution of influence across each point decision. The level of agreement was relatively high across all six decisions: 74%, 75%, 84%, 80%, 58%, and 68% respectively. In general, previous findings about role specialization across these six products were supported.

Investigation of the research question of whether differences in sex-role orientations account for differences in family role perceptions began with a comparison of mean influence assessments according to spousal sex-role orientation. Table 3 reveals that the pattern of perceived

TABLE 1
MEAN RATINGS OF SPOUSAL INFLUENCE

Product Decision	Husbands' Self-Ratings	Wives' Self-Ratings
Vacations	11.7	11.2
Automobiles	12.8	12.1
Children's Education	11.2	10.8
Housing	11.5	11.0
Insurance	13.5	12.7
Savings	12.9	11.4

- Mean ratings greater than 12 indicates perceived husband dominance.
- Mean ratings less than 10 indicate perceived wife dominance.
- Mean ratings between 10 and 12 indicate perceived joint influence.

TABLE 2
PATTERNS OF INFLUENCE ACROSS PRODUCT DECISIONS (Percentages)

Product Decision	All Husbands			All Wives		
	HD	J	WD	HD	J	WD
Vacations	17	74	9	15	76	9
Automobiles	33	56	11	28	58	14
Children's Education	8	82	10	7	85	8
Housing	14	81	5	11	79	10
Insurance	53	45	2	27	70	3
Savings	31	63	6	17	73	10

HD = Husband dominant J = Joint WD = Wife dominant

influence is somewhat different for husbands and wives when they are compared on the basis of their sex-role orientation. Husbands who are sex-role traditionalists consistently perceive their levels of influence to be higher than do their wives, sex-role modern husbands, and the more general set of all husbands. Specifically, sex-role traditional husbands (HSRT) perceive themselves as dominating decisions regarding vacations, automobiles, housing, insurance, and savings. Only the decision regarding children's education was perceived by HSRT as more jointly determined. The pattern of influence exhibited by husbands who are sex-role modern (HSRM) reflects that of the more general case of all husbands. As in the general case, the automobile, insurance, and savings decision were perceived by HSRM as their domain of greater influence.

In contrast, wives in both groups--sex-role traditionalists (WSRT) and sex-role modern (WSRM)--exhibited patterns of influence perceptions which were similar to each other as well as to those of the general category of all wives.

The patterns identified above are illustrated by the percentage distribution of influence across each product decision according to the spouse's sex-role orientation. Table 4 presents results which indicate differences in family role structure according to a spouse's sex-role orientation. One noticeable pattern is that the level of joint influence perceived by spouses who are sex-role modern is higher than that perceived by spouses who are sex-role traditional. These results are reflective of the trend towards egalitarianism discussed by Haas (1980). Among SRM husbands and wives, only the insurance decision

TABLE 3
MEAN INFLUENCE ASSESSMENTS BY SPOUSAL SEX-ROLE ORIENTATION

Product Decisions	Husbands' SRT(N = 35)	Wives' SRT(N = 31)	Husbands' SRM(N = 67)	Wives' SRM(N = 71)
Vacations	12.4	11.5	11.3	11.2
Automobile	13.5	12.1	13.1	12.0
Children's Education	11.6	11.1	11.1	10.1
Housing	12.1	11.2	11.3	11.0
Insurance	14.7	13.8	13.6	12.8
Savings	14.4	11.4	12.4	11.6

- Mean ratings greater than 12 indicate perceived husband dominance.
- Mean ratings less than 10 indicate perceived wife dominance.
- Mean ratings between 10 and 12 indicate perceived joint influence.

is perceived as being relatively more influenced by one spouse--the husband; but even with the insurance decision, joint influence is the dominant pattern between spouses. Thus the general move toward joint decision making is supported in this study.

TABLE 4
FAMILY ROLE STRUCTURE BY SPOUSAL SEX-ROLE ORIENTATION (Percentages)

Product Decisions	Husbands SRT			Wives SRT			Husbands SRM			Wives SRM		
	HD	J	WD	HD	J	WD	HD	J	WD	HD	J	WD
Vacations	22	66	12	28	58	16	11	81	8	4	93	3
Automobiles	48	44	8	52	44	4	17	63	20	3	72	25
Children's Education	8	72	20	12	81	7	2	92	6	2	89	9
Housing	18	72	10	23	71	6	9	90	1	8	88	4
Insurance	63	32	5	33	65	2	43	57	0	21	75	4
Savings	43	53	6	26	63	12	18	73	9	9	83	8

HD--Husband dominate WD--Wife dominant J--Joint

CONCLUSIONS AND IMPLICATIONS

Overwhelmingly, the majority of consumer research has focused upon the individual as the relevant unit of analysis, where in many cases the family may be the most appropriate unit of research--specifically, in cases or decisions involving intrafamily influence or joint consumption by family members. The findings presented in this paper are one step in addressing this neglected area.

The comparison of sex-role modern and sex-role traditional suggests that a family member's sex-role orientation affects the degree to which families interact and the perceived pattern of influence for various family decisions. The tendency is for sex-role modern family members to perceive a more egalitarian distribution of family decision influence and thus increased interaction between family members. Alternatively, sex-role traditional oriented family members perceive influence for the same decisions similar to past role classifications and role norms of the

family. These changes in sex-role orientation would suggest the need to add this variable to models of family decision making. The extent to which husband and wife sex-role orientation affects marital role structure in family decisions should be of interest to both consumer researchers and marketing practitioners.

The movement by husband and wives toward more joint decision making may indicate an answer to the old question of which member of the family should be interviewed in conducting family level research. The patterns revealed in this paper would suggest that both spouses should be interviewed. Although role specialization within the household does exist, the results strongly support the need to question all relevant family members for a given decision task.

Differences in role patterns between sex-role traditional spouses and sex-role modern spouses were apparent. Thus, it appears that future research involving family decision making should incorporate a family member's sex-role orientation as a variable in the decision environment that affects family decision making processes. Although the results reported here indicate some significant differences in role specialization patterns according to sex-role orientation, additional research should be performed to confirm this relationship.

Frequently, the roles played by husband and wives in family decisions are used as a basis for determining marketing segments, promotional messages, product development, pricing strategies, and distributional strategies. If the pattern in family decision making revealed in this study is held to be valid and a shift is occurring in role specialization and role enactment, adjustments in marketing strategies must take place. The impact of changing sex roles upon family decision making appears to warrant further investigation.

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RECYCLING THE FAMILY LIFE CYCLE: A PROPOSAL FOR REDEFINITION

Mary C. Gilly, Southern Methodist University
Ben M. Enis, University of Missouri-Columbia

Abstract

The family life cycle, as traditionally defined and recently "modernized," fails to recognize the changing role of women in contemporary society and the impact of such changes upon the types and composition of families. This paper presents a redefined family life cycle which accounts for the increasing number of single-person households, cohabitation by non-legally married adults, delayed parenting, and rising divorce rates. The proposed concept is compared with other FLC definitions, and consumer behavior associated with the various redefined life cycle stages is discussed.

Introduction

It stands to reason that family life cycle stage is a useful indicator of consumption behavior. Though changes in attitudes and behavior of interest to family and consumer researchers occur as individuals grow older, many of these changes are associated less with the biological process of aging than with changes in family status. Thus, dates marking changes in purchase patterns may not be birthdays, but dates of marriage, birth of children, dissolution of marriage, departure of children.

Reason notwithstanding, there is little empirical support in consumer research literature for the Family Life Cycle (FLC) as a predictor of consumption behavior. The authors contend that this relative void stems from inadequate precision in defining the concept. This paper offers a more comprehensive operationalization of the family life cycle concept than previous FLC definitions.

The Family Life Cycle In Consumer Analysis

The family life cycle concept has been well-accepted in sociology for fifty years (Loomis, 1936) and in marketing for over twenty-five years (Clark, 1955). It is recognized in most sociology and marketing textbooks, primarily as a useful basis for segmentation. Engel, Kollat and Blackwell (1978) comment, "because the life cycle concept combines trends in earning power with demands placed on income, it is one of the most powerful ways of classifying and segmenting individuals and families."

Both marketers and sociologists have long used the family life cycle as a predictor of various types of behavior. These attempts have been made at different levels of sophistication and have had varying degrees of success. Lansing and Kish (1957) compared the variables of age and life cycle with respect to six aspects of the family's consumption pattern: income, indebtedness, whether the wife works, home ownership, purchase of new cars and purchase of television sets. Life cycle was found to be a better discriminator than age in all six categories and, in fact, provided some information that analysis by age group concealed. However, the rho values for FLC ranged from .01 to .15, indicating that, while a better predictor than age, FLC explained very little of the variation in the dependent variables.

Perhaps the definitive statement of the traditional family life cycle in marketing was offered by Wells and Gubar (1966). Table 1, excerpted from their work, shows the stages in the traditional life cycle, and typical buying or behavior patterns for each stage. They also compared age and life cycle stage as predictors of expenditure on

various products. For half the goods and services, there was little difference between age and life cycle. However, for 231 goods or services, there were substantial differences with 54 favoring age and 177 favoring life cycle. No indication was given as to how much of the variation in the expenditure for these products was explained by family life cycle stage.

Hisrich and Peters (1974) examined family life cycle and three other commonly used segmentation variables (income, social class and age) as correlates of two aspects of purchase behavior: choice of entertainment activities during the past year, and frequency of use of these entertainment activities. Findings revealed that income and family life cycle stage were more highly related to the use of all the entertainment activities than age or social class. However, all four variables showed strong associations with the frequency of use of all the entertainment activities. Stage in life cycle was able to explain 40 percent of the variation in use and 50 percent of the variation in the frequency of use.

Family life cycle was also used as an independent variable by Cox (1975) with length of marriage, in explaining the process of adjustment in family purchase decision making. Analysis of variance of the relationship between the stage in the family life cycle and two operational definitions of adjustment revealed rho values of .15 and .36. These rho values were higher than the corresponding coefficients of determination using length of marriage, suggesting that family life cycle is the more powerful independent variable.

These studies show that the use of family cycle stage as an independent variable has been limited in scope and has had mixed success. As Wells and Gubar (1966) note, the question of how to define the different stages is not a trivial one. In her standard sociological work on the FLC, Fischer (1955) recognized that "there are, of course, deviations from this [traditional] pattern that need hardly be mentioned, such as failures to marry, divorce, childless couple, early death of one spouse, remarriage, and so on." She dismissed these exceptions as inconsequential; indeed they may have been in the 1950s. Wells and Gubar estimated that such households accounted for five to ten percent of the data in 1966.

The proportions are much larger today. Nearly three-quarters of all households in 1960 included the head and spouse; this figure had dropped to two-thirds by 1966, and to 62 percent by 1978. During the 15 years from 1960 to 1975, the number of one-person households approximately doubled, from 6.9 million to 13.9 million; this represents an increase from 13 percent in 1960 to 20 percent in 1975. Men and women under the age of 30 accounted for half the growth in this type of household since 1972.

There were one million divorces and two million marriages in the United States in 1975. Two and one half million men and four million women were currently divorced in 1975. In addition, more marriages were being postponed. The proportion of single persons 20 to 24 years old (the range of years in which the median age at first marriage for both men and women falls) increased from 28 percent in 1960 to 48 percent in 1978 for women and from 53 percent in 1960 to 66 percent in 1978 for men.

These figures demonstrate the fact that the trend in the United States today is away from the "traditional" family

TABLE 1 -- AN OVERVIEW OF THE LIFE CYCLE

Stage in Life Cycle	Buying or Behavior Pattern
1. Bachelor stage: Young, single people not living at home	Few financial burdens. Fashion opinion leaders. Recreation-oriented. Buy basic kitchen equipment, basic furniture, cars, equipment for the mating game, vacations.
2. Newly married couples: Young, no children	Better off financially than they will be in near future. Highest purchase rate and highest average purchase of durables. Buy cars, refrigerators, stoves, sensible and durable furniture, vacations.
3. Full nest I: Youngest child under six	Home purchasing at peak. Liquid assets low. Dissatisfied with financial position and amount of money saved. Interested in new products. Buy washers, dryers, TV, baby food, chest rubs and cough medicines, vitamins, dolls, wagons, sleds, skates.
4. Full nest II: Youngest child six or over	Financial position better. Some wives work. Less influenced by advertising. Buy larger-sized packages, multiple-unit deals. Buy many foods, cleaning materials, bicycles, music lessons, pianos.
5. Full nest III: Older couples with dependent children	Financial position still better. More wives work. Some children get jobs. Hard to influence with advertising. High average purchase of durables. Buy new, more tasteful furniture, auto travel, non-necessary appliances, boats, dental services, magazines.
6. Empty Nest I: Older couples, no children living with them, head in labor force	Home ownership at peak. Most satisfied with financial position and money saved. Interested in travel, recreation, self-education. Make gifts and contributions. Not interested in new products. Buy vacations, luxuries, home improvements.
7. Empty nest II: Older married couples, no children living at home, head retired	Drastic cut in income. Keep home. Buy medical appliances, medical care products that aid health, sleep, and digestion.
8. Solitary survivor, in labor force	Income still good, but likely to sell home.
9. Solitary survivor, retired	Same medical and product needs as other retired group. Drastic cut in income. Special need for attention, affection, and security.

Reprinted from Wells and Gubar, (1966, pp.335-363)

life cycle of marriage, birth of children, departure of children, and death of spouse. Many of these changes are related to the growth number of life style choices available to women today. There appear to be three major issues:

1. Childless and Delayed-Child Marriages. Choice and timing have traditionally been primarily the women's prerogative. More and more women are postponing or eschewing childrearing. More women are remaining single (23.9 percent in 1978 compared to 19 percent in 1960). More marriages are childless; in 1974, about 28 percent of all married couples with the husband under 35 had no children under 18 years of age at home, as compared with the 1969 level of 24 percent. And more married couples are postponing the birth of the first child. The median age of the mother at birth of first child was 22.1 in 1972 compared to 21.8 in 1960.

By and large, these decisions are a function of the broadening perspective of women today. New careers are open to

women, more women are obtaining higher educations and/or are finding other ways to lead fulfilling lives. Raising children is no longer considered to be the predominant role of women in modern society. A greater variety of life styles exists today than the traditional FLC recognizes.

2. Single-parent Households. More than 90 percent of the single-parent households in the United States today are headed by women. There were eight million such households in 1978. Assuming only the mean poverty line income for each, these households represent almost 32 billion dollars in purchasing power. The traditional life cycle concept does not recognize single-parent households.

3. Male Head-of-Household. Until recently, in official U.S. Census Bureau designations, the age-of-head-of-household statistic employed was that of the male. In terms of childbearing, however, it is the age of the woman in the household that is important. Children have a significant effect on the family's purchasing behavior and therefore,

their presence is of interest to consumer researchers. Because children are an important determinant of life cycle stage, FLC stage classified by male age-of-head-of-household tends to distort significant age milestones. For example, most experts agree that a woman 35 years of age or older faces significantly higher risk of bearing a defective child than does a woman under 35 years of age. (Carro, 1976; Daniels and Weingarten, 1979).

In short, the family life cycle concept is potentially useful for consumer analysis. The authors believe that its relatively sparse utilization in recent years can plausibly be attributed to distortions caused by minimizing the variety of roles open to women (and men) in the contemporary family. It is possible to correct this distortion by redefining the FLC.

Redefining The Family Life Cycle Concept

Other researchers (Norton, 1974; Glick, 1977; Murphy and Staples, 1979) have offered similar proposals, the last being perhaps the most comprehensive and well-known. The present work was begun independently of Murphy and Staples; however, similarities do exist. The authors' redefined family life cycle concept, like that of Murphy and Staples, has more categories than does the traditional concept as defined by Wells and Gubar (1966). Therefore, the proposed concept will be explained in relation to the Murphy and Staples "modernized" FLC and the Wells and Gubar "traditional" FLC.

Family life cycle stages are based upon three characteristics (1) age, (2) marital status, and (3) ages and presence/absence of children in the household. There is considerable discussion today about "proper" age categories. The proposed family life cycle has three categories: young (under 35 years of age), middle-aged (ages 35 to 64 years of age), and elderly (over 64). These age categories are based upon age of the female in the household (if there is one). As noted above, thirty-five seems to be the age at which childbearing becomes more risky. It is recognized that these age categories are somewhat arbitrary; however, the same categories are used by Murphy and Staples.

The concept of "marriage" is also more complex than first appears. In the proposed FLC redefinition, a single person is anyone presently unmarried regardless of past marital status. The "married" category includes any couple residing together who intend to share a long-term relationship. Thus roommates are not "married." On the other hand, a marriage license is not required. A man and woman living together would be considered married if they established or intend to establish a household. This is a significant change from the traditional family life cycle concept, but it reflects modern society. For example, surveys in California reveal that there are more people in the 21-to-30 age group in the state living together than are actually married (Time, 1977). The traditional concept would classify each of these couples as two bachelors rather than recognizing their "married" status. In fact, a homosexual couple would also be "married" within the context of the present discussion if they had established or intended to establish a relationship expected to be permanent.

This definition of "single" and "married" also differs from the Murphy and Staples modernized FLC categories. They recognize divorced individuals with and without children, but not widowed or single individuals with and without children. There is no reason to believe that the consumption behavior of a widowed person differs significantly from that of a divorced individual. Murphy and Staples justify the exclusion of individuals who remain single throughout their lives by stating they "are by definition not included in forming a family." But these individuals represent consumption units, and therefore should be of interest to consumer behaviorists. Further, if "young single," "middle-

aged divorced without children," and "older unmarried" are recognized as valid family life cycle stages, individuals who remain single throughout their lives should also be included.

In the redefined family life cycle, as in its traditional and modernized counterparts, the presence or absence of children is important. Family life cycle stages are distinguished by the age of the youngest child: a child under six years of age and therefore not in school has very different consumption (and other) requirements than does a child of six or older. The age of children is also a determinant of the amount of freedom enjoyed by mothers, e.g., it is easier for a mother to work if all her children are in school.

In short, the proposed family life cycle is based upon chronological age (of the female member of the household if appropriate) interrupted by two types of critical points. The first type is marriage and separation by divorce or death of one member of the household. The second is the arrival of the first child and the departure of the last child. Thus, the redefined family life cycle accounts for four household types over three age groups through a person's lifetime: the one adult household, the two adult household, the two adult plus children household, and the one adult plus children household.

These household types are traced through the age groups of young, middle-aged, and elderly, with the following modifications. In the last age group, children tend to leave home so that only the one adult and two adult households are represented in this age group. In the young age group, the two-parent household is divided into Full Nest I (youngest child under six years of age) and Full Nest II (youngest child six years or over). This division also applies to the single parent category. Similarly, in the middle-age group the two parent family is divided into Delayed Full Nest (middle-aged couples with youngest child under six) and Full Nest III (all children six years of age or older). The Delayed Full Nest accounts for an increasing number of couples who wait to have children. The Empty Nest and Solitary Survivor categories can be divided to account for households with at least one working member and those in which all are retired. The result is a total of thirteen categories in the proposed redefined family life cycle (as compared with the seven [or nine if retirement is considered] categories in the traditional FLC). Figure 1 summarizes the various stages.

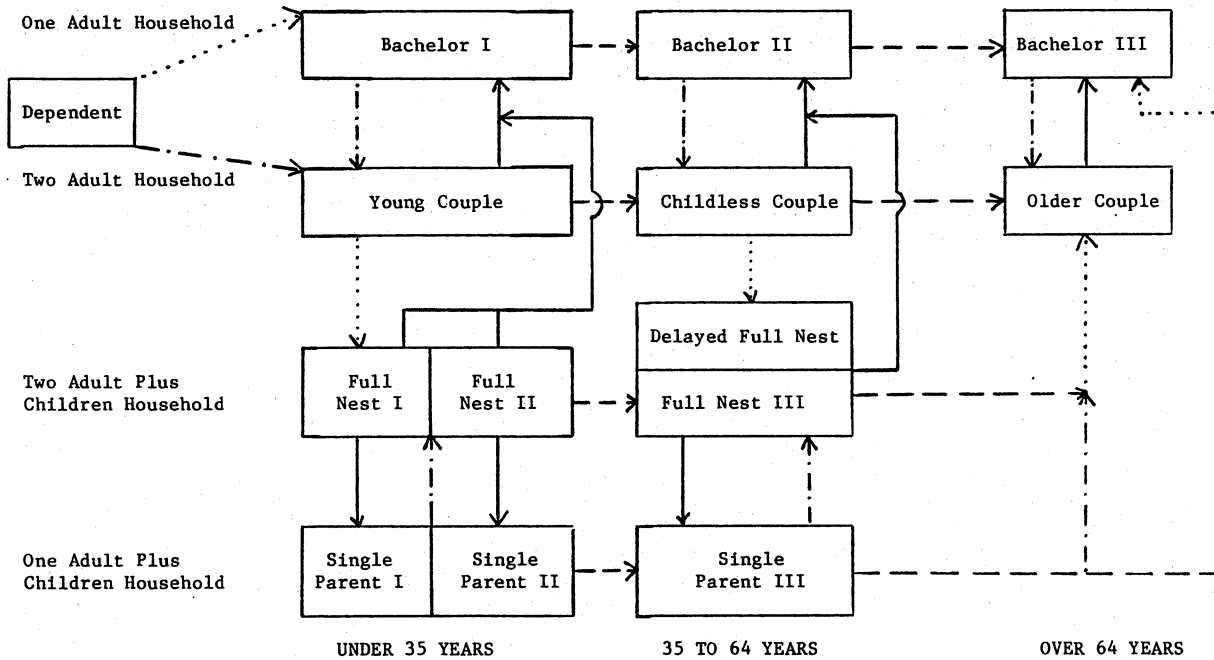
The critical points representing major changes in a person's life (and therefore his/her behavior as a consumer and in other roles), have been superimposed upon a chronological age base. The critical points are marriage and divorce/death, and addition/departure of children. The horizontal lines indicate passage of time, while the vertical lines indicate transition from one household type to another. Only the more common paths are shown. For example, it is possible for a single person to have a child while never having been married. If this event occurred, this individual would move from a bachelor stage to a single parent stage. For simplicity's sake, this line was not included. Other unusual family life cycles could be followed that are not expressly drawn in this figure. However, the stages do exist to classify almost all individuals and households.

Comparisons With Other FLC Definitions

As noted above, other researchers have attempted FLC redefinition. Table 2 was prepared to facilitate comparison of the present approach with two oft-cited alternatives: Murphy and Staples (1979) and Wells and Gubar (1966). Perhaps the major difference between the present redefinition of the family life cycle and both of the alternatives is that the present approach strives to classify all households, e.g., to remove the "other" category which can distort

FIGURE 1

THE REDEFINED FAMILY LIFE CYCLE



analysis. The present approach partitions the set of all households along three dimensions: (1) three mutually exclusive age categories, (2) whether or not there is more than one adult in the household, and (3) whether or not there are children. Thus, this approach strives to be mutually exclusive and collectively exhaustive. Of course, exceptions will always exist, such as young children residing with grandparents, but the redefined FLC cycle does take into consideration a larger percentage of households than do either of the alternatives discussed. Table 2 displays the data.

Using the same adjustments on the data as do Murphy and Staples, the redefined FLC reduces the "other" category to 2.8 per cent. This improves the concept by reducing the unclassified group from 1/6 of the total to 1/30 -- a five-fold reduction to a negligible fraction of the population. Recalculation of the proportions when 1980 census data become available is not expected to significantly alter the magnitude of the improvement.

Concluding Comments

This logical classification scheme is made possible by a rather broad -- perhaps controversial -- definition of

"family". The authors recognize that including in the definition unmarried cohabitants, particularly those of the same sex, is a variance with the traditional view of the conjugal family, and may even be offensive to some in contemporary society. But this definition does reflect the realities of modern times. Much of consumer behavior is household-oriented. Thus, it is necessary for research purposes to eschew normative judgments and define family life cycle stages so that all households in society are included.

The obvious next step in this research is empirical testing. Although many firms routinely use various combinations of the variables which define the FLC (cf. Reynolds and Wells, 1977), the authors do not agree with the approach suggested by Derrick and Lehfeld (1980). Simply collecting data and searching them for empirical relationships will not suffice. Empirical work should be guided by conceptual models, so that theory can be developed.

The family life cycle, as redefined, can perhaps provide the foundation for theory development in consumer behavior. To do so, a number of methodological issues must be addressed. The authors hope that conference discussion and/or reader comment will help them and stimulate others to empirically examine the redefined family life cycle.

TABLE 2
COMPARISONS OF FAMILY LIFE CYCLE DEFINITIONS

Gilly and Enis			Murphy and Staples			Wells and Gubar		
Stage	No. Individuals or Families (000's) ^c	% Total U.S. Population ^c	Stage	No. Individuals or Families (000's) ^c	% Total U.S. Population ^b	Stage	No. Individuals or Families (000's) ^c	% Total U.S. Population ^b
1. Bachelor I	16,626	8.2	1. Young Single	16,626	8.2	1. Bachelor	16,626	8.2
2. Newlywed (5,917)	2,958	2.9	2. Young married without children	2,958	2.9	2. Newly married couples	2,958	2.9
3. Full Nest I (37,193)	8,085	18.1	3. Other young					
4. Full Nest II (18,187)	4,230	9.0	a) young divorced without children	277	0.1	3. Full Nest I	11,433	24.2
5. Single Parent I	677	0.3	b) young married with children (young, infant, & adolescent)	8,082	17.1	4. Full Nest II	6,547	13.2
6. Single Parent II	292	0.1	c) young divorced with children (Y, I, A)	1,144	1.9			
7. Bachelor II	5,327	2.6	4. Middle-aged					
8. Childless Couple (20,885)	10,442	10.3	a) middle-aged married without children	4,815	4.7			
			b) middle-aged divorced without children	593	0.3	5. Full Nest III	6,955	14.7
9. Delayed Full Nest (2,744)	638	1.4	c) middle-aged married with children (Y, A)	15,574	33.0			
10. Full Nest III (64,226)	14,913	31.6	d) middle-aged divorced with child (Y, A)	1,080	1.8	6. Empty Nest I	5,627	5.5
			e) middle-aged married without dependent children	5,627	5.5			
11. Single Parent III	2,295	1.1	f) middle-aged divorced without dependent children	284	0.1	7. Empty Nest II	5,318	5.2
12. Bachelor III	12,464	6.1	5) Older			8. Solitary Survivor in Labor Force	428	0.2
13. Empty Nest (10,635)	5,318	5.2	a) Older Married	5,318	5.2	9. Solitary Survivor Retired	3,510	2.0
			b) Older Unmarried (divorced, widowed)	3,510	2.0			
All Other ^d	<u>5,742</u> <u>203,210^e</u>	<u>2.8</u> <u>100.0</u>	All Other ^d	<u>34,952</u> <u>203,210^e</u>	<u>17.2</u> <u>100.0</u>	All Other ^d	<u>46,738</u> <u>203,210^e</u>	<u>23.3</u> <u>100.0</u>

^aThis table was designed to facilitate comparisons with other FLC definitions; see Murphy & Staples (1979, Table 2) and Wells & Gubar (1966, Table 2).

^bFigures for this Table were taken or derived from U.S. Bureau of the Census 1973, Tables 1, 2, and 9.

^cWhen two or more individuals comprise a "family," the total number of individuals in this FLC stage (shown in parentheses) is derived from Census data. The adjustment factors, following Murphy & Staples (1979) are:

Children = number of families x 2.3 (the average number of children according to the 1970 Census)

Adults = number of families x 2 (except in single parent households)

For example, the 8,085,000 families in the Full Nest I stage in all three FLC versions constitute a total of $2.3(8,085,000) + 2(8,085,000) = 37,193,000$ individuals. Other entries are similarly calculated.

^dIncludes all individuals not accounted for in FLC definitions plus errors of estimation and rounding.

^eSource: U.S. Bureau of the Census. Numbers do not add to the total because of calculations explained in Footnote C.

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THE DISCOUNTING PRINCIPLE IN THE
PERCEPTION OF ADVERTISING

Richard M. Sparkman, Jr.

Abstract

Previous researchers have used either Kelley's ANOVA model of Jones and Davis' correspondence theory to investigate consumers perceptions of advertisements. This paper examines the applicability of the discounting principle to advertising. It concludes that the discounting principle may be better suited to this purpose than either of the other theories.

Introduction

Studies based on various attribution theories have been appearing in the consumer behavior literature for the last ten years. A surprisingly small number of these have dealt with advertising. Mizerski, Golden, and Kernan (1979) cite only four advertising studies (Robertson and Rossiter (1974), Swinyard and Ray (1977) and Smith and Hunt (1978 a and 1978 b). At least two others should be added to this list, Settle and Golden (1974) which was inadvertently omitted and Sparkman and Locander (1980) which was published later. Three of these, Settle and Golden, Smith and Hunt (b), and Sparkman and Locander have experimentally investigated the effects of attributionally based manipulations on advertising effectiveness. Settle and Golden and Smith and Hunt studied advertising copy using Kelley's (1967: 1973) ANOVA model and Jones and Davis' (1965) theory of correspondent inference respectively. Sparkman and Locander used the ANOVA model to investigate advertising context.

Similar investigations of advertising effectiveness based on Kelley's discounting principle have not been reported. The purpose of this study is to extend the earlier work by applying the discounting principle to the study of advertising. Previous research based on the discounting principle addressed one of three areas. Mizerski (1975, 1976, and 1978) and Mizerski and Green (1978) used the discount principle and the related concept of causal schemata to investigate the causal complexity of consumers. Dholakia and Sternthal (1977), Swinyard and Ray (1977), and Sternthal, Phillips and Dholakia (1978) used discounting to explain self perceptions of consumers. Calder and Burnkrant (1977) used the discounting principle in their investigations of the perceptions of store and product selection by consumers.

The Discounting Principle

All attribution theories attempt to explore how observers assign (attribute) causes to an actor's behavior. The discounting principle is perhaps the most easily stated and understood of all the attribution theories. According to the discounting principle: "the role of a given cause in producing a given effect is discounted if other plausible causes are also present" (Kelley 1972 (a) p. 8). If for example, an associate tells us how much he enjoys driving his automobile, we tend to attribute his behavior to the characteristics of the automobile itself. When we later learn that he is trying to sell the automobile, a second plausible cause, the desire to make a sale, is introduced. We might, therefore, discount the automobiles characteristics as a cause for the statement.

Both the automobile itself and the money which could be obtained through its sale are external causes for behav-

ior. They exist outside the actor but may be perceived to influence his behavior. They should be contrasted with internal causes such as the honesty of the actor. Honesty might, for example, be the perceived cause for a statement such as "the car gets terrible gas mileage" (see Sparkman 1980 for a more complete discussion on the relationship between perceived trustworthiness and discounting).

In the example above, the actor described an object which was for sale. this situation is somewhat similar to that of a spokesperson advertising a product. In advertising, there are usually at least two plausible external causes for the spokesperson's behavior, the money he is paid and the product itself. The spokesperson whose behavior is attributed to the advertised product is more likely to be believed than is one who is perceived as being motivated only by the money he is being paid. It is thus in the advertiser's interest to decrease the importance of one plausible external cause (money) and to increase the importance of another (the product itself). While the discounting principle can be applied to the comparisons of two external causes (Kelley 1972 a), it will be shown that neither the ANOVA model nor the theory of correspondent inferences are as well suited for this type of comparison. The discounting principle thus offers a unique opportunity to investigate the effects of the money paid to product spokespersons.

The theory of correspondent inferences is internal in its orientation. "A correspondent attribution occurs when causation for the event is assigned to dispositional properties of the actor, rather than external or situational constraints." (Smith and Hunt 1978 b p. 12). The variable of most interest is the importance which the observer attaches to internal causes. This led Smith and Hunt (1978 b) to calculate a "correspondence score" =

$$\frac{\text{Internal Causes} + \text{External Causes} \times 10}{\text{Internal Causes}}$$

The theory is limited to inferences from comparisons between two conditions: internal plausible cause only and internal plus external plausible causes (Kelly 1972 a). It is of limited use for cases involving multiple external causes.

The ANOVA model focuses on behavioral patterns which distinguish between internal and external causes. If actor "A" performs behavior "B" toward object "O", the ANOVA model would be used to determine if that behavior was caused by the object itself or by some characteristic of the actor, (Kelley 1973). The model is based on the covariance principle. The behavior is attributed to the factor with which it covaries. For example, increasing the length of time over which the behavior is performed toward the object increases the covariance between behavior and object and thus the probability of an object attribution (Kelley 1973). McArthur (1972) demonstrated that the theory works well in noncommercial situations. Unfortunately, it does not work nearly as well with commercial communications. The object of primary interest in advertising is the advertised product. Sparkman and Locander (1980) attempted to increase product attribution by increasing the length of time over which the spokesperson advertised the product. This manipulation in-

creased the covariance between the behavior and the product but did not produce the predicted increase in product attribution. The authors concluded that money was a confounding factor which prevented the hypothesized increase in product attribution. Increasing the time increased not only covariance with the product but also was perceived as increasing the amount of money paid to the spokesperson. Thus, it might be concluded that this second plausible external cause caused product attribution to be discounted.

Money will be a second plausible external cause for any ad for which the spokesperson is perceived as being paid. Therefore, investigations in this area will be of potentially practical as well as theoretical interest. It is hoped that this study will be of useful extension of the earlier work.

Research Design and Hypotheses

The study was conducted using a consumer mail panel in a medium size southwestern city. Panel demographics are given in Table 1. The experimental treatment and the data collection instrument was included in the regular panel mailing. Data was collected during June, 1980. At this time information on Frank Sinatra's \$1.00 a year contract with Chrysler had appeared in the trade press but not in any media for the general public.

TABLE 1

Race of Panel Members	
Caucasian	71.1%
Mexican American	27.0%
Negro	1.6%
Other	.3%

Age of Head of Household	
18 - 25	13. %
26 - 36	32. %
36 - 45	22. %
46 - 55	16. %
56 - 65	10. %
over 65	7. %

Panel members were randomly assigned to one of two groups, a discounting group or a control group. The control group treatment was:

"We are interested in your reaction to the Frank Sinatra ads for Chrysler, which are being tested in your city."

The discounting group was given additional information intended to discount attributions to money. They were told:

"We are interested in your reaction to the Frank Sinatra ads for Chrysler, which are being tested in your city. As you may already know, Mr. Sinatra is working for the same \$1.00 a year as Mr. Iacocca. (Chairman of Chrysler). He has said, 'I was impressed with Iacocca's personal crusade to save Chrysler and protect American Jobs.'"

The application of the discounting principle to commercial communication requires that the observer be given information to discount the monetary reward as a perceived cause for the spokesperson's behavior. If this information is accepted, attributions to money would be reduced and the discounting principle would lead us to expect increased attributions to other causes. However, if the discounting treatment was rejected, there would be no change in attributions to money and no reason to expect a change in any other attributions. It is, therefore, necessary to conduct a manipulation check.

H1: Subjects in the control group will have significantly stronger attributions to money than will subjects in the discounting group.

A successful discounting treatment is expected to result in greater product attributions. Hypothesis two is:

H2: Subjects in the discounting group will have significantly stronger product attributions than will subjects in the control group.

A spokesperson motivated by money should be perceived as less truthful than one motivated by the characteristics of the product he describes. Hypothesis three is:

H3: Subjects in the discounting group will perceive Frank Sinatra as being significantly more truthful than will subjects in the control group.

Dependent Variables

Hypotheses one and two were tested using five point Likert scales ranging from:
strongly agree neither agree strongly disagree

For both treatments, the instructions to the subjects were:

"We are interested in why you think Mr. Sinatra will appear in these ads. Please indicate the extent to which you agree or disagree with each of the possible causes below."

The possible cause given for hypothesis one was:

"For the money he will be paid."

The possible cause for hypothesis two was:

"Chrysler is a good automobile."

For hypothesis three subjects were asked to respond to this question:

"How truthful do you believe Mr. Sinatra will be in these ads?"

by rating Frank Sinatra on a five point truthfulness scale:

not at all slightly somewhat very completely
truthful truthful truthful truthful truthful

Results

One-hundred fifty two questionnaires were sent to female panel members and 152 to the husbands of other female panel members. 96 usable responses were returned from females (54 control and 42 discounting). One hundred twenty five usable responses were returned from males (62 control and 63 discounting). The answers for the questions designed to test hypotheses one and two were coded as "1" for "Strongly Agree," "2" for "Agree", and down to "5" for "Strongly Disagree." Nonresponses were coded as "3". The truthfulness question was coded as "5" for "Completely Truthful" down to "1" for "Not at all Truthful." Nonresponses were coded as "3".

Data were analyzed using the SPSS ANOVA procedure for unequal cell sizes. There were no significant differences between the response of males and females. Hypothesis one was supported at $\alpha = .001$. The manipulation was successful in that subjects in the discounting condition attributed Frank Sinatra's behavior less to money than did control subjects. The average money attribution score was 2.28 for subjects in the control group and 3.11 for subjects in the discounting group. Hypothesis two was supported at $\alpha = .001$. Subjects in the discounting condition had higher product attributions (mean score = 2.51 vs 2.91), than did subjects in the control group. This is as predicted by the discounting principle. Hypothesis three was also supported at $\alpha = .003$. Subjects in the discounting group perceived Mr. Sinatra as more truthful than did control group subject (3.18 vs 2.82).

Summary and Implications

The results of this experiment demonstrate that the discounting principle can be applied to advertising. The effects that the discounting principle predicts in social situations are shown to occur in situations involving commercial communication. This study represents an extension of earlier work in that it demonstrates a method for increasing product attributions by explicitly reducing attributions to money. This is an important extension since money is a second plausible external cause present in most advertising situations. The decrease in the money attribution had a secondary effect. It causes an increase in the perceived trustworthiness for the spokesperson.

This study demonstrates that the discounting principle can be applied to advertising and that it can be used effectively to reduce unwanted external attributions. For an advertiser, the discounting principle offers significant advantages over both the ANOVA model and the theory of correspondent inferences. The discounting principle has an advantage over the theory of correspondent inferences in that it can be used to focus directly on the external cause or causes of interest. It also avoids the confounding of external causes which can occur with attempts to apply the ANOVA model to advertising. Perhaps the biggest advantage of discounting over the other two theories is that it allows for comparisons between two or more external causes. This allows the advertiser to strengthen product attribution by weakening other external attributions such as money.

The simplicity of the discounting principle is also an advantage to both researchers and practitioners. It is unnecessary to determine prior probabilities or to even distinguish between internal and external causes. The discounting treatment itself is much more direct than the ANOVA treatments or correspondent inference treatments employed in earlier studies. Discounting treatments would also be safer for an advertiser to employ. For example, both Settle and Golden (1974) and Smith and Hunt (1978 b) attempted to increase advertiser credibility by providing unfavourable information about the advertised product.

This approach is of theoretical interest but would be risky to apply since any prospect who considered the negative information salient would be discouraged from purchasing the product. The discounting approach is safer since it does not require the use of unfavorable information. Instead, it leads to treatments intended to directly reduce attributions to causes which might compete with the product attribution.

There appear to be at least three applications for the discounting principle to either the practice of advertising or to further research in commercial communication. First the results of this study would seem to be directly applicable to the practice of advertising. It would seem that ads using uncompensated spokespersons would be more effective if that fact were publicized. Second, although this study should not be extended beyond advertising, the results do indicate that other discounting techniques should be investigated. One possibility would be to test the effects of a salesman making the statement that he doesn't work on commission. Finally, discounting treatments may be of use in increasing the effectiveness of the ANOVA model. Discounting might, for example, be able to reduce or eliminate the confounding effects of money on the ANOVA treatments.

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AN APPROACH TO MEASURING THOUGHT PATTERNS AND GAUGING CAUSAL SCHEMATA

William R. Dillon, University of Massachusetts
Chris T. Allen, University of Massachusetts
Marc G. Weinberger, University of Massachusetts
Thomas J. Madden, University of Massachusetts

Abstract

Introduced here is a measurement technique that may allow identification of thought patterns of the sort suggested by attribution theory. Basically, the approach entails a two-stage procedure wherein thought verbalization data are recast into thought categories; these provide the framework for gathering similarity data that are input into a functional scaling method. A sample application illustrates the approach and furnishes data for assessing its face and criterion-related validity.

Introduction

The general problem of assessing communication effects has been and will continue to be of major interest to consumer researchers. Communication research has evolved from simplistic, black-box models to recent approaches which emphasize and specify cognitive mediators of communication effects. Current work in assessing and explaining the impact of information stimuli is dominated by cognitive structure (e.g. Fishbein and Ajzen, 1975) and cognitive response models (e.g. Wright, 1980), or a combination of the two (e.g. Lutz and Swasy, 1977).

A paradigm which adopts a cognitive processing perspective, but has been employed to only a limited degree in explaining communication effects (e.g. Smith and Hunt, 1978), is attribution theory. As characterized by Kelley (1972; 1973), attribution theory entails a general conception of the way people think about and analyze cause and effect data; the theory posits that informational stimuli will evoke configurations of thoughts in the attributor. A major thesis in this paper is that attribution theory offers richness for conceptualizing thought processes in communication contexts that has not been adequately explored by consumer researchers. The purpose of the paper is to introduce, and report an exploratory application of, a measurement technique that may facilitate identification of thought patterns of the sort suggested by attribution theory, and thus prove useful as a tool for assessing communication effects.

Attribution Processes and Communication Effects

A key concept in Kelley's (1972; 1973) theory in the situation where a person is making a causal inference from a single observation of some event¹ (say, a single exposure to some persuasive message), is the causal schema or array. A causal schema refers to the way a person thinks about plausible causes in relation to some observed event (Kelley, 1973); it is the framework within which bits and pieces of relevant information are fit in order to draw reasonably good causal inferences (Kelley, 1973). Consumer

¹Unfortunately, attribution theory is not precise in delineating situations where single inference rules, as opposed to the covariation principle (based on multiple observations over time), are appropriate. The assumption here is that single inference rules are relevant where the attributor views a single informational stimuli. Mizerski, Golden, and Kernan (1979) provide a discussion concerning the apparent controversy inherent in such an assumption (see p. 133).

causal schema is a largely unexplored area (Mizerski, Golden, and Kernan, 1979), but may prove particularly useful for understanding communication effects, because if one can identify the type of causal array evoked by a message, one should be able to make a statement about the inferences the attributor will draw.

Kelley seems to be suggesting that if one were to examine verbalized thoughts (Wright, 1980) elicited after exposure to information stimuli, at least in some instances, certain patterns should be identifiable that indicate the message receiver evoked a causal array. That is, specific thought statements should appear linked in logical configurations that reveal the type of causal inference derived. For instance, the following pattern or set of thoughts would indicate the causal array referred to as augmentation (Kelley, 1972; 1973) had been evoked by an automobile advertisement about handling characteristics: "that was an extremely difficult handling test"; "yet the auto performed flawlessly"; "this auto must be very maneuverable". Such a pattern, of course, indicates that the attributor was making a very strong inference about a characteristic of the object (the auto) in question.

Conceptually, Kelley's notion of causal schema is appealing because of the emphasis on identifying thought configurations to explain message impact. As noted by Wright (1980), approaches to classification of thought verbalization data used in "cognitive response theories" to date uniformly key on individual thoughts, and in so doing may be ignoring important information about the communication's impact that would be revealed in patterns. There is limited evidence derived via verbalization data that persuasive communications do evoke attributional analyses generally (Smith and Hunt, 1978), but little has been done in the way of examining causal arrays via analyses of thought configurations.

Gauging Causal Schemata

Given one accepts the notion that examining causal schemata through analyses of thought patterns would be a useful exercise, the key issue becomes "how does one go about it"; indeed, limited progress in applying the attribution paradigm may be at least as much a function of measurement issues as conceptual ones. To gauge the causal arrays evoked by realistic informational stimuli, one's measurement technique must possess inherent flexibility to allow identification of a variety of thought configurations. Such flexibility is a must because different attributors can react to the same information stimuli in very divergent ways (Kelley, 1973): this can be due to differences in attributors' prior beliefs that affect their perceptions of the information, or differences in the causal schemata they have learned to use and rely on in making inferences from information of the sort they are being exposed to. Notably, although two types of schemata--augmentation and discounting²--

²Under the discounting principle (Kelley, 1973), the role of a given cause in producing a given effect is discounted by the attributor if other plausible causes are also present. Augmentation operates in situations where nonstimulus or external causes may inhibit the observed effect, and thus serve to heighten the impression that a stimulus cause is present and is a potent force (Kelley, 1973).

appear to be evoked so frequently they have achieved the status of attribution principles (Mizerski, Golden, and Kernan, 1979), Kelley's (1972; 1973) work indicates there is potentially an infinite variety of possible schemata, underscoring the need for a flexible measurement device.

Free-flow thought verbalizations provide the ultimate in flexible measurement, and Wright (1980) notes judges could be instructed to code such data according to whether reasoning chains of theoretical interest are evidenced. However, verbalization data are cumbersome to analyze and difficult to quantify, and a problem that continues to plague use of these data--thought weighting (Wright, 1980)--would seem even more problematic when examining thought patterns. For example, should one equally weight all thoughts in a given configuration, or do some thoughts dominate the pattern and appear to be more intense than others? Free-flow methods do not deal very well with such questions (Wright, 1980). For gauging causal arrays then, it would be desirable to have a technique which generally furnishes more quantifiable output than the free-flow approach, and that specifically allows one to address the weighting issue.

Described in the next section is a measurement approach which possesses inherent flexibility, and ultimately supplies more quantifiable output, and seems to deal with the weighting issue in a more appealing way, than free-flow verbalizations. An application of the approach is discussed, and data from this application are used in demonstrating face and criterion-related validity. Like others, this is not a methodology without potential limitations: construct validity issues are raised in the concluding discussion. It is not being suggested that cognitive (attribution) processes are actually revealed via this technique; rather, similar to what Wright (1980) assumes about verbalization data, the proposed method can be portrayed as yielding an indication and description of a process that purportedly takes place when persons are exposed to informational stimuli.

A Thought Matching Approach

The approach involves a two-stage procedure which integrates thought verbalization and functional scaling methodologies. In the first stage subjects' free-flow reports of message-evoked thoughts are used to define a set of plausible causes; in essence, one is determining the thought categories and descriptions of the content of the categories that persons are evoking in responding to a particular message. The second stage derives functional scale weights for the thought categories or plausible causes via a metric modeling of a second group of subjects' perceptions of the similarity between their thoughts and a variety of thought profiles. A sample application seems the most efficient way of describing the approach in detail.

Context of the Sample Application

In June of 1978 Consumers Union released via press conference and its magazine Consumer Reports highly negative information about Chrysler's Horizon and Omni automobiles. All the major network evening news programs carried the story which included a dramatic film demonstrating the purported handling deficiencies of these new autos. Knowing of the impending news release, Chrysler prepared a reply to Consumers Union's condemnation. Videotapes of the Consumers Union story, Chrysler's reply, and a fifteen minute segment of the NBC Nightly News were obtained; this material was used in developing the informational stimuli.³ The broadcast message concerning Horizon/Omni is treated as the focal event in subject's attributional analyses.

³ Five different treatment configurations were utilized; they differed in terms of how much negative or unfavorable product information they contained.

Subjects

Two groups of students were utilized. In stage one, twenty-five graduate students were asked to report the thoughts that had occurred to them as they viewed the information about Horizon/Omni. Sixty-eight undergraduates participated in stage two. As an initial step, pre-exposure belief and intention data were collected from students in the second group. Two weeks later they viewed the videotapes, performed the thought matching task, and again provided belief and intention (post-exposure) information.

Stage One: Prescreening the Informational Stimuli

Immediately after viewing information about the Chrysler/Consumers Union controversy, subjects completed questionnaires which in part asked for a listing of all thoughts that had passed through their minds during viewing. The request was general in nature (i.e., contained no specific priming), no severe space limits were imposed, and ten minutes were allotted for the listing.⁴ Afterwards, a focus group session was conducted to clear up potential ambiguities regarding participants' thought verbalizations, and then they were debriefed and dismissed.

The thoughts were evaluated independently by four judges (the authors) in identifying the various categories of plausible causes for the information that subjects thought about as they viewed the stimuli. The separate content analyses proved similar and revealed that, for the most part, thoughts tended to fall into three categories related to: (1) the safety of the automobile (Horizon/Omni) itself; (2) the general credibility/fairness of Consumers Union; and (3) the validity of the testing procedures used by Consumers Union. Below are examples of thoughts listed in each category:

1. Safety of the automobile itself.

"This confirmed my opinion--the car is unsafe."
"There's something wrong with this car."
"I wondered whether this auto is any less safe than others."
"I thought that this auto is as good as any other compact."

2. Credibility/fairness of Consumers Union.

"I questioned the intent of Consumers Union."
"A low rating from such a reputable source must mean that the auto should be avoided."
"I thought about the fairness of Consumers Union."
"Consumers Union is biased against Chrysler Corporation."

3. Validity of the testing procedure.

"I questioned whether the test simulated real driving conditions."
"I wondered under what circumstances a driver would have cause to twist the wheel 90° and release."
"I thought about the control characteristics of the auto and how poor they were as demonstrated by the test."
"The test appeared legitimate."

Within each thought category, a variety of sentiments were expressed. For example, the automobile was perceived to be unsafe by some, but about as safe as other subcompacts by

⁴ Wright (1980) reports that a fairly short time limit may be preferred to guard against made-up thoughts. However, in the context of this use of thought verbalizations, we felt that to potentially exclude valid thoughts would run the risk of overly restricting the generality and relevance of the thought profiles.

others; to some, Consumers Union was perceived as fair, yet others called its credibility/fairness into question; the test procedure was considered legitimate by some, while others questioned its realism. In general, the evaluative nature of subjects' thoughts reflected either support, disbelief or uncertainty about the car's safety, Consumers Union's credibility/fairness, and/or the testing procedure's validity. Notably, careful examination of the thought verbalizations also showed that certain thought patterns tended to occur together, that thought linkages did exist, and that the thought statements had a definite evaluative component.

Stage Two: Thought Profiles and Thought Matching

Twenty-seven unique thought profiles containing three thought statements, one from each of three thought categories, were generated from the framework shown in Figure 1. Notice that statements within each category were framed in such a way as to reflect support, disbelief or uncertainty about the automobile's safety, the fairness of Consumers Union, and the test's validity. After the second group of subjects watched the videotaped material, they were asked to recall the thoughts that passed through their minds while viewing the information about the Chrysler/Consumers Union controversy. Subjects were given a stack of twenty-seven "3x5" cards; each card held one of the twenty-seven thought profiles. (A sample profile card is displayed in Figure 2.) Subjects were first instructed to sort the cards into three piles: they placed in one pile cards containing statements very similar to their thoughts; in a second, cards containing statements somewhat similar to their thoughts; and in a third, cards with statements dissimilar to their thoughts. Each time instructions were given, strong emphasis was put on subjects recalling the thoughts about the Chrysler/Consumers Union controversy that came to their minds as they watched the videotape. After the sorting, subjects recorded a similarity judgment for each of the profiles on a nine point scale ranging from (1)--"these statements completely matched my thoughts" to (9)--"these statements did not match my thoughts at all". By rating the similarity of all twenty-seven profiles, each participant evaluated every possible combination of thoughts.

Functional Scaling

Utilizing these similarity judgments, a simple metric scaling of the profile data is possible through use of a dummy-variable coding procedure. Since each profile is defined by three thought statements, it can be uniquely represented by two dummy variables, where each dummy reflects the absence or presence of each thought statement.

For example, from the framework of Figure 1, the code (00,10,01) indicates the profile with thought statements:

- Horizon/Omni is less safe than other small cars.
- I have no way of knowing how fair Consumers Union is in their product ratings.
- Consumers Union's procedure seems very realistic and reflects what a person might encounter when driving.

The functional scaling is accomplished by use of standard regression analysis. With dummy-variable coding the model takes the form:

$$Y_{ij} = b_0 + b_1 D_{2i}^{(1)} + b_2 D_{3i}^{(1)} + b_3 D_{2i}^{(2)} + b_4 D_{3i}^{(2)} + b_5 D_{2i}^{(3)} + b_6 D_{3i}^{(3)} \quad (1)$$

where Y_{ij} ($i = 1, 2, \dots, 27$) denotes the j^{th} person's similarity rating of the i^{th} belief profile, ϵ denotes least squares approximation, b_0 denotes the intercept term, b_1, b_2, \dots, b_6 denote the partial regression coefficients, $D_{2i}^{(k)}$ and $D_{3i}^{(k)}$ denote the respective second and third thought

statements for the k^{th} ($k = 1, 2, 3$) thought category.

FIGURE 1
THOUGHT CATEGORY DESCRIPTIONS

The Automobile Itself

- (0,0) - Horizon/Omni is less safe than other small cars.
- (1,0) - I'm just not sure whether Horizon/Omni is more or less safe than other small cars.
- (0,1) - Horizon/Omni is about as safe as other small cars.

The Credibility of the Consumers Union Testing Agency

- (0,0) - It seems Consumers Union almost always emphasizes the negative in its product ratings.
- (1,0) - I have no way of knowing how fair Consumers Union is in its product ratings.
- (0,1) - Consumers Union is fair and even-handed toward manufacturers in its product ratings.

The Validity of the Testing Procedure

- (0,0) - There are problems with the Consumers Union test procedure and it seemed very unreasonable. It doesn't seem to reflect a condition a person would encounter when driving.
- (1,0) - I'm somewhat confused by what I've seen. Consumers Union's testing procedure may or may not reflect what a person may encounter when driving.
- (0,1) - Consumers Union's procedure seems very realistic and reflects what a person might encounter when driving.

FIGURE 2
INSTRUCTIONS AND SAMPLE PROFILE CARD

Directions:

"While watching the videotape some thoughts may have come to mind. On the 27 cards in the deck there are different thought combinations."

"Look at each card and rate on the scale at the bottom how closely the entire profile of thoughts on the card matched your own thoughts as you watched the videotape program."

Sample Profile Card:

- Horizon/Omni is less safe than other small cars.
- Consumers Union is fair and even-handed toward manufacturers in its product ratings.
- Consumers Union's procedure seems very realistic and reflects what a person might encounter when driving.

The partial regression coefficients will indicate the extent to which a subject reported that a given thought statement matched his or her own thoughts. Thus, it is possible to describe the pattern of plausible causes/thought categories evoked in the person's thinking, and through simple computations assign scale values (weights) to the plausible causes. These weights furnish an indication of the relative intensity of the various individualized thoughts within a configuration. Note that unlike previous approaches using free response data, the weights are not self-explicated but are derived unobtrusively via the functional scaling procedure.

Face Validity of the Approach

Data from the sample application are used here to examine face validity, and in the next section, to evaluate criterion-related validity. Face validity is assessed in terms of (1) how well the twenty-seven profiles seemed to allow

subjects to characterize their thoughts, and (2) the plausibility of the kinds of thought patterns identified.

Distribution of R^2 's

Functional scaling of the thought profile data entailed fitting sixty-eight regressions, one for each subject; the dependent measure in each was the reported similarity score assigned to a particular profile. The observed R^2 's suggest that the twenty-seven profiles did allow subjects to adequately report their own thoughts, offering support for face validity of the approach. The median R^2 was 0.77; fifty-seven subjects had R^2 's $> .6$, and just seven had R^2 's $< .5$. Where poor fits did surface, the difficulty of the data collection task might have been a problem, or it may have been that for some persons the profiles did not allow them to accurately represent their thoughts; alternatively, some may have had no thoughts at all. In any case, the efficacy of a given measurement application can be assessed in part from the fitting process; this would appear to be an attractive feature of the method.

Derived Thought Configurations--Discounters and Enhancers

Table 1 presents summary output of the functional scaling method for two sample subjects (labeled Persons D and E). Low values for partial regression coefficients (p.r.c.'s) mean that the respective plausible cause apparently matched a thought that had come to the person's mind while watching the videotape.⁵ (The p.r.c.'s have been scaled so zero is the smallest value.) By identifying those thoughts with p.r.c.'s of zero, a "most similar" overall thought profile can be identified.

The modal thought profile is different for the two sample subjects: Person D thought the Horizon/Omni as about as safe as other small cars, Consumers Union fair, and the test procedure unrealistic; Person E thought the Horizon/Omni less safe, Consumers Union fair, and the test realistic. While attribution theory does not supply clear rules for selecting an attributional focus and an attendant theoretical paradigm (Mizerski, Golden, and Kernan, 1979), it seemed apparent in the present context that the object of the attribution process was the automobile. Thus, Persons D and E appear quite different in terms of their likelihood of making an internal or stimulus attribution about the auto's safety; this difference appears related to their thoughts about the test procedure external factor, but not their thoughts about Consumers Union--another external factor.

The p.r.c.'s supply additional insight about one's message-evoked thoughts: if within a thought category they are all of the same magnitude, then either all three thought statements were considered plausible causes, or, more likely, they tended not to match the person's thoughts at all. On the other hand, if the within thought category p.r.c. spread is large, then one thought was highly discriminative and reflective of "the" plausible cause. To provide a method for capturing idiosyncratic differences weights were assigned to the thought statements which reflect the size of the associated p.r.c. as well as the discriminative power within a category. The weights were calculated by taking the ratio of the exponential of each within category

p.r.c.;⁶ these weights are shown for subjects D and E in the last two columns of Table 1. This type of normalization is analogous to the conditional logit specification used in consumer choice models (McFadden, 1976).

TABLE 1
A COMPARISON OF TWO PERSONS' (D AND E) THOUGHT PATTERNS

Thought Categories From Figure 1	Regression Coefficients ^a		Weights	
	Person D ^b	Person E ^c	Person D	Person E
<u>The Automobile</u>				
1. less safe	3.33	0	0.03	0.91
2. not sure	1.11	3.11	-- ^d	--
3. about as safe	0	3.00	--	--
<u>Fairness of Consumers Union</u>				
1. unfair	0.78	0.67	0.26	0.29
2. unsure	1.33	1.44	0.16	0.14
3. fair	0	0	0.58	0.57
<u>Validity of Test</u>				
1. unrealistic	0	2.78	0.85	0.05
2. uncertain	1.78	2.33	0.14	0.09
3. realistic	4.33	0	0.01	0.86

^aThe partial regression coefficients have been scaled so that the smallest value is zero; smaller values mean that the subject rated the statement as similar to their own thoughts.

^b $R^2 = .90$; D signifies discounting

^c $R^2 = .91$; E signifies enhancing

^dIn the context of this example, weights for the "not sure" and "about as safe" dimensions are not pertinent.

⁶The transformation used to compute the weights was of the form:

$$W_j^{(a)} = \frac{e^{b_j^{(a)}}}{\sum_{j=1}^{j^{(a)}} e^{b_j^{(a)}}}$$

$a = 1, 2, 3$; $j = 1, 2, 3$; where $W_j^{(a)}$ denotes the estimated weight for the j th thought statement of the a th thought category, $e = 2.718\dots$, $b_j^{(a)}$ is the p.r.c. (with algebraic sign reversed) associated with the j th thought statement of category a . This type of transformation induces weights which will be larger as the thought category's discriminability increases; in addition, the rank order of weights within a thought category is invariant over the transformation.

⁵All results are based on raw data; no standardization was necessary because means and standard deviations were similar across subjects.

Referring to Table 1, the within category p.r.c. ranges for the internal and external causes are similar for Persons D and E; thus, although they held different thoughts in the case of the test procedure, the weight assigned to their respective most similar thought is about the same for both persons. Note that for the internal cause category, marked differences in thoughts were exhibited. Person D's did not seem to question the safety of the Horizon/Omni, whereas Person E's did.

Given their apparent thought patterns, it is reasonable to expect that Person D would be less likely than E to revise his beliefs about the auto. Indeed, D's thoughts seem to identify a causal schema--discounting--familiar to attribution researchers; D discounted the negative information about the auto's safety because he perceived the test was unrealistic. Conversely, E perceived the test realistic, Consumers Union generally fair, and these thoughts seemed to enhance E's suspicions about the auto's safety. These "discounting" and "enhancing" configurations typified many of the participants' thought processes. Just as was done for D and E, all subjects were classified as discounters, enhancers, or neither based on observed patterns in their respective p.r.c.'s.

Unlike discounting, enhancing is not a schema examined in prior attributional research, but would appear to be simply the flip-side of discounting: just as external factors can serve to inhibit internal or stimulus attribution, they also may function to enhance it. Kelley's (1972; 1973) work seems to portray augmentation as the schema which is the natural opposite of discounting; however, thought patterns like those of subject E do not fit Kelley's rather strict definition of augmentation. The fact that theoretically-plausible thought patterns were identified establishes face validity for the approach; the identification of a plausible, but somewhat unexpected thought configuration--enhancing--seems to demonstrate the technique's desired flexibility.

Criterion-Related Validity

Discounting, Enhancing, and Stimulus Attribution

Although direct measures of stimulus attributions were not taken, the output of the functional scaling procedure does provide an indicator for such attributions in the derived weights. Larger weights on the thought "the auto is less safe" should reflect greater likelihood of a causal attribution about the auto/a stimulus attribution (e.g., D's weight was .03, E's was .91). If in fact the discounter and enhancer thought patterns are realistic portrayals of causal schemata actually evoked, persons so classified should differ on their stimulus attribution scores.

Each subject's thought configuration was categorized judgmentally as being suggestive of discounting, enhancing, or neither, based on the pattern of p.r.c.'s derived for their thoughts on the two external factors. The process resulted in 41 enhancers, 17 discounters, and 10 unclassifiable patterns. An analysis of variance was then run on stimulus attribution scores for enhancers versus discounters. The first row of Table 2 shows the stimulus attribution scores are indeed significantly higher for subjects whose causal arrays reflected enhancing.

Discounting, Enhancing, and Cognitive Structure

Because it is reasonable to expect that causal explanations play a role in determining a plan of action and decision making, variations in the nature and composition of causal schemata evoked should yield consequent changes (i.e., revisions) in cognitive structure (Fishbein and Ajzen, 1975; Mizerski, Golden, and Kernan, 1979). Stronger stimulus attributions, for example, should yield stronger changes in beliefs. In the following analysis, difference

scores (postexposure-preexposure) are used to be consistent with the definition of an attribution as a revision of a belief in light of new information (Fishbein and Ajzen, 1975).

TABLE 2
ANALYSIS OF DEPENDENT VARIABLES--DISCOUNTERS
VS. ENHANCERS

Dependent Variable	Discounters (Means)	Enhancers (Means)	Degrees of Freedom	F Ratio
Stimulus Attribution Scores	0.31	0.50	1,56	5.52 ^b
Revised Safety-Belief Scores	0.52	1.92	1,53	10.13 ^a
Revised Purchase Intention Scores	0.50	1.02	1,53	6.02 ^b

^a p < .01 ^b p < .05

Stimulus attribution scores were correlated with (1) (post-exposure-preexposure) belief scores about the safety of Horizon/Omni, and (2) the change in the likelihood of considering Horizon/Omni if purchasing a new automobile as evinced in (postexposure-preexposure) intention scores. Results were encouraging: the correlations were $r = 0.72$ ($p < .001$) for belief revisions and $r = 0.64$ ($p < .001$) for intention revisions. Thus, a substantial amount of variation in the change in beliefs and purchase intentions was accounted for by the stimulus attribution scores. These scores, of course, are just weights derived from the functional scaling procedure.

Enhancers should have experienced greater changes in their beliefs and purchase intentions concerning Horizon/Omni than discounters. As a final step in the investigation, an analysis of variance was run on the (postexposure-preexposure) belief and intention scores, and the results are summarized in Table 2. As expected, the second and third rows of the table show that mean revision scores are significantly higher for enhancers than for discounters. Since higher mean revision scores reflect more unfavorable changes in beliefs and purchase likelihoods (remember, the treatments contained negative or unfavorable information about Horizon/Omni), the results suggest a strong measure of criterion-related validity for the measurement approach.

Concluding Remarks

Our purpose was to introduce a measurement approach for identifying theoretically-plausible thought patterns evoked by informational stimuli. In one exploratory study it is impossible to deal with all questions concerning such a new approach, but the results of this effort seem promising. Further refinement may yield a technique that will prove useful both for theory testing, and in practical applications like evaluating the impact of advertisements.

Successful use of the method depends on accurately defining the number of thought classes and thought statements potentially evoked in response to a message. If past studies in the attribution area are any indication, the

typical research design should allow the thought process to be characterized by a small number of thought categories and within thought statements. Where the ability to adequately characterize the thought process with a limited number of thought profiles is suspect, the researcher can adopt (orthogonal) fractional factorial designs which will allow the estimation of weights on an unconfounded basis. This approach would be analogous to that which is used in conjoint analysis (Green, 1974; Green and DeSarbo, 1978).

The major concern about the approach at this point involves construct validity. Presenting people with thoughts to rate as similar/dissimilar to their own may encourage them to report thoughts they did not have; moreover, the structure imposed on the reporting by the thought matching procedure may culminate in derivation of artificial thought patterns. Stage one of the approach provides a check against the latter concern since one can assess whether theoretically-plausible patterns emerged in the free-flow verbalization data. In this application, analysis of the free-flow data did indicate the presence of thought patterns similar to those derived via functional scaling of the thought matching data. The former concern is more problematic; similar concerns have been expressed about free-flow data (e.g. Lutz and Swasy, 1977) because asking persons to list their thoughts presumes they had thoughts. Construct validity of both the proposed approach and thought verbalization methods generally might be heightened simply by giving subjects a legitimate option to report they had no thoughts.

Empirical research can help lessen concerns about construct validity. Experiments could be designed using treatment messages which theoretically would yield different attributions: the technique would be used to examine whether the expected differences in attributions were evidenced in subjects' thought patterns. Further, research might be designed to allow one to make causal inferences about whether identified thought patterns actually mediated the effect of divergent persuasive messages on beliefs. Such research seems to be the logical "next step" in developing the method introduced here.

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CAUSAL ATTRIBUTIONS AND PERSUASION:
THE CASE OF DISCONFIRMED EXPECTANCIES

James M. Hunt, University of Florida
Teresa J. Domzal, George Mason University
Jerome B. Kernan, University of Cincinnati

ABSTRACT

The persuasiveness of an apocryphal advertiser was tested by comparing the post-message attributions of subjects with their pre-message expectations in an experimental setting. Mixed results suggest that disconfirmed expectations lead to enhanced message acceptance and "entity" attributions when pre-message expectancies anticipate reporting bias. Modality manipulations further suggest the superior efficacy of a hidden camera over a "typical purchaser" in enhancing the credibility of both the corporate sponsor of the advertising and its spokesperson.

INTRODUCTION

Communicators in general and advertisers in particular have long been interested in how individuals assess the veridicality of persuasive messages. Attribution theory (Bem 1972; Heider 1958; Jones and Davis 1965; Kelley 1967, 1972a 1972b, 1973; Kelley and Michela 1980), which suggests that the inferences people make regarding the causal nature of a message influence their judgments about the accuracy of that message, is a useful perspective for undertaking the analysis of persuasion.

This study is an attempt to bring attribution theory to bear on promotion--the efforts of sellers to persuade prospective buyers to accept the seller's information [as a veridical interpretation of the environment] and store it in retrievable form" (Kernan and Sommers 1967). It focuses on the attribution/persuasion process, paying particular attention to the related concept of source credibility.

BACKGROUND

Attribution theory has been characterized as the single most pervasive influence on social psychology during the 1970s (Cialdini, Petty and Cacioppo 1981) and its presence in consumer research is no longer a novelty (Burnkrant 1975; Mizerski, Golden and Kernan 1970; Scott 1978). It is not surprising that the majority of consumer-related attributional studies deal with promotion-like phenomena (e.g. Golden 1977; Hansen and Scott 1976; Settle 1972; Settle and Golden 1974; Smith and Hunt 1978; Sparkman and Locander 1980) since, at base, attribution theory is information processing theory.

A direct link between attributional analysis and the persuasion process has been proposed by Eagly, Wood and Chaiken (1978), who argue that message recipients should be viewed as problem solvers who are attempting to maximize the validity of their judgments. According to the model, a key factor in the persuasion process is the message recipient's presumption about the likely position a communicator will espouse. This expectancy is based on pre-message cues regarding the communicator's traits and the extant situational pressures. If the expectancy is subsequently confirmed by the message (if the source "says what the receiver expects"), the validity of the message arguments is discounted, the credibility of the source is questioned, and little persuasion results. When pre-message expectancies are disconfirmed, however, the source is seen somehow to be credible--to be telling the "real truth" about the object in question.

The Eagly, Wood and Chaiken model does not predict results radically different from the more traditional paradigms (e.g. Festinger and Maccoby 1964; Hovland and Mandel 1952; Jones et al. 1971; Koeske and Crano 1968; McPeck and Edwards 1975; Mills and Jellison 1967; Steiner and Field 1960; Thibaut and Rieken 1955; Walster, Aronson and Abrahams 1966; Walster and Festinger 1962) and it focuses on what Cialdini and Petty (1981) call an "elastic" opinion shift--one that responds almost wholly to situational demands. Its value to consumer analysis rests largely in how it hypothesizes persuasive effects. Two features are noteworthy. First, explicit recognition is given to the effect on a recipient simply expecting to have to deal with a persuasive communication. Second, this anticipatory process is explicated through attributional analysis.

To assert that there are anticipatory message effects is to recognize the existence of pre-message cognitive processing. Attributional analysis simply explicates this, commonly by opining the invocation of causal schemata (Kelley 1973)--in this case idiosyncratic summaries of the likely causes for a source to take one stance or another, relative to some issue. In the case of a persuasive (promotional) message, a recipient likely anticipates a presenter (a spokesperson, a corporation) to reflect bias, since the seller obviously has something to gain by message acceptance. For the most part, this is "reporting bias" (the difference between what the source knows about the entity being described and the way he actually describes it) as opposed to "knowledge bias" (the difference between the truth about an entity and the source's understanding of that entity). Or, as Eagly, Wood and Chaiken (1978) suggest, one is far more likely to question the trustworthiness of a commercial message than the expertise of its source.

Succinctly stated, the Eagly, Wood and Chaiken model argues that communicators can increase their credibility--and thus persuasive efficacy--by transmitting messages that disconfirm recipients' pre-message expectancies, when those expectancies manifest reporting bias. The present study attempts an operational test of that model by explicitly measuring the pre-message schemata and expectancies that attend realistic, consumer-related advertisements. The question is whether advertisements that disconfirm pre-message expectancies--that don't say what one would expect an advertisement to say about a product--engender "entity" attributions (those which infer the cause of the message to be the product, per se, rather than some situational, reporting bias).

METHOD

Subjects

A total of 150 students (female and male) was selected from the student body at the University of Cincinnati to participate in an "advertising evaluation" task. These subjects were assigned randomly to one of five groups: an "expectancy" group or one of four different "persuasion" (treatment) groups.

Procedure

Subjects were informed that they were participating in a study designed to test advertisements for several new products that were soon to be test marketed in various cities throughout the country. They were then told that their task would entail: (1) reading background information about several manufacturer/advertisers; (2) reading background material about several new advertisements; (3) viewing these advertisements; and (4) responding to questions to assess their reactions.

After receiving these instructions, each subject received a booklet containing experimental materials. For the first phase of the experiment, the booklets presented background material concerning the "Telco Electronics Corporation," a firm that purportedly had recently developed a new clock radio. It was stated that this corporation was now in the process of testing various advertising formats for television audiences, and that subjects would be viewing the content of one of these advertisements in storyboard format.

Next, subjects read "background facts" about one of "several" possible advertisements. The format was described as one in which a customer (spokesperson) endorses the Telco product. Following this, the background material described how this spokesperson was to be introduced to the television audience. Finally, the background section ended with the spokesperson about to "report his experience with the product."

At this point, subjects viewed a sample mock advertisement having several picture frames accompanied by a script. After that, they completed a questionnaire designed to assess the dependent measures of the study.

Expectancy subjects were treated identically, except they did not actually view the mock advertisement. Instead, after reading the background materials, they responded to a set of items pertaining to their expectancies about what would be said in the advertisement and their pre-message schemata.

Promotional Message

The sample advertisement viewed by each subject consisted of six frames. Each of these frames depicted the spokesperson--a man in his mid-twenties--making various statements (directed toward the viewers of the message) about the Telco clock radio as he was standing at a store counter. The statements consisted of information related to four product features--ascertained through two pilot studies--and two statements dealing with the spokesperson's overall evaluation of the product. These latter statements (appearing in the first and last frames) described the product as an overall superior clock radio.

Independent Variables

Manipulation of the expectancy confirmed/disconfirmed factor was carried out by varying the information subjects were exposed to in the commercials. Subjects either received an advertisement that made superior claims (expectancy confirmed) on all product features--(1) sound of the radio, (2) accuracy of the clock-radio, (3) clock and alarm reliability, and (4) styling--or they received a message that made such claims on only three of these attributes (expectancy disconfirmed). On the fourth attribute, sound, the information given to subjects in the disconfirmed group was that the Telco product "did not have the best sound."

A second factor was used to elaborate the expectancy confirmed/disconfirmed factor. This factor involved the type of spokesperson used to convey the commercial message. Half the subjects were exposed to a message from a spokesperson described as a typical customer who was in the

process of buying a Telco clock radio. The other half viewed a commercial conveyed by a customer who had been filmed by a "hidden camera." This manipulation was carried out through the information presented in the background section dealing with the advertising format.

Variation of this second factor was thought to be a further manipulation of reporting bias. Essentially, the hidden camera condition involves a speaker in a modality different from that associated with "typical" advertisements, where the spokesperson usually appears as though s/he is following a script. As such, it was anticipated that the hidden camera condition would lead to more entity attributions and thus have a greater persuasive effect.

Given these manipulations, a 2 (expectancy confirmed vs. disconfirmed) x 2 ("typical purchaser" spokesperson vs. "hidden camera" spokesperson) between-subjects design resulted. Expectancy subjects responded to background material representing the "typical purchaser" cell.

Dependent Measures

Expectancies. Expectancy subjects were asked to indicate their "agreement" or "disagreement" to a series of items dealing with their judgments as to what the "typical purchaser" would say in the advertisement they were about to read. Each of these items -- rated on a 15-point bipolar scale ranging from "strongly agree" to "strongly disagree" -- corresponded to specific product features.

Causal Schemata. Subjects were asked to judge the importance of three factors in influencing the seller's claims as conveyed in the ad: (1) "the real facts about the clock radio" (entity-related factor); (2) "the firm's true feelings about the clock radio" (internal/seller-related factor); and (3) "the firm's desire to sell products" (situational/bias-related factor). Two different scales were used to assess this item. Subjects were asked first to respond to the importance of each factor on a 15-point bipolar scale ranging from "extremely important" to "extremely unimportant." In addition, of the three factors mentioned, subjects selected the factor that was "the most important in influencing the Telco Corporation to produce and televise such a commercial."

In addition to the items above, subjects were asked to respond to a similar set of items involving the actual speaker. Four causal factors (again measured on a 15-point bipolar scale) were used: (1) the pay the speaker received for appearing in the ad; (2) the speaker's true feelings; (3) the real facts about the clock radio; and (4) the speaker's opportunity to promote himself on TV. The items used for both this assessment of causal schemata and the one above were ascertained from two previous pilot studies.

Pre-message Schemata. Expectancy subjects responded to the same set of items as did the subjects in the persuasion group. However, the items that expectancy subjects responded to were prefaced by the following statements. "Although you do not know for certain what this (the typical purchaser) person will say in the ad, assume that he actually says what you personally expect him to say. In that case, how important do you think each of the following factors would be in influencing him to make such a statement?"

Message Acceptance. Prior to receiving the questions pertaining to causal schemata, subjects indicated their agreement to a series of 15-point scales, anchored by "strongly agree" vs. "strongly disagree." As was the case with expectancy subjects, each belief statement corresponded to one of the various product characteristics discussed above. Additionally, subjects rated the "overall superiority" of the Telco clock radio. This, also, was done on a 15-point scale.

Source Credibility. Source credibility was measured at two levels: (1) the level of the individual spokesperson; and (2) the level of the corporation. Regarding the spokesperson, subjects were asked their judgment as to how "honest" and how "sincere" he was. Both items were scored on a 15-point (strongly agree vs. strongly disagree) type scale. Credibility of the company was assessed on a 7-point bipolar scale. This measure entailed responses to an item that had to do with how "honest" the corporation was as an advertiser.

Other Measures. In attempting to assess reporting bias, subjects judged two items. The first asked subjects to indicate their agreement (on a 15-point scale) with the statement that the spokesperson "tried to report his true private opinion about the clock radio." The second item involved whether subjects thought the spokesperson would state that the clock-radio was a "superior" clock-radio during "the course of a private conversation."

RESULTS*

Data analysis was conducted by using a 2 (expectancy confirmed vs. disconfirmed) x 2 (typical purchaser spokesperson vs. hidden camera) analysis of variance. In addition, chi-square analysis was used to assess the dichotomous measures of schemata.

Design Requirements

One requirement of the design was that expectancy subjects exhibit bias-related expectancies -- i.e., they expected claims about the product to be relatively superior ones. To establish this, a comparison was made between (1) subjects' expectations that in the ad the spokesperson would describe the product as being a "superior clock radio" and (2) their expectations as to what he would say about the product in a private conversation. A paired t-test showed these to be different -- $t(28)=6.56$, $p < .001$ in the hypothesized direction. In addition, the average value of attribute-related expectancies fell into higher ranges of the 15-point scale: 11.73 for sound quality; 12.79 for product accuracy; 12.73 for reliability; and 11.04 for styling.

Message Acceptance

In three of the four performance attributes, persuasion subjects accepted the promotional message more when they received a message that disconfirmed expectations. This is evident from Table 1. Belief scores on the first attribute (sound quality), which was used to manipulate expectancy confirmation/disconfirmation, were significantly lower -- as hypothesized -- in the disconfirmed group: $F(1,110) = 117.39$, $p < .0001$. In the case of the "accuracy" dimension, belief scores for the subjects in the disconfirmed group were significantly greater than those of the confirmed group: $F(1,110) = 4.63$, $p < .03$. Similar results were obtained for the reliability feature: $F(1,110) = 5.17$, $p < .02$. No difference was found between the confirmed and disconfirmed group in terms of "styling," the fourth product attribute. Finally, none of the expectancy confirmation x spokesperson type interaction terms approached significance, nor did the main effects of spokesperson type.

Causal Schemata

Subjects' judgments regarding why the corporation would sponsor the advertisement differed as a function of expectancy confirmation. The group receiving a message that disconfirmed their expectations made more attributions to the entity-related factor ("real facts") than did the group that received a

*Space limitations prohibit a complete display of findings. For additional elaboration, contact James Hunt, Department of Marketing, University of Florida, Gainesville 32611.

message confirming their expectations. This is exhibited in Table 2. Further, the number of subjects who attributed the cause of the ad to the selling motive (situational bias) was less in the disconfirmed group than in the confirmed group. These differences were assessed through a test of independence using a (Yates corrected) chi-square statistic ($X^2 = 2.824$, $df=1$, $p < .09$). Similar results were found over the spokesperson type factor. Subjects exposed to the "hidden camera" spokesperson made more entity-related and fewer situational attributions than did the group that received the message from a "typical purchaser" spokesperson (corrected $X^2 = 2.633$, $df=1$, $p < .10$).

TABLE 1

PERSUASION SUBJECTS' MEAN BELIEF SCORES BY EXPECTANCY CONFIRMATION AND TYPE OF SPOKESPERSON

Product Attribute	Expectancy Confirmation			
	Confirmed		Disconfirmed	
	Typical Purchaser	Hidden Camera	Typical Purchaser	Hidden Camera
Sound Quality	9.23	9.34	3.83	4.80
Accuracy	9.73	10.24	10.52	11.27
Reliability	10.30	10.58	11.21	11.62
Styling	10.70	10.34	10.14	10.62

TABLE 2

FREQUENCY OF SUBJECTS' RATINGS OF FACTORS INFLUENCING THE CORPORATION

Factor	Plausible Cause		
	Real Facts	Firm's True Feelings	Desire to Sell Products
Expectancy Confirmed	1	0	59
Expectancy Disconfirmed	6	0	49
Expectancy Group	6	2	21
Typical Purchaser	1	0	58
Hidden Camera	6	0	50

TABLE 3

FREQUENCY OF SUBJECTS' RATINGS OF FACTORS INFLUENCING THE SPOKESPERSON

Factor	Plausible Cause			
	The Pay	True Feelings	Real Facts	Promote Self
Expectancy Confirmed	31	10	7	12
Expectancy Disconfirmed	30	9	3	13
Expectancy Group	15	3	5	6
Typical Purchaser	37	3	5	14
Hidden Camera	24	16	5	11

No expectancy confirmation differences were found to exist with respect to the reasons for the spokesperson's statement. Spokesperson type, however, did have an impact on subjects' inferences about why the spokesperson said what he did in the ad. This can be seen in Table 3. The group that was exposed to the "hidden camera" speaker made fewer situational attributions (pay and self promotion) and more attributions to the spokesperson's "true feelings" about the product ($X^2 = 11.955$, $df = 3$, $p < .01$).

Analysis of schemata in terms of importance scores for each causal factor was done through a 2 (expectancy confirmed vs. expectancy disconfirmed) x 2 ("typical purchaser"

spokesperson vs. "hidden camera" spokesperson) analysis of variance. With respect to the expectancy confirmation factor, no significant main effects were found. There were, however, several hypothesized main effects of the spokesperson type factor. Subjects who were exposed to the hidden camera spokesperson judged the speaker's statement to be caused: less by "pay," $F(1,110) = 9.55, p < .01$; less by "the opportunity to promote himself" ($p < .001$); and more by his "true feelings about the clock radio" ($p < .01$). In addition, these same subjects rated the "desire to sell products" (situational factor) to be less important in influencing the corporation than did those exposed to the "typical purchaser" ($p < .06$).

Pre-message Schemata

Comparing the expectancy group to both the expectancy confirmed and disconfirmed groups, the findings are at odds with the hypothesized results. As can be seen from Table 2, the expectancy group differs considerably from the expectancy confirmed group in their explanations of why the corporation would/did produce the ad ($X^2 = 14.625, d.f. = 2, p < .001$). Further, the expectancy group differed only marginally from expectancy disconfirmed group ($p < .14$). That difference, however, was opposite to the hypothesized difference -- i.e., the expectancy disconfirmed group made proportionately more attributions to the situational factor (selling motivation).

Regarding the spokesperson's statement, as would be hypothesized, the expectancy group did not differ from the expectancy confirmed group in terms of causal explanations. However, contrary to our anticipation, the expectancy group did not differ from the expectancy disconfirmed group, either.

Reporting Bias

Mean scores for the two measures of reporting bias appear in Table 4. Analysis of variance indicated that the only factor having a significant main effect on either of these dependent measures was that of spokesperson type. As discussed above, the first measure dealt with subjects' estimates of what the speaker would say about the clock radio (in terms of overall superiority) during the course of a private conversation. The results showed that subjects who received the ad from the "typical purchaser" judged this statement to be less "superior" than did those who received this ad from the "hidden camera" speaker: $F(1,110) = 3.14, p < .10$. Accordingly, the bias scores for subjects in the "typical purchaser" group were significantly higher than those in the "hidden camera" condition.

Similar findings resulted when subjects were asked to judge the spokesperson's freedom "to express his true opinion" in the ad. Subjects who were exposed to the "hidden camera" spokesperson exhibited higher ratings on this item than did those who received the ad from the "typical purchaser": $F(1,110) = 6.03, p < .05$. Thus, the mean bias scores of those in the "hidden camera" condition were significantly lower.

Source Credibility

A 2 x 2 analysis of variance was performed to assess the effects of both treatment factors on subjects' judgments of source credibility. In terms of subjects' ratings of the spokesperson's "honesty" and "sincerity," the expectancy confirmation factor was found to have no significant main effect (see Table 4). The means of these two measures were, however, in the hypothesized order. The second factor, spokesperson type, did have a significant main effect on ratings of both honesty and sincerity. Subjects in the hidden-camera group judged the speaker to be more honest: $F(1,110) = 5.39, p < .05$; and more sincere: $F(1,110) = 3.50, p < .10$; than did those who received the same message from the typical purchaser. Neither interaction was

significant in these analyses.

Similar results were found in terms of the corporation's credibility. The expectancy confirmation factor had no significant main effect on subjects' ratings of how "honest" Telco was in its advertising. There was, however, a marginally significant main effect of spokesperson type. Subjects exposed to an ad from a spokesperson on hidden camera rated Telco to be more "honest" than did those in the "typical purchaser" group, $F(1,110) = 2.51, p < .12$. Again, no significant interaction was found.

TABLE 4

MEAN RESPONSE TO CREDIBILITY AND BIAS ITEMS

Credibility/Bias Items	Expectancy Confirmation			
	Confirmed		Disconfirmed	
	Typical Purchaser	Hidden Camera	Typical Purchaser	Hidden Camera
Credibility Items				
Spokesperson's honesty	8.233	9.035	8.242	9.385
Spokesperson's sincerity	8.067	8.586	8.173	9.462
Corporation's honesty in advertising	0.300	0.517	0.035	0.500
Bias Items*				
Product superiority in private conversation	9.433	8.586	8.862	7.423
Freedom to express opinion in ad	9.333	8.379	9.483	8.039

* Note: Lower numbers indicate less measured bias.

DISCUSSION

Whether, and to what extent, promotion leads to message acceptance depends in part on the degree to which the actual message contrasts with bias-related expectancies. Subjects who received an advertising message that made claims of superiority on every product attribute exhibited less message acceptance than did those who received a message that made a "less than superior" claim on one attribute. Subjects in the latter group rated the clock radio as being more reliable and accurate and less likely to have good quality sound. From this, it can be reasoned that message acceptance is dependent, in part, on whether the message confirms or disconfirms bias-related expectations--which, in the case of promotion, appear to be ones that are relatively superior.

That subjects have such expectations concerning promotional messages is suggested by the marked difference between expectancy subjects' ratings of what the speaker was about to say in the ad and their expectations about what he would say if he were stating his "true" opinion in a private conversation. Implicit in this difference is variation over modality, or situation. Message recipients expect the "effect" (the speaker's statement interpreting some entity, or issue) to differ over the two situational contexts. And this difference is thought to represent the situational, or reporting, bias that becomes part of message recipients' causal schemata.

Attributional Processing

Utilization of bias-related schemata was reflected in subjects' post-message attributional processing. To a large extent, the difference in persuasion subjects' message acceptance appears to be due to the postulated differences in causal inferences. As expected, subjects who received a message that consisted of all positive information about

the product (confirmation of expectancies) were more likely to explain that message in terms of situational bias--i.e., the corporation's desire to sell products. Subjects who were exposed to a message that contained negative attribute information--i.e., a message that presumably disconfirmed expectancies--were more likely to attribute the message to "real facts" about the product and less likely to assign cause to the situational factor.

It should be noted that this result also could be explained solely in terms of Kelley's (1973) discounting and augmentation principles (cf. Hansen and Scott 1976; Settle and Golden 1974). These rules, however are post-dictive and do not require the use of pre-message schemata or expectancies. The theoretical structure presented here rests on a pre-message process--message recipients are thought to utilize pre-message schemata, which result in pre-message expectancies. Messages that confirm those expectancies are taken to be evidence confirming pre-message schemata. When a promotional message confirms bias-related expectancies message recipients should explain that message in terms of their bias-related pre-message schemata. On the other hand, when a seller's message disconfirms such expectancies, message recipients have evidence indicating their pre-message reasoning should be rejected. Accordingly, their explanation of the seller's message should emphasize factors other than the biasing element(s).

Alas, the measures of pre-message and post-message schemata did not fully support the above reasoning, however. Two comparisons are relevant here: the expectancy group versus the expectancy-confirmed group; and the expectancy group versus the expectancy-disconfirmed group. According to the reasoning presented above, the pre-message schemata of the expectancy group should be similar to the post-message schemata of the expectancy-confirmed group and significantly different from the schemata of the expectancy-disconfirmed group. In terms of attributions about the corporation, however, the results were opposite to what was anticipated. Expectancy-confirmed subjects seemed to have assimilated the actual message more toward the dominant pre-message cause--the situational bias. These subjects appear to have elaborated (up-dated) their schemata in terms of the cause that appears "most plausible" in explaining messages of superior claims. If such an "up-dating" process did occur, it was not as prevalent, of course, in the case of the expectancy-disconfirmed group. It is difficult, however, to draw any strong conclusions along these lines.

Related results concerning source credibility and situational bias clearly offer no support for the reasoning presented above. Although the majority of these items were found to vary in the expected direction, their lack of significance prevents any kind of statement other than non-support.

Spokesperson Type

The results associated with the second factor, spokesperson type, are again somewhat confusing in terms of attribution theory. As pointed out above, this factor was seen as a manipulation over the modality, or situation, presumed to be part of message recipients' causal schemata. Accordingly, it was anticipated that less reporting bias would be associated with the "hidden camera" speaker than with the "typical purchaser." The majority of the results surrounding this hypothesis were congenial to Kelley's model. The "hidden camera" spokesperson was rated as less biased in reporting his true opinion. In addition, he was rated as more credible. Similar results were found regarding the corporation's credibility. Clearer evidence of the postulated attributional process was exhibited by persuasion subjects' post-message schemata. The group exposed to the "hidden-camera" spokesperson was more likely to attribute the cause of the message to "real facts" about the product and less likely to make attributions to the seller's desire to sell products. This result, however, did not seem

to explain differences in message acceptance, which were not significant across the spokesperson type factor.

On Methodology

Two comments, each relating to this study's methodology, seem to warrant specific attention. The first of these has to do with comparisons between the expectancy group and the persuasion group(s). As noted above, it would be more tidy if these groups' causal schemata behaved according to hypothesized prediction--i.e., if the pre-message schemata of the expectancy group were similar to the post-message schemata of the expectancy-confirmed (persuasion) group and different from those of the expectancy-disconfirmed (persuasion) group. That these comparisons did not emerge as hypothesized, however, might well be a function of the study's execution rather than a fault with the conception of pre-message schemata as mediators of marketing communication. Inasmuch as the post-dictive (confirmed/disconfirmed) comparison did behave as hypothesized, it might well be that we simply failed to operationalize the pre/post comparison properly.

Finally, there seems to have been a problem with the "styling" attribute in the study. While obviously this is an important attribute, it cannot be treated in the same way that accuracy, reliability, and other "endorsable" qualities can (cf. Hirschman 1981). The (now obvious) fact is that subjects' belief scores for styling had nothing to do with expectancy confirmation; rather, they simply looked at the clock radio (there were three depictions in each ad treatment) and made up their own minds. "Who said what" about the product's styling paled in comparison to each subject's own sensory experience.

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ON USING ATTRIBUTION THEORY TO UNDERSTAND ADVERTISING EFFECTS

Carol A. Scott, University of California, Los Angeles

Abstract

Three experimental studies were reported in this session on attribution theory and advertising effects. The design of these studies and the results are discussed in terms of the contribution to attribution theory and to our understanding of how advertising works.

Introduction

It has been almost a decade since consumer researchers first used attribution theory to explicate some effects of advertising messages (e.g., Settle, 1972; Settle and Golden, 1974). During this period authors sought to establish the applicability of attribution concepts to the advertising communications context and to validate some predictions derived from the various attribution theory frameworks. Despite the fact that attribution theory became an extremely popular subject of research in social psychology and despite the early intense interest of consumer researchers, attribution theory has never become a dominant force in the consumer behavior literature. Although some might claim that the field was simply overrun with more cognitively-based information processing concerns, others might also note the seemingly difficult task of finding the right place for attribution theory concepts within the sort of substantive problem areas generally investigated by consumer researchers.

The three papers presented in this session all bring attribution ideas to bear on the substantive area of advertising effectiveness. Two of the papers, those by Sparkman and by Hunt, Domzal, and Kernan, test some ways of influencing attributions about the source of communications messages and illustrate perhaps why attribution research seems to be fading away. These studies apply attribution theory with considerable skill, but in doing so they show how inadequate the theory is for dealing with some of the important questions concerning the effects of advertising messages and their ultimate persuasive power. The third paper, by Dillon, Allen, Weinberger, and Madden, is methodologically based, but ironically may show one way out of the theoretical thicket. These authors explore some fundamental premises of attribution theory, and in doing so they indirectly show us how we may extend it and integrate it with other views of how communications work.

My comments on the three papers will deal with selected conceptual issues, and not primarily with methodological or philosophical ones. I begin with an examination of two assumptions underlying the papers by Sparkman and by Hunt et al. that affect the application of attribution theory to the area of communications. The second section expands the discussion to explore the limitations of current applications for explaining advertising effectiveness.

Influencing Attributions

Sparkman argues for the superiority of the discounting principle, derived from Kelley (1972) and to some extent from Bem (1972), over other attributional frameworks (e.g., Jones and Davis, 1965; Kelley, 1967, 1972) for explaining and predicting the effects of communications. He notes that these other frameworks focus attention on the distinction between internal or dispositional and external or situational causes for a person's behavior, while advertising messages may be perceived as being caused by a variety of external causes

(characteristics of the product, being paid for presenting the message). Sparkman argues that attribution of the message to some of these external factors (e.g., to the characteristics of the product) will result in greater message acceptance. Rather than working to eliminate attributions to all external causes, the advertising strategist should seek to minimize only some of them.

Hunt, Domzal, and Kernan also assume the superiority of object or entity attributions. Basing their study on a series of experiments conducted by Eagley and her colleagues (cf., Eagley and Chaiken, 1975; Eagley, Wood, and Chaiken, 1978), these authors reasoned that people expect advertising messages to be characterized by reporting bias (i.e., the source reports facts or opinions that he doesn't believe or that he knows are not accurate). Following Eagley et al. (1978), they predicted that disconfirming this expectation would result in receivers perceiving the source as more truthful and the source's behavior as caused more by the entity or object than by the demands of the advertising situation. These perceptions, in turn, should lead to a greater acceptance of the message.

Although these two studies have different theoretical foundations, they both examine factors that should affect attributions of a source's behavior and, in turn, the persuasiveness of the source's message. Their common features also include at least two assumptions that may or may not be warranted. First, the authors seem to assume at least implicitly an automatic, hydraulic process of attribution. That is, they assume that attributing a spokesperson's statements less to external constraints such as monetary gain will automatically result in attributing the statement more to the characteristics of the object being discussed. In many advertising contexts, however, the choice may not be so simple or so clear cut. A receiver may perceive other causes as plausible alternatives to monetary payment or product quality. Or, the receiver may not feel that reducing the probability of one cause has any effect at all on the probability of other causes. Sources may have many reasons for presenting a message, and these reasons may be somewhat independent of one another. Only if one is operating under a single cause model of the world in which an event has one and only one cause would the probabilities be perfectly related to each other in an inverse way.

Sparkman's data provides some interesting evidence relevant to this point. In his study, the discounting group did attribute Mr. Sinatra's behavior less to the money he might be paid than did the non-discounting group¹ (3.11 vs.

¹It is interesting to note that even the discounting group neither agreed nor disagreed that money was a cause (3 = the scale midpoint). This is surprising in view of the fact that these subjects were told that Sinatra was being paid \$1.00 and in view of Sinatra's already large personal wealth which should obviate any monetary motivation. If one cannot erase the perception of monetary motivation, then perhaps increasing advertising effectiveness will depend more on enhancing the perception of other causes than on the negation of the monetary incentive. And, if one cannot erase the money attribution even in this pointed fashion, then it may be impossible to do so in more typical advertising settings.

2.28). But, they did not turn overwhelmingly to an attribution of his behavior to the quality of Chrysler automobiles (2.51 vs. 2.91). Even though this difference is statistically significant, the effect size (as opposed to the level of significance, which is affected by the large cell sizes and the reduction in variance due to the decision to replace missing values with a midpoint score of 3) is not dramatic. Subjects in this study may have attributed Mr. Sinatra's behavior more to a desire to save American jobs, a desire to help Mr. Iacocca in his valiant battle, or a multitude of other factors that were not measured.

An assumption of a hydraulic mechanism might be appropriate where one postulates and measures a conceptually exhaustive set of potential attributions. In some of the earlier attribution studies, for example, vaguer but more inclusive categories were used (e.g., "something about the person," etc., as used by McArthur, 1972). In fact, subjects were allowed to use combinations of categories in order to be sure that all possible attributions were recorded. In advertising and communications research, however, we have generally tried to be more specific, as it is undoubtedly true that the advertising strategist will find information on specific exemplars of such broad categories more useful in developing advertisements. But, moving from the general, exhaustive categories to more specific and less exhaustive factors causes some difficulties. At the very least, the researcher must assume a greater responsibility for asking about and measuring attributions to all possible exemplars. Hunt et al., for example, did ask about several possible causes. Unfortunately, they present no evidence to suggest that this list exhausted the perceived possibilities of receivers.

Second, both Sparkman and Hunt et al. seem to assume that receivers accept as statements of fact those statements made by a source that are not attributable to a reporting bias. That is, both authors discuss attributions to the entity or object rather than attributions to the source's true beliefs about the entity or object. I do not wish to argue with Sparkman as to whether such attributions are external or internal, primarily because, as he points out, this is not the most important question from the advertiser's point of view.² Rather, I do wish to argue, as I have in the past (Hansen and Scott, 1976) that an attribution of a source's statement to an object is incomplete and unlikely to be useful in guiding the development of advertising messages or predicting what attributions will lead to greater message acceptance.

A communicator may report his or her true perceptions of a product. But, the receiver may or may not accept these true perceptions as accurate representations of reality. Mr. Sinatra may tell you what he really thinks of a Chrysler automobile, and a consumer filmed by a hidden camera may tell you his true opinion of a clock radio. But, what do they know about cars or clock radios? These spokespeople may or may not be perceived as possessing any degree of expertise. Or, these spokespeople may be viewed as possessing certain values or having certain tastes not shared by the receiving audience. As in Kelley's (1967) old example about movies, this consumer may like this clock radio, but since he likes all clock radios or likes all bright pink radios his opinion is not very informative for others.

For me, McArthur's (1972) interpretation of Kelley's cube (1967) offers the most complete and most useful classification system. Here, an event such as an advertising message can be attributed to something about the object, something about the particular person (dispositional qualities, idiosyncratic traits), or something about the particular circumstances. Ruling out "something about the circumstances"

²There are those who consider a desire for money an "internal" motivation, and the distinction between internal and external causes can often be difficult to defend (cf., Kruglanski, 1975, and Calder, 1977).

does not mean that an attributor must leap from an attribution of the message to the source's true reaction to the object to inferences about reality. This classification scheme allows for the case of a trustworthy but unexpert source, a trustworthy but not similar or attractive source (e.g., "Mary Tyler Moore may like this stuff, but who wants to be like Mary Tyler Moore?"), and other combinations. At the very least, it reminds us that an attribution of the source's behavior may not be the same thing as an attribution of a quality to an object, and that trustworthiness alone may not be sufficient for persuasion.

Hunt et al. provide some evidence to support this more limited role for trustworthiness. First, the disclaiming manipulation did result in greater message acceptance on two of three relevant attributes, but it did not affect ratings of subject trustworthiness (honesty, sincerity) or attributions of the spokesperson's behavior.³ The hidden camera manipulation, on the other hand, did affect attributions of the spokesperson's message to such factors as payment, promotion of himself, and his true feelings, and did influence ratings of the spokesperson's honesty and freedom in the ad. The ratings show that although fewer people rated payment as the most important cause of the spokesperson's message and more people rated "true feelings" as the most important in the hidden camera as opposed to the typical consumer treatment, there is not much difference between the number of people citing "real facts" as most important in the two cells (8.47% vs. 8.93%). Despite the indications of greater perceived trustworthiness, the "hidden camera" spokesperson did not result in greater message acceptance.

These findings may be due to the particular nature of the spokesperson in the Hunt et al. study. In many source credibility studies, expertise is held constant but generally moderate to high when trustworthiness is varied. In the Hunt et al. study, however, the "typical consumer" may not have been perceived as terribly knowledgeable about such things as the accuracy and reliability of clock radios. Thus, whereas most studies show increased persuasiveness resulting from increased trustworthiness, the current work may indicate that an increase in trustworthiness in the absence of a sufficient amount of expertise does not increase persuasiveness. It is unfortunate that no measures of expertise were included in the study. Such measures would provide evidence to suggest why the disclaiming manipulation did increase message acceptance as well as provide support for speculations about the effects of the hidden camera treatment.

Problems of the Past, Directions for the Future

Sparkman and Hunt et al., following in the footsteps of most consumer researchers, have applied attribution theory in a competent fashion. It is important to note, however, that these studies, like almost all others in the consumer behavior literature (and many in the social psychology literature) are applications of the theory, and not tests of it. Neither of these studies was designed to be able to falsify attribution theory or its underlying assumptions. Rather, these studies sought to determine whether some actions that an advertiser might take (e.g., use a hidden camera) operate in the same way that other means of removing discounting cues do in other settings. Is the hidden camera manipulation strong enough to remove the perception of monetary or other motivations for presenting the message, for example? Thus, if the hidden camera manipulation had not worked as predicted, we would have questioned the manipulation rather than the presumed attributional processes.

³In this discussion, I use only conventional levels of significance (i.e., $p < .05$ or better).

It is equally important to note that the central focus of the experiments was not the overall effectiveness of the advertising message. Since attribution theory was not developed as a theory of communication, it should come as no surprise that it can be applied only to a portion of the advertising process, and that there are questions that it cannot handle. It simply is unfortunate that the questions it cannot handle may be precisely those that come to the advertising strategist's mind when she considers the ultimate persuasive impact of a message or to the researcher's mind when she begins with the idea of investigating the effectiveness of advertising.

The strategist is likely to ask about what factors will make the message persuasive, and not necessarily about how to create certain attributions, unless the connection between the attributions and persuasion is made fairly clear. To date, researchers have chosen to focus on factors which result in certain attributions and to ignore, for the most part, the question of which kinds of attributions or patterns of attributions about the source's message lead to the greatest degree of message acceptance and behavior consistent with it. If we focused on this latter question, we perhaps would be examining a much broader range of attributions in an attempt to find those most closely associated with persuasion. Rather than measuring only attributions to the circumstances or the product, or only to the circumstance, the person, or the object, we might search for other categories of attributions that are important for the communications context. Rather than looking for the most important cause, we might look instead for patterns of causes. Rather than assuming that one category of attribution is always best, we might develop theories and hypotheses about when, and under what conditions, certain attributional patterns will be associated with greater persuasion. For example, we might investigate when an attribution to the idiosyncratic tastes and values of the spokesperson results in a stronger intention to purchase the product than an attribution to the "objective" properties of the product.

Dillon et al. do not take on these questions directly either. But, these authors develop and present a methodology that we might find useful in subsequent investigations of them. In this report, the authors examine an underlying premise of applications of attribution theory to advertising messages. Rather than asking for particular attributions, they collected what might be considered to be the raw materials from which attribution-type inferences are derived, i.e., the thoughts elicited by a message. These thoughts were then analyzed to determine whether the patterns of thoughts were consistent with the kinds of causal schema proposed by others and assumed to underlie attributional thinking. The patterns of thoughts were then related to attitudes and purchase intentions.

Certainly there are methodological questions one might raise about the procedures followed by Dillon et al. Most of these are noted by the authors themselves in their discussion section, and so they need not be elaborated upon further here. The contribution of interest to me is the ability to represent thought patterns which can be described and analyzed for their association with persuasion. The elicitation technique which must be used as a first step in this procedure may force us to consider possible causal features that we might not have thought of on our own, and thus may guard against an incomplete list of potential attributions. The emphasis on thought patterns may indicate when message recipients operate under multiple sufficient, or multiple necessary, or other causal assumptions. Finally with the new richness of data, we may become more interested in which attributions are related to persuasion and thus warrant further investigation.

Summary

Attribution theory has much to contribute to our understanding of the communications and persuasion process. But, our research to date has focused on a very narrow aspect of it, i.e., testing various operationalizations of factors postulated to affect certain attributions of a message source's behavior. I have suggested in these comments that we must be careful in thinking through the number and type of potential attributions and that we begin to focus more of our attention on the consequences of different attributions. This latter effort may require us to move beyond the current confines of attributional theory, but this seems a necessary step if our goal is to gain insight into advertising effectiveness.

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SOME UNDERPINNINGS FOR A RADICAL THEORY OF CONSUMPTION

Nikhilesh Dholakia, University of Rhode Island

Abstract

Observing the existence of radical streams in the parent disciplines of consumer behavior, this paper examines the extent to which consumer research satisfies the requirements of radicalness. It is found that a radical theory of consumption is viable. Some substantive directions for such a theory are suggested.

Introduction

Each of the major social science disciplines from which consumer research draws its substantive theoretical support - economics, psychology, sociology, and anthropology - has its radical stream of thought. And yet, consumer behavior - a skillfully blended interdisciplinary - has no radical stream of its own. The major reason for this is the ideological lineage of consumer behavior. Much of the consumer research has originated in or has been directed to the field of marketing (Arndt 1976). Because of its close alliance to private business enterprise, the field of marketing has not welcomed radical thought which often challenges the basic premises of capitalism.

The lack of a radical stream in consumer research, however, cannot be fully explained by this ideological resistance. A recent survey of the readers of Journal of Consumer Research indicated that a sizeable number of them is interested in seeing articles based on better theories and better explanation (Ferber 1981). Presumably, this segment of consumer researchers would not reject radical approaches to consumer behavior merely on ideological grounds. The absence of radical consumer-related theories, therefore, must be attributed to some combination of: (a) neglect, (b) lack of awareness, (c) apathy, and (d) lack of initiative. This paper takes the initiative to create a better awareness of the radical aspects of consumption. By so doing, it hopes to end the neglect and the apathy and to engender a debate. The argument in this paper is developed in the following way:

1. Characteristics of radical theories are examined. Starting from the question of "What is radical?", several characteristics of radical theories, in general, are outlined.
2. Implications of the above for consumer behavior are discussed. It is argued that a radical stream in an interdisciplinary field like consumer behavior would need to have all the characteristics of radical theories in general. Progress and prospects on these dimensions of "radicalness" are examined.
3. Some substantive concepts that could form the underpinnings of a radical theory of consumption are presented.
4. Possibilities of change in the consumer behavior field are presented in summary.

The four main sections that follow deal with each of the points enumerated above.

Characteristics of Radical Theories

Two important ideas are inherent in the concept of radicalness. The first is the idea of searching for the roots, to go for the origin, to be fundamental. The second is the idea of departing from or challenging the traditional, i.e., to be critical.

In the natural sciences, the idea of being fundamental or basic is very important. Copernicus, Newton and Galileo were radical in that they presented a more fundamental or basic view of the universe than the geocentric view and other church-espoused orthodoxies. In so doing, of course, they had to be critical and were branded heretics. Recent revolutions in natural sciences have been characterized by the "fundamental" aspects overshadowing the "critical" aspects. Einstein's theories of relativity gave us a view of the universe more fundamental than did Newtonian physics. These theories were critical; however, no demands were made to stone Einstein to death or burn him at the stake. In social sciences, on the other hand, at the present juncture, the critical aspects of radical theories are perhaps more important than the fundamental aspects (Benson 1978, Brown 1974, Flax 1978, Freiberg 1979). This critical stance, as argued later, creates enormous difficulties in introducing radical theories in a field like consumer behavior.

In natural sciences, to be fundamental requires deeper exploration of matter; in social sciences, it requires deeper understanding of man. As the premier radical social scientist of the industrial era wrote: "To be radical is to grasp something at its roots. But for man the root is man himself. . ." (Marx, quoted in Fromm and Kirau 1968, p. 224). This means radical theories in social sciences (including consumer behavior) have to deal with basic questions of human nature and the human condition. Asking fundamental questions implies that prevalent, legitimized views of human nature and the human condition cannot be taken as given starting points. For example, customary assumptions about the rationality, autonomy, volition, motives and needs of the consumer become open to challenge under a radical approach. Similarly, the existing social structures, social relations, power structures, roles, etc. are challenged under a radical perspective. In other words, scientific inquiry - while not ceasing to be exploratory or explanatory - becomes critical in its approach to the subject matter.

Several other generalizations about radical social science theories follow from the above. Disciplinary barriers collapse when fundamental, critical questions are asked about human behavior and its context. For instance, needs are not merely endogenous psychological states but formations of a social process which occurs in a politico-economic context (Marcuse 1964). Thus, radical theories tend to be holistic and integrative - recognizing that disciplinary boundaries are for purposes of division of labor and not for fragmentation (and hence obfuscation) of reality. Radical theories challenge dominant social and intellectual structures because these structures are not unalterably given or indefinitely valid. For this reason, radical theories are dynamic - theories about change, its possibilities and the obstructions to it. These are also theories for change, in the sense of guiding the actions that change social and intellectual structures. This mutuality of theory and action is very important in radical social science. Such social science

has praxis; theory informs (inspires, guides) action and action informs (enriches, develops) theory.

The asking of fundamental and critical questions about observed behaviors and structures leads a radical theory to investigate how these observed phenomena originated. To illustrate from physics, theories that probe the nature of matter inevitably raise questions about the origins of the universe (Bronowski 1973, ch. 10). In social science, questions arise about the origins of a social system or some component of it. This makes radical theories much more historical than traditional theories (Benson 1978).

A few other differences between radical and conventional theories deserve brief attention. Since conventional theories do not probe deep enough, some exogenous and unexplainable variables are implicitly given a spiritual justification: insatiability, avarice, inequity, etc. are variously explained in terms of the original sin, frailty of humans, gifts of god, etc. Radical theory, on the other hand, is thoroughly material - it requires that explanation be sought in the material (not necessarily physical, but worldly) reality. While spirituality is an unacceptable theoretical refuge for radical social science, the goal of a humanity capable of reaching its highest (in this sense, spiritual) potential is highly valued. Radical theories are therefore very humanistic: not necessarily humane in the sense of engendering sympathy for the underprivileged but posing the fulfillment of human potential of all as a goal and challenge for social science (Fromm 1970). Finally, in contrast to conventional theories, radical theories do not have a one-way, linear view of causation. It is recognized that social and behavioral processes are often dialectic. This not only means that systemic models are favored over unidirectional models but also that contradictions do not vitiolate a theoretical structure - they are a part of the theoretical structure.

The Radical Potential of Consumption Research

Summarizing the characteristics of a radical theory, outlined in the foregoing section, such a theory is fundamental, critical, holistic, dynamic, historical, material, dialectic, and has a praxis. While all radical theories may not have all these characteristics, it can be argued that a radical theory in an interdisciplinary and action-oriented field like consumer behavior (consumption phenomena, broadly) would require all these features. The requirement of being "historical" may not appear very relevant for consumption research but it should be noted that both the context and the social purpose of consumption have varied through history.

Given the characteristics (requirements) of a radical theory, how does the current state of consumption research measure up? Are there indications that a radical theory of consumption exists or is viable? There would be a fair consensus that no well-developed radical theory of consumption currently exists. The question of future viability can be positively answered to the extent that many preconditions for the emergence of a radical theory can be found in contemporary consumer research. A brief discussion of the requirements of "radicalness" in relation to consumption research illustrates these preconditions:

1. Fundamental: Consumer behavior got its start by asking more basic, probing questions about the consumer than economics did (Sheth 1972). Deep probes have been made in areas like attitudes, decision making, personality, information processing, group influences, persuasive communication, etc. In some important areas, however, consumer research has seldom raised fundamental questions. Some of these are: needs, social purpose and social relations of consumption, post-purchase consumption activities, consumption patterns at

aggregate levels, choicelessness, consumptive change (a la social change), etc. The urgency to probe these areas would increase as consumer researchers study the temporal aspects of consumption (Feldman and Hornik 1981), socialization processes (Ward 1974), changing social roles (Venkatesh 1980), low-involvement (or alienation) of consumers (Kassarjian 1981), etc.

2. Critical: While consumer researchers are often critical of specific effects of or on consumption, they rarely challenge the overall social structures that produce such effects. This is to be expected in a discipline which, for the most part, individualizes social, cultural, and institutional influences in a "more or less ad hoc fashion as so-called situational micro-level factors" (Uusitalo and Uusitalo 1981, p. 561). There is reason to believe that this could change. In another applied, interdisciplinary, and scientifically very advanced field - medicine - critical theories that challenge the dominant social structures have emerged (Illich 1976, Waitzkin 1979, Zola 1972). The first step to being theoretically critical is the recognition of hegemonic tendencies and their likely causes: this is already occurring in consumption related fields (Firat and Dholakia 1977, Himmelweit and Mohun 1977, Hirschman 1981).
3. Holistic: The very structure of the major Association and the major Journal in the field of consumer research facilitates interdisciplinary perspectives. Interdisciplinary approaches in specific consumer behavior processes (e.g., Feldman and Hornik 1981) and application areas (e.g., Garcia 1980) are observable. The urgings and attempts to go beyond the psychological research traditions would further lead to theoretical broadening (Nicosia and Mayer 1976, Uusitalo and Uusitalo 1981, van Raaij 1981). Theoretical holism, however, is not just adopting an interdisciplinary perspective. It requires a nonfragmented view of the reality. In consumer research, this implies strengthening the links between microbehavior and macrostructures. In the field of marketing, at least, such a tendency is observable (Bagozzi 1976, Fisk 1980, Heede 1981).
4. Dynamic: Consumer research has traditionally been interested in dynamic aspects of consumption at the very micro levels: changes in brand preferences (e.g., Jacoby and Chestnut 1978) and brand-directed attitudes (e.g., Lutz 1975). A radical theory of consumption, however, requires dynamism of a much more comprehensive variety. It should not only be able to explain consumption changes at various levels (brand, product class, life style), but also relate consumption changes to social change in general. In fact, such a theory would not only be a theory of change but a theory for change: it would provide guidance for transforming unjust social and consumption structures. Contemporary consumer research is far from such a state; however, pointers for the direction to follow exist (Heede 1981).
5. Historical: Interest in socialization of young consumers has added at least a longitudinal dimension to consumer research (Ward 1974). Socialization processes, however, focus on limited aspects of intragenerational change. A radical theory of consumption would examine not only the reproduction of consumption patterns over generations but also changes in the character of consumption from one epoch to another. Development-oriented theorists recognize, for example, that social purpose and form of consumption is different in primitive, feudal, industrial and

post-industrial societies (Dalton 1971, Kumar 1978). In consumer research, the emergence of a viable historical perspective would hinge on the amount of interest in cross-cultural studies - across space and time.

6. **Material:** On the surface, consumer research appears quite materialistic - concerned with behavior related to material objects of consumption. Consumer researchers, however, have avoided the metascientific issue of whether their theories are material in the ultimate sense. This has been accomplished by assuming away thorny areas where the questions of material or spiritual basis are highly relevant. These are areas like needs, choice, ability, distribution of resources, values, etc. A radical theory of consumption would reject explanations in these areas veering towards innateness, givenness, pre-existence or prescience - it would seek explanations grounded in the real material world.
7. **Dialectic:** Consumer behavior theories have been quite aware of the circularity of effects, interdependencies, and systemic aspects in consumer decision processes (e.g., Howard and Sheth 1969). This systemic approach illustrates the acceptance of dialectic processes in consumer research. Such a systemic view needs to be extended to post-purchase phenomena (Berk 1980). Radical theories are "dialectic" in a much more basic way, however. Such theories accept "contradiction" as an essential logical and conceptual category. In consumer research, this would imply that inconsistent findings may sometimes provide valuable insights. If a consumer holds a very negative attitude toward a product and yet consumes it regularly, and no normative or situational factors seem responsible,

then the researcher, instead of despairing, may seek explanation at a higher level - the consumption of that product may serve some essential ideological purpose in the society.

8. **Praxis:** The strivings for a praxis are quite evident in a field like consumer research with its appeal to "relevance", "pro-active" research, etc. While knowledge generated by consumer researchers does inform practice, in whatever imperfect way, it mostly informs the practice of dominant interest groups and class. A radical theory would require a liberating praxis - an interchange in which man qua consumer gains a greater understanding of his condition and thereby greater autonomy, while the researcher qua radical enriches the theory through the experience and study of (liberated) consumption.

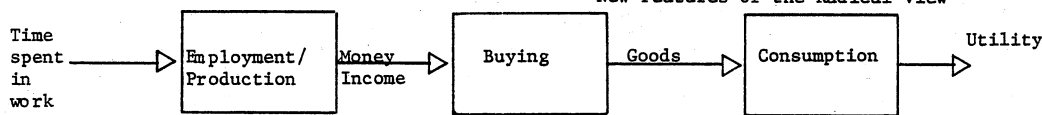
To summarize the above points, contemporary consumer research possesses some characteristics which exhibit elements of radicalness. Hence, a radical theory of consumption is viable although its actual emergence and growth would very much depend on the praxis of the field. To concretize the possibility a little bit, the next section briefly outlines some substantive theoretical directions.

Some Theoretical Directions

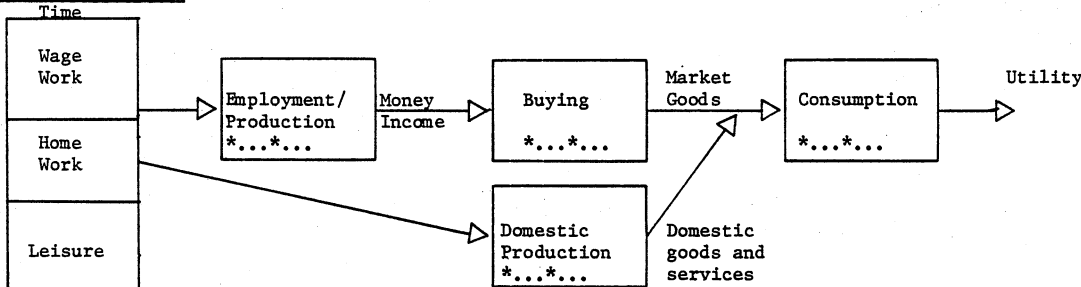
The theoretical task of developing a radical theory of consumption is quite straightforward - it is to challenge, probe, and extend the existing consumer behavior theories in the same way that behavioral researchers challenged, probed, and extended the economic view of consumption. As an ideological task, this is difficult because the world-views underlying the dominant consumer behavior theories

FIGURE 1
Relations Between Production and Consumption: Different Views

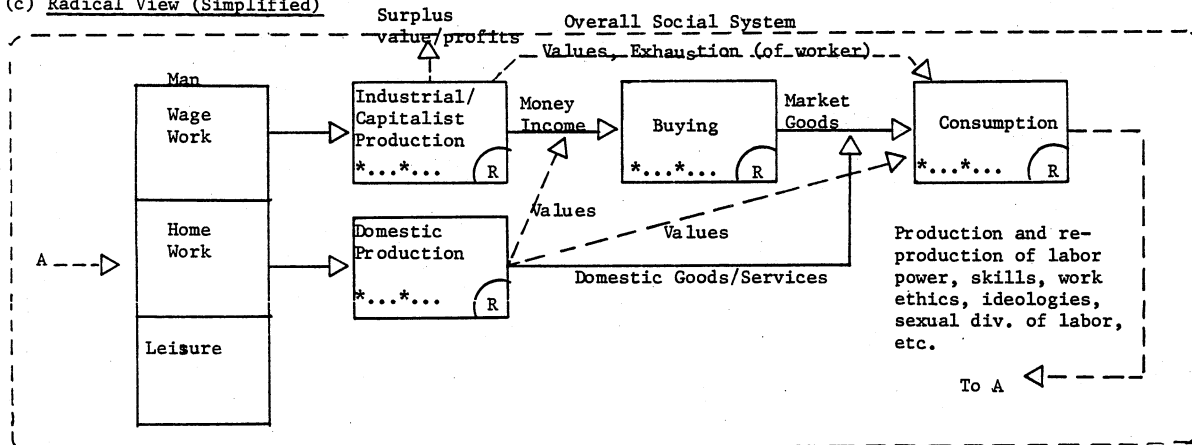
(a) Traditional, Neoclassical View



(b) Emerging Behavioral View



(c) Radical View (Simplified)



would be threatened.

Figure 1(a) represents the traditional, neoclassical, economic view of the relations between employment, buying, and consumption. The actual processes occurring in employment, buying, and consumption are treated in "black-box" fashion - only the outcomes are of interest. Behavioral inroads have been made in each of these black-boxes in recent years. Behavioral studies of employment have focused on the nature of "work" (Cass and Zimmer 1980, Walton 1980), especially interesting from the radical viewpoint being the ethnological insights of Braverman (1974). Buyer and consumer behavior theories have comprehensively explored the blackbox of "buying" (cf. Engel, Kollat, Blackwell 1978), albeit limiting the focus mostly to buying of single brand-objects. The "New Home Economics" has developed a fairly complex model of how households produce utilities (Berk 1980, Beutler and Owen 1980). In short, as Figure 1(b) shows, the blackboxes have become translucent. Additional influences on the "blackboxes" have been identified. Links among the three, at least at the empirical level, are likely to be provided by studies on consumption of time (Feldman and Hornik 1981).

Radical theories of consumption take the state of affairs in Figure 1(b) as a point of departure. Such theories extend, re-conceptualize, and challenge the status quo theories by:

1. Closing the loop, i.e., recognizing the mutual relationship between work (production) and consumption;
2. Emphasizing the context, i.e., requiring the analysis of behavior in relation to its socio-historic context;
3. Subverting the hegemony, i.e., exposing the ideological aspects of consumption in the contemporary world.

Brief comments on each of these three aspects follow. Figure 1(c) summarizes the "new view" by using dashed lines.

Closing the Loop

While Figure 1(a) recognizes the relationship from production (work) to consumption, this figure (and its behavioral variant 1b) ignore the reverse relationship. For a radical theory, the two intertwined relationships are crucial:

Production is simultaneously consumption. . . Firstly . . . the individual, who develops his abilities while producing, expends them as well, using them up in the act of production . . . Secondly, it is consumption of the means of production, which are used and used up . . .

Consumption is simultaneously also production . . . it is obvious that man produces his own body, e.g., through feeding, one form of consumption . . . [elaborating] . . . Consumption produces production in two ways . . . [First,] . . . a product becomes a real product only through consumption. For example, a dress becomes really a dress only by being worn, a house which is uninhabited is indeed really not a house . . . [Second,] . . . consumption creates the need for new production . . . consumption posits the object of production as a concept, an internal image, a need, a motive, a purpose. There is no production without a need . . . consumption re-creates the need.

[Correspondingly] . . . production produces consumption: 1) by providing the material of consumption; 2) by determining the mode of consumption; 3) by creating in the consumer a need for the objects it first presents as products. It therefore produces the object of consumption, the mode of consumption and the urge to consume.
(Marx 1970, pp. 195-197)
(original date 1857)

The mutual relationships described above are simple but their implications for consumer research are profound. A few are enumerated here. First, the view that production is simultaneously consumption provides an excellent rationale for the study of industrial/organizational buyer behavior. Second, this same view suggests a radical approach to the study of work - work as "consumption" of the worker's abilities. Third, the above discourse provides clues for understanding the nature of needs and consumption patterns (modes) - the origins of these must be sought in the structures of production in a society. Fourth, the idea that consumption entails the transformation of an object into a consumable item (the "dress" example) opens up many avenues of researching the meaning and symbolism of objects in everyday life. Fifth, the notion that "consumption posits the object of production as a concept" - which the perceptive will recognize as a statement par excellence of the so-called "marketing concept" - provides a criterion and approach to social policies regarding production and consumption. The list could be elongated but the point is simple: a radical closure of the production-consumption loop opens up many potent directions for consumer research.

Emphasizing the Context

Just as the context of production has varied historically, so has the context of consumption. It is easy to visualize the contrast between a primitive peasant and a mechanized, capitalist farmer; between a village blacksmith and a robotized auto-assembly line. Radical consumption theories point to similar contrasts in the field of consumption - subsistence food habits and contemporary Western food habits, fertility behavior in rural Indonesia and fertility behavior in urban Japan, buying behavior of the ghetto unwed mother and the single, swinging suburbanite, etc. The point is not merely to recognize the similarities and differences but to seek explanation in the context. The explanations for observed buyer behavior in the ghetto, for example, lie in the social milieu of the ghetto as well as in the larger social structures that create the ghetto (Stein 1980). It is not enough to just seek contextual explanations of behavior - it is necessary to weave contextual change in the theories of consumer behavior. For instance, it is not enough to investigate how increasing participation of women in the labor market is altering the pattern of household consumption. It is also necessary to study why it is only in the era of late capitalism that the woman has been effectively able to challenge her exploited and subordinate role and, in the process, threaten the institution of the family (Boulding 1972). Does the household represent the latest frontier of capitalism in terms of markets for goods and labor? What are the theoretical links among changing household consumption pattern, changing role of women, and the changing character of capitalist economy?

The opportunity and the need to incorporate contextual factors would increase in the economically uncertain years ahead (van Raaij 1981). It would be interesting to observe and theorize as to how consumption patterns in a high-level capitalist service economy adapt to stagflationary conditions. The production and ideological requirements of such an economy, for example, are likely to foster the increased consumption of skill-oriented knowledge on the one hand and an increased consumption of coping devices such as drugs, pop-therapies, fantasies, etc., on the other hand.

Subverting the Hegemony

The ideological dimension alluded to above is likely to be the most controversial area for formulating and applying a radical theory of consumption. In the advanced Westernized societies, consumption is increasingly used as a means of ideological social control. In the early stages of industrialization, consumption merely reproduced the worker - from day-to-day and from generation-to-generation. As

industrialization progressed, the society prospered but the social relationships did not change much - bosses hardly worked and workers hardly bossed. In such prosperous industrial societies, the role of consumption became to produce not just the worker but the total "work ethic". The mass consumption society, the American Dream, the license to be responsibly hedonistic (*La Dolce Vita*), etc. were the answers of the prosperous industrial age. Tendencies toward de-massified consumption (viz, hippism) were condemned as dangerous until they were assimilated into mainstream consumption ethics. At the present conjuncture, advanced postindustrial societies face some dilemmas. The nature of work is changing so as to make the biophysiological rationale for consumption redundant: we could live off a few pills. Since the social relations of production have not changed, the ideological role of consumption has greatly expanded. The role of consumption is not so much to produce and reproduce the able-bodied worker but to produce and reproduce the appropriate mental abilities and attitudes. The increasing knowledge requirements of a service economy, however, endanger the simple material sops that consumption has traditionally provided. Someone who can read Fortran can conceivably read Fromm; someone who knows Goal Programming may end up knowing Gramsci and Gorz - the liberating aspects of knowledge are ideologically potent. The consumption implications of this are fair grounds for research under a radical perspective. For example, one consequence that needs a great deal of attention is the expansion of the so-called "experience" (experience deadening?) industry. Is it a coincidence that drugs, pornography, micro-targeted cable TV, designer garments, fantasy vending, and such are emerging as the growth industries of 1984?

Summary and Conclusion

Starting with the observation that the parent disciplines of consumer behavior have their radical streams but consumer behavior does not have one, this paper has developed a conceptual framework for radical theories in general and applied it to consumer behavior theories. Some degree of radicalness exists in consumer research and a radical consumption theory is certainly viable. Some substantive theoretical directions were explored. Specifically, radical consumption theories urge a much stronger link between spheres of production and consumption, explore the social and historical context of consumption quite carefully, and unmask the ideological aspects of consumption.

The emergence of such theory or theories would depend on how the research enterprise in the consumer behavior field evolves. In the long run, their emergence is inevitable through seepage from the parent disciplines. In the short run, consumer research may benefit from the rejuvenating and liberating effects of a radical paradigm, if it takes a pro-active approach to the development of such a paradigm.

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EXPLORING SUCCESS AND FAILURE IN INTENDED CHANGES OF LIFE-STYLE¹⁾

Kjell Grønhaug, Norwegian School of Economics and Business Administration
Torvald Øgaard, Jr., Norwegian School of Economics and Business Administration

Abstract

This paper explores intended changes towards a more restrained lifestyle among a sample of consumers belonging to the organization The Future in Our Hands. Great variations in intended changes and ability to change were observed. Socio-economic and demographic variables were found to possess almost no descriptive or explanatory power.

Introduction

The majority of consumer research has regarded consumption as purposeful behavior (cf. Sheth 1972). Viewed in a "consumption-system" perspective (cf. Boyd & Levy 1962), consumption - including purchase and use of various goods and services - may be seen as means of purchasing specific goals.

Major aspects of a person's life-style are related to supply and consumption of various products and services (cf. Wells & Cosmas 1977). Consequently, major changes in life-style, may also involve changes in consumption pattern due to goal directed change activities.

In most societies the household (or family) exerts great influence on a person's life-style. The household shares resources and represents a major arena for various consumption activities (cf. Engel & al. 1978).

The household may be described by various characteristics. Socio-economic and demographic (SED) factors probably represents the most common, and have been widely used by researchers from several disciplines including marketing, consumer behavior and consumer policy (for overview cf. Sheth 1977).

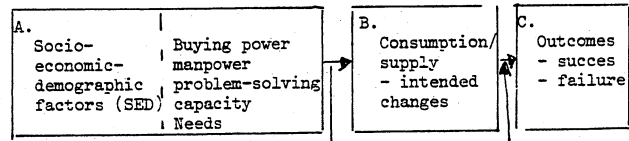
The popularity of such factors is easily explained. Compared to factors related to personality, attitudes and psychographics they are easier to collect, easier to communicate to others, and often more reliable. However, the main point is whether such factors possess descriptive and explanatory power. Socio-economic and demographic factors are often used as indicators of some underlying, but relevant aspects of the phenomena studied, such as: Income may be regarded as an indicator of economic resources; education may indicate problem-solving capacity; age may be regarded as an indicator of life-cycle and products needed. Taken together indicators such as education, order to map social class (for overview cfr. Bauer 1966, and Zaltman & Wallendorf (1979).

The focus here is on intended changes in supply and consumption of various products and services, and on the outcome of such intentions. Figure 1 outlines the conceptual framework underlying this exploratory piece of research.

Box A subsumes various socio-economic and demographic factors describing the household, which may be useful in order to map dimensions such as buying power, manpower, problem-solving capacity and various needs. It is assumed that such factors may exert on intentions to change (Box B) as well as on the outcomes of change activities (Box C).

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FIGURE 1
Conceptual Framework



Methodology

Data

Data used in this paper are from a large research project investigating private consumption and changes in lifestyle (for a detailed description see Holbæk-Hansen 1980). The data were obtained from structured mail questionnaires, which were developed through extensive testing and modifications.

Sample

The total population from which the present sample has been taken, consists of all Norwegian households where at least one member belongs to the organization, Framtiden i våre hender (The Future in our Hands). When the research was conducted the organization consisted of approximately 20.000 members. The main objectives for this organization is to discuss and propose changes in present way of living in Norway and other industrialized countries. It is mainly a populist movement, and is probably best described by some of its slogans: "Small is beautiful", "Do it yourself", "Solidarity with the third world" etc.

The questionnaire was sent to a random sample of 2,000 members. Approximately 1,400 households completed the questionnaire. Usable answers were received from 1,199 households, i.e. 59.3% response rate. Compared to the total population of Norwegian households, the sample was found to be only slightly skewed compared by the following characteristics: Members were found to be somewhat younger and better educated; large households were underrepresented.

Consumption activities

Below are listed the various supply and consumption activities studied:

- (1) daily diet
- (2) sociability (what to serve, drink etc.)
- (3) drinking habits (alcoholic beverages)
- (4) smoking habits
- (5) energy conservation at home
- (6) transportation
- (7) leisure time activities
- (8) vacation and travelling
- (9) growing of vegetables etc. in private garden
- (10) picking of wild growing berries
- (11) maintenance and redecoration of own home by family members (painting, carpentering etc.)
- (12) physical exercise

This list was developed by scanning publications from the organization and by interviewing a small sample of members in order to delete supply and consumption activities of minor interest for intended changes.

TABLE 1
Success and failure in intended changes by supply/consumption activities (%)
(N = 1190)

Measurements

Below are reported the measurements used in this study:

- (1) Intended change: (cf. Box B): For each of the supply and consumption activities listed, the respondents were asked whether they wanted to change or had tried to change their consumption. With regard to directions for intended changes the following should be noted:

For the following activities, food (1), drinking (3), smoking (4), energy conservation (5), and transportation (use of) (6) changes are related to reductions;

- regarding growing vegetables (9), berry picking (10), maintenance and decoration (11) and physical exercise (12) the changes all refer to increases;
- for activities number 2 (what to serve etc.), leisure (7) and vacation/travel (8) the directions of intended changes are unspecified.

- (2) Outcome (cf. Box C): For each product and activity the respondents were asked to report to what extent she or he had been successful in carrying out the intended change. "Succeeded well" and "succeeded very well" are here classified as success. Failure subsumes the following response alternatives: "Wanted, but of no use to try; tried, but in vain; tried, but the change was not successful", (while "Did not try" was classified as no intention to change).

- (3) The household was described by the following indicators (cf. Box A).

- number of household members;
- number of household members having income;
- household income;
- education (measured in terms of years of schooling for the household member receiving the highest income);
- age (of person receiving the highest income).

Here number of household members is perceived as an indicator of manpower, but taken together with household income also as an indicator of buying power. Income serves as an indicator of buying power and economic resources, number of household members with incomes as an indicator of allocation of time; education as an indicator of planning and problem solving capacity, and age as an indicator of stage in life cycle, and thus products and services needed and consumption skills.

Due to the explorative purpose of the present paper no explicit hypotheses will be advanced.

Findings

Below are reported the main findings regarding intended changes, outcomes, and the descriptive and explanatory power provided by the various antecedent variables (SED-factors).

Intentions and outcomes

Table 1 reports intentions and outcomes for the various products and activities listed previously.

Several things ought to be noted from Table 1: The fraction of intended changes (cf. column 3) varies considerably across the various products and activities. Intentions to change behavior are the highest for food (1), energy conservation (5), growing vegetables (9), picking

Consumption/ supply activities:	(1)	(2)	(3)	(4)
	Success	Failure	(1)+(2)	$\frac{(1) \times 100}{(3)}$
	%	%	%	%
1. Daily diet	34.5	31.8	66.3	52.0
2. Sociability	16.5	12.8	29.3	56.3
3. Drinking	18.1	8.1	26.2	68.8
4. Smoking	19.8	12.0	31.8	62.3
5. Energy saving	28.1	31.0	59.1	47.5
6. Transportation	32.5	24.9	57.4	56.6
7. Leisure time act.	24.1	11.2	35.3	68.2
8. Vacation/Travelling	19.0	7.8	26.8	70.9
9. Growing veg.	26.4	32.0	58.4	45.2
10. Berry picking	45.9	20.1	66.0	69.5
11. Home maintenance etc.	35.0	18.9	53.9	64.9
12. Exercise	37.8	30.3	68.1	55.1

berries (10), and physical exercises (12).

The percentage of positive outcomes (cf. col. 4, i.e. $(\text{success} \times 100 / (\text{success} + \text{failure}))$) is the successrate of intended changes. Inspection of column (4) reveals great variations in the percentage of positive outcomes across the various products and activities.

From Table 1 it is evident that the respondents may both intend to do and be successful in several changes. Number of intended and successful changes are reported in Table 2.

TABLE 2
Number of Intended and Successful Changes (n = 1199)

	Intended changes (%)	Successful changes (%)
0	7.3	13.6
1	3.1	11.8
2	5.1	14.8
3	8.3	16.7
4	9.7	12.2
5	10.8	10.0
6	12.4	7.2
7	9.8	6.3
8	5.4	3.3
9	8.8	2.2
10	5.4	1.1
≥11	7.1	0.8
Σ	100.0%	100.0%
n	(1199)	(1199)

Very high fractions for multiple intended and successful changes are observed from Table 2. The high correlation coefficient between the two distributions ($r = .77$; $p < .001$) combined with the higher scores for intentions compared to successful changes, support the assumption that intentions preceded outcomes.

Table 1 revealed great variations in intended as well as in successful changes. In order to detect possible patterns among the intended changes, factor analysis was performed.

The factor analysis extracted three factors explaining 50.5% of the variance (varimax, eigenvalue ≥ 1). As seen from Table 3, however, none of the factors are pure and the communalities (h^2) are rather low. Factor score $\geq .40$ have been underlined.

TABLE 3

Supply/consumption activities	h^2	"Do it yourself"	"Tone/money"	"Social"
1 Daily diet	.22	.33	.29	.21
2 Sociability	.29	.13	.39	.41
3 Drinking	.29	.04	.19	.79
4 Smoking	.16	.12	.09	.43
5 Energy conservation	.19	.35	.27	.15
6 Transportation	.26	.34	.38	.16
7 Leisure time act.	.34	.14	.65	.17
8 Vacation/travelling	.34	.12	.68	.12
9 Growing veg.	.26	.62	.07	.03
10 Berry picking	.31	.69	.09	.07
11 Home maint.	.23	.50	.20	.13
12 Exercise	.21	.32	.33	.18
Explained variance		(30.0%)	(11.7%)	(8.8%)

Factor 1 has its highest loadings on activities like berry picking (10), home maintenance (11), which all are in concordance with the stated goals of the organization (cf. description above). Factor 3 loads highest on items number (2), (3) and (4) all reflecting the intentions to conform to a more restrained life-style. Factor 3 with high loadings on leisure (7) and vacation/travel (8) reflects intended changes in allocation of time (and money?). Taken together, the three factors reflect that the respondents really intend to behave according to the basic ideas of the organization.

Table 4 reports in a similar way the factor analysis performed on successful changes.

TABLE 4

Supply/consumption activities	h^2	"Health"	"Resources & time"	"Do it yourself"
1 Daily diet	.15	.21	.28	.16
2 Sociability	.19	.33	.28	.16
3 Drinking	.64	.78	.14	.01
4 Smoking	.13	.33	.10	.10
5 Energy conservation	.15	.12	.33	.18
6 Transportation	.16	.12	.38	.08
7 Leisure time act.	.40	.14	.60	.14
8 Vacation/travelling	.41	.10	.63	.05
9 Growing veg.	.30	.02	.07	.54
10 Berry picking	.38	.02	.07	.54
11 Home maintenance	.20	.11	.24	.36
12 Exercise	.17	.11	.38	.13
Explained variance		(23.2%)	(11.1%)	(9.2%)

The factor analysis extracted three factors (varimax, eigenvalue ≥ 1), explaining approximately 44% of the total variance. As seen from Table 4 none of the factors are pure and the communalities rather modest. Factor scores $\geq .30$ have been underlined. The three factors intuitively make sense. The first factor has its highest loadings on drinking, sociability and smoking ("Health"). The second factor loads on energy conservation, transportation, leisure, vacation and physical exercise ("Resources & time"), and the third factor loads the highest on various activities related to "do it yourself".

In the same vain factor analysis among failures in intended changes was performed to detect barriers to change, if any. The factor analysis extracted four factors (varimax, eigenvalue ≥ 1) explaining 46,5% of the variance. By looking at the highest loadings on each factor, the following was observed: The first factor explaining almost 19% of the variance loads highest in item (1) food, energy conservations (5) and transportation (6), which

may due structural bindings such as lack of relevant alternatives of transportation, heating and food supply. A very high loading on drinking (factor 3, -9,3% explained variance) may reflect personal problems in quitting this habit. High loadings on leisure and vacation/travelling factor 2, -10,1% explained variance) may reflect barriers due to lack of economic means and time. Factor four (8,4% explained variance) loads on growing vegetables and berry picking which may reflect lack of time and manpower.

Household characteristics

An underlying assumption for the present piece of research is that household characteristics (SED-factors) may be useful in describing and predicting intended and successful changes of consumption activities. Multiple regression analyses with number of intended changes and successful changes as dependant (cf. Table 2) and the SED-factors reported above as independant variables, were performed. The main findings are reported in Table 5:

TABLE 5

Indicator	a) Intended changes		b) Successful changes	
	Beta	S.l.	Beta	S.l.
No. of household members	0.045	.01	.069	n.s
No. of h.h.m. having income	0.107	.01	.021	n.s
Total household income	- 0.042	n.s	- .031	n.s
Education	0.090	n.s	.021	n.s
Age	- 0.055	n.s	- .025	n.s
	$R^2 = .019$		$R^2 = .0006$	

The results are surprising. From Table 4 it is evident that household characteristics neither possess descriptive nor explanatory power.

A possible "stronger" test is to contrast the extremes. Respondents with no intentions were contrasted with respondents high in change intentions (> 11). No significant differences on the various SED-indicators were detected.

The same type of analyses were also performed for each of the twelve activities (cf. Table 1) with the same "disappointing" results.

Discussion

a) The findings reported above indicate that the households in the present study:

- are most interested in changing behavior related to physical exercise, daily diet picking, energy conservation and growing of vegetables;
- are most successful in carrying out their intended changes regarding vacation/travelling, berry picking, drinking habits, leisure activities, home maintenance and smoking habits;
- are confronted with barriers to change partly due to lack of relevant alternatives, personal problems (addition), and lack of time and economic resources.

b) The modest descriptive and explanatory power of the various household characteristics are noteworthy in several ways. Compared to the total population of households, the actual sample was only moderately biased as described by various SED-factors (cf. sample description). However, in order to explain intended and actual changes of various

consumption activities, other variables have to be included (cf. Sheth 1977).

Furthermore, the results reported indicate that widely used SED-factors may partly be inappropriate both as basis for designing marketing program and as indicators for selecting consumer protection activities (cf. Yankelovich 1964; Wells & Cosmas 1978).

For marketers the findings do also indicate that interests and values, here mapped by organizational membership may be highly relevant as basis for segmentation purposes.

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A STUDY OF FACTORS INFLUENCING ENERGY CONSERVATION BEHAVIOR

Richard Semenik, University of Utah
Russell Belk, University of Utah
John Painter, University of Utah

Abstract

Previous research on factors that influence energy conservation behavior have almost without exception been restricted to demographic investigations using bivariate analyses. The present study attempts to go beyond prior research by using a richer set of non-demographic predictors in the context of gasoline conservation. Multivariate analysis of the predictors suggests that greater understanding of conserver and non-conserver groups can be achieved with a broader set of predictor variables.

Introduction

The energy problems first highlighted by the 1973-74 gasoline and fuel oil shortages have spawned a considerable number of research efforts on the topic of energy conservation. Reviews by Anderson and Cullen (1979), Farhar, et al. (1979), Frankena, Buttell, and Morrison (1977), and Joerges (1979) classify over 300 energy consumption studies conducted during the Seventies. A major thrust in many of these studies has been the detection of factors affecting energy conservation. Such a focus on understanding who conserves and why they do so, is of obvious concern for formulating realistic public policies, effectively encouraging energy conservation, and recognizing problems in operationalizing energy conservation plans. However, despite the fact that a number of studies have been directed at finding correlates of energy conservation attitudes and behavior their findings have generally been weak and often contradictory. The following sections review the findings for the major categories of predictors which have been examined and discusses reasons for the inconsistencies.

Factors Related to Individual Energy Conservation

Income

The one factor most studied for its relationship to energy conservation has been income. Income-related influences on conservation or non-conservation of energy seem to be sufficient to have created a confusing set of findings. Based on general indicies or questions about energy conservation behavior some studies have found positive associations between energy conservation and income (Grier, 1976; Talarzyk and Omura, 1974) and between energy conservation and social class (Bultena, 1976). However other studies have found negative associations between energy conservation and income (Cunningham and Lopreato, 1977; Opinion Research Corporation, 1975c) as well as between energy conservation and social class (Gottlieb and Matre, 1975). Still other studies have found that the middle income classes report the greatest level of energy conservation (Warren and Clifford, 1975; Kilkeary, 1975). And still other studies report no significant relationship between energy conservation and income (Hogan, 1976; Bartel, 1974).

The same inconsistent pattern of findings has emerged when conservation of specific type of energy has been examined separately. For home heating conservation, the largest number of studies have found a positive association between income and conservation behaviors (Morrison and Gladhar, 1976; Murray et al., 1974; Perlman and Warren, 1975a, 1975b; Reizenstein and Barnaby, 1976). Nevertheless, there are again exceptions with some studies showing lower income

households conserving more heating fuel (Newman and Day, 1975; Walker and Draper, 1975) and some showing middle income households conserving more (Warkov, 1976), or that some heating conservation actions are more likely in low income households, while other heating conservation actions are more likely in high income households (Opinion Research Corporation, 1974b). The same inconsistency occurs for studies examining various aspects of gasoline energy conservation, except that in this case the preponderance of evidence shows a negative association between income and conservation (Gallup, 1977a; Opinion Research Corporation, 1976b; Roper, 1977a; Barnaby and Reizenstein, 1977; Newman and Day, 1975). The contradictory evidence either shows a positive association (Roper, 1977b; Murray, et al., 1974; Perlman and Warren, 1975a; Reizenstein and Barnaby 1976), a curvilinear association (Warkov, 1976), or no significant association between income and automobile-related energy conservation (Opinion Research Corporation, 1974c).

Education

The general expectation here would be that education and conservation would be positively associated. However a major complicating factor may be the positive association between education and income. Whether due to this association or to a similarity of energy conservation attitudes across education levels, the studies examining this variable again provide mixed results.

As expected the largest number of studies have obtained a positive association between education and conservation actions (Roper, 1977b; Survey Research Laboratory, 1977; Reizenstein and Barnaby, 1976; Thompson and MacTavish, 1976; Gallup, 1977a). The exceptions consist of findings of a curvilinear relationship between education and energy conservation (Cunningham and Lopreato, 1977), findings of a negative relationship (Opinion Research Corporation, 1974a, 1975a, 1975c), and findings of no significant education/conservation relationship (Murray, et al., 1974; Hogan, 1976).

Occupation

Occupation has been studied less frequently and one reason may be that there is less of an intuitive basis for hypothesizing a relationship between occupation and energy conservation. The studies which have obtained a significant relationship between occupation and energy conservation practices and attitudes have found greater conservation by those with higher status occupations (Thompson and MacTavish, 1976; Opinion Research Corporation, 1975d). Other studies have found no differences in energy conservation by different occupational groups (Lowry and Good, 1977; Gallup 1974, 1977a). Some research has found little difference in overall conservation tendencies between occupational groups, but has found the nature of their conservation efforts to differ. For example, one study found that those in business and professional occupations reported a greater tendency to turn down home thermostats in cold weather, while clerical, sales and manual labor workers reported a greater tendency to turn off unused lights at home (Gallup, 1977b). Overall however, occupation does not appear to be a good predictor of energy conservation.

Age

Given the relationship between age and income, it might be

expected that the young and old would find the greatest economic incentive for energy conservation, with less of this motivation among middle ages. But given that many energy-conserving behaviors (e.g. walking, bicycling, turning down winter thermostats and turning up summer thermostats) may be less feasible for those in poor health, there are greater constraints acting on older consumers who might otherwise be more inclined to conserve through such behaviors. In terms of baseline rates of energy usage, it appears that middle-aged families (especially with children) have the highest levels of energy consumption, and therefore the greatest opportunity to conserve (Morrison and Gladhart, 1976).

These mixed expectations are borne out by mixed findings relating energy conservation and age. For instance, Talarzyk and Omura (1974) report the least resistance to the idea of energy conservation by older consumers, but the greatest number of energy conservation activities by middle age consumers. Cunningham and Lopreato (1977) found the oldest and youngest consumers most likely to conserve, but also found that for some conservation behaviors there was a positive association with age and for others there was a negative age association. While such mixed findings are typical (e.g. Roper, 1977b), other studies report finding no significant relationship between age and energy conservation (Hogan, 1976; Kilkeary, 1975; Bartel, 1974). Thus age has also failed to act as a consistently good predictor of energy conservation.

Family Life Cycle

As suggested in the comments concerning the related variable of age, larger families with middle aged parents tend to consume larger amounts of energy (Morrison and Gladhart 1976). While this argument suggests greater opportunities for energy conservation by such households, there are also some countervailing forces. One is that a larger, less fuel efficient automobile may be more of a necessity for larger families. Similarly, to the extent that energy conservation requires some sacrifice, it may be more difficult in our society to deprive children of some energy-consuming activity than it is to deprive self or self and spouse alone. But another countervailing force in the opposite direction may be that children receive more conservation information in school than their parents did and bring this information and related conservation attitudes home (Opinion Research Corporation, 1976b). Once again we are left with unclear expectations about the relationship of the family life cycle variable and energy conservation.

Even within the area of gasoline conservation, some studies have found conservation more likely among married persons (Burdge, 1975) while others have found conservation more likely among singles (Roper, 1977b). Similarly, some studies have found greater (gasoline) conservation by families with fewer children (Roper, 1977b), while other studies have found greater (general energy) conservation by families with more children (Kilkeary, 1975). Still other studies have found no significant relationship between energy conservation and family composition or size (Hogan, 1976; Morrison 1977).

Gender

Expectations for the effect of gender on attitudes toward various conservation practices are difficult to formulate. Farhar et al., (1979) speculate that home-related energy conservation in heating and appliance use may threaten the traditional role of the woman in providing family comfort. However, several studies show women more favorable toward energy conservation in the home than men (Opinion Research Corporation, 1975b, 1976a; Cunningham and Lopreato, 1977). Other studies find no differences in such attitudes (Bartel, 1974). Within the domain of gasoline-conserving behaviors, some studies show males to be less favorable (Opinion Research Corporation, 1976a) while others show

females to be less favorable (Gallup, 1977a). Again the literature fails to uncover consistent relationships between energy conservation and a potential predictor variable.

Other Factors Related to Energy Conservation

To a lesser extent, other demographic variables have been examined as predictors of energy conservation behavior. Race has been examined with some sort of inconsistencies or no difference in behavior result between blacks and whites (Newman and Day, 1975; Cunningham and Lopreato, 1977). Political party affiliation has also been examined and in some cases Democrats appear more conserving (Opinion Research Corporation, 1975c) and in other cases Republicans appear more conserving (Gallup, 1977a). Urban versus rural area of residence has been examined with little consistency in results. In some studies, rural residents are more conserving (Blakely, 1976; Morrison, 1977), in others urban residents are more conserving (Opinion Research Corporation, 1975d, 1976a), and in others no difference was found (Hogan, 1976).

Some studies have gone beyond demographic variables in search for predictors of conservation. One study (Reizenstein and Barnaby, 1976) found media exposure and personal sources of information better predictors of conservation attitudes than demographics. Several studies have used activity, interest, and opinion (AIO) variables to predict energy conservation (Morrison, 1977; Barnaby and Reizenstein, 1977; Talarzyk, 1974). Although the results of these studies have found some significant relationships, the substantial differences in AIO items used preclude any generalization of effects of lifestyle on conservation.

Reasons for Inconsistent Findings

Several explanations are possible for the contradictory and inconsistent findings of studies seeking factors related to energy conservation. Two explanations offered by both Farhar et al., (1979) and Anderson and Cullen (1979), are that there are numerous measures and categorizations of independent variables in these studies and that the dependent variable (energy conservation) has also been operationalized in a number of ways. These do not seem to be adequate to explain all of the anomalies found in the literature. While different categorizations and measures of independent variables may explain why a variable is a significant predictor of conservation in some studies but not in others, it does not explain why the same relationships are positive in some studies and negative in others.

Another explanation which might be suggested is that the samples and time periods of the various studies were different. However, there are also shortcomings to this explanation. The review by Farhar et al., (1979) finds little in the way of regional differences in energy conservation findings. Even though all relevant studies have been conducted during the 1970's, there may be enough volatility in attitudes and behavior during this period that studies of several different years could obtain different findings. However, the series of longitudinal studies reviewed by Murray et al., (1974) would seem to discount this argument since most of the variables remained relatively stable.

The foregoing explanations may go part way toward explaining the differences in findings obtained, but there is another more compelling explanation. In nearly every instance there are opposing conceptual expectations concerning the nature of the relationship between the predictor variable and conservation of energy. It may well be that the combination of these opposing forces has been sufficient to cause different and even opposite findings in studies with somewhat different samples. Since some of the opposing expectations arise from the correlations between a predictor variable and another variable, a sample which is

more homogeneous in such a third variable (e.g. income) than another sample may cause an apparent reversal of the relationship between the predictor variable (e.g. education) and energy conservation. With very few exceptions (e.g. Reizenstein and Barnaby, 1976), previous studies have used bivariate rather than multivariate methods in order to examine the relationships of interest.

One of the improvements offered in the present paper is to employ a multivariate method in order to go beyond the limitations of the largely bivariate prior studies. In addition, the present paper seeks a richer set of predictor variables than the largely demographic variables employed in prior research. The primary non-demographic sets of variables added were (1) beliefs about the nature and causes of the energy crisis (often investigated as dependent variables, but not as independent variables), (2) preferences for different energy-related actions, and (3) media exposure variables. No previous study has simultaneously investigated these types of variables.

Methodology

In an effort to investigate a wide variety of variables and their effect on gasoline consumption, a sample of 253 heads of households who travel over 150 miles per month was selected using a cluster sampling technique. The data were collected in Salt Lake City, Utah in the spring and summer of 1979 during a period of pronounced shortages and price increases. A structured questionnaire administered by trained interviewers was used to gather information on a variety of potential predictor variables and demographic information. Questions were carefully worded to avoid potential demand characteristics that could result from "socially acceptable" response options.

As discussed above, three primary non-demographic sets of variables were included in the data collection. In addition, current gasoline consumption behaviors and demographic variables were also identified. The five total categories of variables and the dimensions for data gathered in each category are displayed in Table 1.

The rationale for choosing to investigate variables in these categories stem from several influences. First, the previous research, discussed at the outset of this paper, tended to narrowly define the potential influences on consumption behavior. The categories used in this study attempt to broaden the base of investigation of potential influences. Second, the types of variables examined in earlier works provided a foundation for the categories of variables used here. Earlier studies were relied on for choosing variables to examine within categories. Finally, since there is an issue related to using demographics versus other types of variables to predict energy-related behaviors, demographics were also included in the investigation.

Results

The main purpose of data analysis was to identify factors that influence gasoline conservation behavior. The initial step in this procedure was to classify respondents as either conservers or non-conservers of gasoline by virtue of various behaviors. The behaviors used to classify respondents were:

1. estimated mpg of the auto being driven
2. consuming less gasoline than six months ago
3. consuming less gasoline than five years ago
4. currently riding in a car pool
5. moving to a residence closer to work to help conserve gas
6. increase in bus usage

TABLE 1
MEANS AND UNIVARIATE F SCORES
FOR VARIABLES CONSIDERED AS PREDICTORS

Variable	Mean Scores		F
	Conservers	Non-Conservers	
<u>Beliefs About Gasoline Shortage</u>			
The country needs to decrease consumption ^a	4.53	3.80	7.91**
No real petroleum shortage exists in the U.S. ^a	2.92	3.87	11.27***
Foreign oil producing countries are taking advantage ^a	4.35	4.89	4.20*
There wouldn't be a problem if it weren't for gov't bungling ^a	3.86	4.69	11.44***
The fuel shortage has been caused by the general public ^b	.33	.16	5.95**
The fuel shortage has been caused by oil companies ^b	.19	.27	1.37
<u>Evaluation of Potential Solutions</u>			
The solution lies in voluntary conservation by everyone ^b	.59	.47	2.16
The solution lies in government enforced conservation ^b	.21	.12	2.48
The solution lies in government pressure on oil companies ^b	.19	.42	10.73***
Gas stations closing certain days (Acceptable) ^b	.57	.39	4.97*
High prices to reduce demand (Acceptable) ^b	.20	.21	.07
Enforced speed limits - 55 mph (Acceptable) ^b	.85	.76	2.23
More and better public transportation (Acceptable) ^b	.87	.82	.66
Restricting driving to 6 days/week (Acceptable) ^b	.28	.33	.44
High prices to reduce demand (Best) ^b	.06	.00	5.35*
Restricting driving to 6 days/week (Best) ^b	.95	.10	1.03
More and better public transportation (Best) ^b	.04	.02	.32
Gas rationing (Best) ^b	.05	.06	.03
Tougher mpg standards for new cars (Best) ^b	.11	.08	.23
Development or use of other fuels (Best) ^b	.44	.43	.01
<u>Gasoline Consumption Behaviors</u>			
Miles driven per year (5 categories)	2.25	2.55	2.48
Percentage of miles driven related to work	45.72	54.95	3.84*
<u>Media Habits</u>			
Hours per day listening to radio	2.17	2.87	2.35
Hours per week watching TV	11.59	14.02	1.34
Minutes per day reading newspaper	35.36	34.78	.05
<u>Demographics</u>			
Employment status (Full time) ^b	.77	.91	.27
Education (7 categories)	3.74	3.19	4.09*
Number of children	1.41	1.49	.13
Age of respondent	39.33	44.84	5.67*
Income (6 categories)	3.97	3.37	.16
Sex (male) ^b	.77	.71	.79

^aMeasured using six point scale from "1" Strongly Disagree to "6" Strongly Agree.

^bMeasured as 0-1 dummy variables.

*Significant at $p \leq .05$ for D.F. (1,156).

**Significant at $p \leq .01$ for D.F. (1,156).

***Significant at $p \leq .001$ for D.F. (1,156).

If a respondent was engaging in two or more conservation behaviors with regard to the above set of variables, the decision rule was to classify this respondent as a conserver. Respondents engaging in less than two conservation behaviors or behaving in a fashion that indicated increased consumption of gasoline were categorized as non-conservers. On the basis of reported behavior, 83 respondents were classified as conservers and 75 as non-conservers. The remaining 95 respondents were unclassified by virtue of demonstrating contradictory conservation and non-conservation behaviors.

In an effort to verify this grouping procedure and thereby establish that legitimately different groups were formed by the process, a discriminant analysis was performed on the newly formed conserver and non-conservator groups. The discriminant analysis indicated that each of the variables discussed earlier which were used in the group forming process produced significant ($p < .01$) differences between conservers and non-conservers. The most important variables in distinguishing the two groups were consumers' use of a more fuel efficient auto and consuming less gasoline than five years ago. Further verification of the grouping was provided by the classification matrix in this analysis in which a 90.5% correct prediction was achieved in clas-

classifying respondents as conservers or non-conservers versus a maximum chance percentage of 52.5%.

The establishment of groups which were legitimately different in energy related behaviors provided a foundation for investigating a broad set of potential predictor variables. Table 1 shows the means and univariate F-Scores for the complete set of variables considered.

The variables in Table 1 were then analyzed using discriminant analysis for their value in predicting the conserver and non-conserver groups. From the original set of 32 variables viewed as potentially useful predictors, Table 2

shows the results of those that were significant in forming the discriminant function. On a univariate basis, many of the variables distinguish between the conserver and non-conserver groups. Additionally, on a multivariate basis this group of variables provided a highly significant ($p < .001$) discriminant function. Further evidence of the overall power of the variable set is provided in Table 3 by the classification matrix. Predicted group membership had a 76.58% accuracy based on the discriminant function formed from the group of predictor variables (again versus a 52.5% level by the maximum chance criterion, (Morrison, 1969).

TABLE 2
SIGNIFICANT VARIABLES IN DISCRIMINANT ANALYSIS OF CONSERVER GROUPS

VARIABLE	Mean Scores		F ^c	STANDARDIZED DISCRIMINANT HEIGHTS
	CONSERVERS	NON-CONSERVERS		
<u>Beliefs About Gasoline Shortage</u> ^a				
No real shortage exists	2.92	3.87	11.27*	.24
The country needs to decrease consumption	4.53	3.80	7.91*	-.29
There wouldn't be a gas problem if it weren't for government bungling	3.86	4.69	11.44*	.43
<u>Evaluation of Potential Solutions</u> ^b				
Closing gas stations on certain days is acceptable	.57	.39	4.97*	-.42
High prices to reduce demand is acceptable	.20	.21	.07	.32
Restricting driving to 6 days/week is acceptable	.28	.33	.44	.20
High prices to reduce demand is the best solution	.06	.00	5.85*	-.42
Gasoline rationing is the best solution	.05	.06	.03	-.26
Restricting driving to 6 days/week is the best solution	.02	.04	.32	-.23
<u>Gasoline Consumption Behaviors</u>				
Miles driven per year (5 point scale, higher scores = more miles)	2.25	2.55	2.48	.32
Percentage of miles driven related to work	45.72	54.95	3.84*	.27
<u>Media Habits</u>				
Hours per day listening to the radio	2.17	2.87	2.35	.25
<u>Demographics</u>				
Education (7 categories)	3.74	3.19	4.09*	-.21
Age	39.33	44.04	5.67*	.30
Male (0-1 dummy variable)	.77	.71	.79	-.26
Income (6 categories)	3.97	3.87	.16	-.29
GROUP MEANS	-.70	.63		

*Univariate F significant at $p \leq .05$ for D.F. 1,156.

^aMeasured using a six point scale from "1" Strongly Disagree to "6" Strongly Agree

^bMeasured as 0-1 dummy variables

^cMultivariate F significant at $p \leq .0001$ for D.F. 16,141.

TABLE 3
CLASSIFICATION MATRIX FOR CONSERVER GROUPS*

ACTUAL GROUP MEMBERSHIP	PREDICTED GROUP MEMBERSHIP		
	CONSERVERS	NON-CONSERVERS	TOTAL
CONSERVERS	53	22	75
NON-CONSERVERS	15	68	83
TOTAL	68	90	158

NOTE: Total correct predictions = 121, percentage correct predictions = 76.58% (121/158).

*Predicted group membership was based on the discriminant function reported in Table 4, adjusted for prior probabilities of group membership.

In light of the variables' power in distinguishing between conservers and non-conservers, a discussion of the contribution made by each variable set is worthwhile

Beliefs About the Gasoline Shortage

This set of predictors indicated consistently different views between conservers and non-conservers. Non-conservers were more prone to believe that no real gasoline shortage existed, that there was less of a need for the country to decrease its consumption of gasoline, and that the

gasoline availability problem was due to government bungling of the situation. The conserver group tended toward opposite beliefs in each of these areas. The government issue is one of the strongest contributors to the multivariate prediction of group membership.

Evaluation of Potential Solutions

Univariate comparisons of the two groups on this set of variables indicate that significant differences exist between the groups on two of six dimensions (closing gas stations on certain days as an acceptable solution and higher prices as a best solution). One possible reason greater differences were not discovered in univariate analysis of these factors is that non-conservers were not convinced a shortage of gasoline really existed. In this context, non-conservers may have found it difficult to evaluate potential solutions to a hypothetical problem. Again, on a multivariate basis, each of the variables in this set contributed significantly to the distinction between the groups.

Gasoline Consumption Behaviors

This set of variables identifies differences in the way conservers and non-conservers use their personal automobiles. Non-conservers tended to drive a greater number of miles in a year and had a significantly higher percentage of work related use of the automobile. Given the influence

of using the automobile for work related purposes, perhaps non-conservers hold a view that there is an element of inflexibility in their ability to conserve gas. This proposition, however, must be evaluated in the context of the non-conservers' stronger belief that a shortage of petroleum doesn't really exist anyway.

Media Habits

The only media habit that was different between the groups was radio listening behavior and this is only significant in the context of the multivariate analysis. Data were gathered on television viewing behavior and amount of time spent reading the newspaper. As the data in Table 2 indicates, non-conservers spend more time listening to the radio (perhaps as part of work related travel).

Demographics

The demographic analysis in this current study provides a basis for comparison with previous energy conservation research. The results in Table 2 indicate that conservers are younger, and have higher education and income status than non-conservers. The age relationship is more straightforward than suggested by prior research. The significance of the education variable contributes to the body of evidence which suggests a positive association between conservation and education level (Roper, 1976b; Survey Research Laboratory; Reizenstein and Barnaby, 1976; Thompson and MacTavish, 1976; Gallup, 1977a).

Conservers were also found to have a higher income than non-conservers. While the difference between groups is not significant on a univariate basis, this is another variable that contributes to the overall differences between the groups on a multivariate basis. In general, the positive association of income to conserver status joins a relatively few previous efforts discovering the same result (Roper 1977b., Murray et al.; 1974; Perlman and Warren, 1975a; and Reizenstein and Barnaby, 1976).

Discussion

First, it may be noted some of the belief, attitudinal, and behavioral predictors are stronger predictors of conserver status than any of the demographic variables. It therefore appears that the inclusion of this enriched set of predictors paid off and that prior studies have been limited by restricting themselves to demographic variables.

From a public policy standpoint, the current results indicate that non-conservers simply are not convinced that an energy problem exists. They are clearly more prone to believe that the government is responsible for shortages in petroleum and that decreasing consumption of gasoline will not eliminate the source of the problem. This mentality on the part of non-conservers manifests itself in several ways. The non-conserver group drives less fuel efficient cars and uses car pooling and public transportation far less than conservers. Further, the non-conserving group has shown little effort over the past six months or five years to consume less gas.

The lack of belief in the reality of a gasoline shortage also results in lack of enthusiasm by non-conservers for any potential solutions. Admittedly, the conservers were not overly favorable toward most solutions, but non-conservers did not rate a single potential solution positively as a group. Since not one of 75 respondents classified as non-conservers cited higher gas prices as the best solution to the problem, perhaps this tactic would have the greatest impact on the group. Aside from any attempt to speculate regarding specific policy strategies though, the main conclusion is that this group needs to be convinced of the existence of any energy problem.

It can also be recognized that non-conservers drive more miles and drive more for work related reasons than conservers. The implication here could be that non-conservers consider the consumption of gasoline a necessity and therefore do not feel they have the flexibility to engage in conservation behaviors.

Demographically conservers are younger, more highly educated and higher in income than non-conservers. Perhaps, these demographic factors have contributed to their ability to obtain and comprehend information about the energy situation, thereby influencing their beliefs about its existence. This in turn may have influenced conservers to car pool, use public transportation, drive more fuel efficient cars, and generally reduce consumption of gasoline. At least this cognitive-behavioral chain of events is the one we would expect for a high involvement choice like gasoline conservation.

The distinctions between conservers and non-conservers just discussed were, to a large degree, discovered through the use of a multivariate approach to the predictor variables. Many factors that were not significant on a bivariate basis, nonetheless, were significant in the context of a multivariate analysis of the two groups. To the extent that factors are operating in conjunction with one another to influence conservation behavior such a simultaneous investigation appears to have promise in untangling the contradictory findings produced by previous bivariate analyses.

The task of future research investigating energy conservation behavior is to further enhance and enrich the set of predictor variables by taking into account longitudinal changes in the beliefs and attitudes found to be important in this study. To the extent that evolving consumer beliefs about energy problems and consumer consumption behaviors related to these beliefs can be identified, a greater understanding of factors influencing conservation behavior will be attained.

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DISCUSSION OF THE THREE PAPERS ON THE CONSUMPTION OF CONSUMER GOODS

Jagdish N. Sheth, University of Illinois

Abstract

All the three papers relate to issues of social marketing in some way or the other. The theoretical paper in a radical theory of consumption tries to apply some of the concepts of Karl Marx. The paper on failures and successes in bringing about less consuming life style changes is an empirical study. The final paper investigates demographic and attitudinal factors related to energy conservation.

How Radical is Radical Theory?

The radical theory of consumption proposed by Dholakia is a thought-provoking paper. There is an excellent review of necessary criteria for a theory to be labeled radical in any discipline. The author then proposes to develop his own radical theory of consumption based on some of the concepts of Karl Marx. The basic proposition of the theory seems to be the allocation of human energy between domestic production and industrial production which generates income and wealth with which to engage in consumption. Reciprocally, consumption of domestic and industrial production generates a set of work ethics and values which influence the choice among leisure, wage work and household activities.

Unfortunately, the theory of consumption is not as radical as the author thinks. With regard to all the three major aspects of a radical theory, there already exists numerous theories and hypotheses in the literature. For example, on the issue of closing the loop, several scholars such as Becker and Lipset have proposed significant theories related to allocation of time between wage work and leisure work. Similarly, on the issue of emphasizing the context, we already have such radical theories as Veblen's conspicuous consumption and Reisman's other directed society. Finally, exposing the ideological aspects of consumption (subverting the hegemony) is strongly entrenched in the traditional literature on welfare economics, and in the more recent literature on consumerism and consumer's bill of rights.

In short, the radical theory of consumption is not as radical as the author thinks. In my opinion, this is a direct consequence of the confusion between a theory of consumer behavior and consumption behavior. The author seems to be not aware of the vast literature in consumption economics and behavioral economics.

I also think it is less appropriate to utilize Karl Marx's propositions in consumption behavior for several reasons. First, they clearly presume that we live in a homogeneous society. While this may have been true in his era, it is certainly not true of the contemporary consumption society. Second, Karl Marx presumes that the quality of production and consumption are comparable. We know that in a highly industrialized society, this is simply not true. Again, it may have been very true in his era which was dominated by the Agrarian economic activities. Finally, Karl Marx also presumes that the magnitudes of production and consumption are equal at a point in time. We already know that in the modern industrial states this is simply not true. We can actually create inequality between production and consumption by providing time and place utilities in addition to the form utility in our production functions.

In fact, we can easily assert that the classical functions of marketing such as collecting, sorting and grading came into existence to accommodate the above three problems inherent in any production-consumption system.

I believe a more fundamental issue relates to the choices a society makes between make, barter or buy decisions. In other words, what are the underlying factors which account for the distribution of production and consumption activities in terms of make, barter and buy choices? Adam Smith would argue that the degree of specialization and economy of scale concepts may go a long way to explain these choices a society makes rather than any ideological concepts.

Lowering Life Styles is not easy

The second paper by Gronhaug and Øgaard is an interesting study of the conscious efforts carried out by a group of Norwegians who belong to a voluntary organization which believes in self actualization. The authors discover that this group of consumers were more able to intervene and self control such activities as daily diet, energy conservation, growing vegetables, picking berries and performing physical exercises. On the other hand, they were less able to control social engagements, drinking, smoking, vacationing and leisure activities. Beyond this empirical finding, the paper generates very few additional insights despite a lot of statistical analysis including factor analysis.

In some ways, the statistical analysis of the data resembles the use of a cannon to shoot a mouse. In fact, it would appear that the authors fall into the trap of making causal inferences out of the data which are at best correlational. This is particularly true when they assert that intentions precede outcomes based on a moderate correlation between intended and successful efforts in bringing about life style changes.

In my opinion, it is less useful to collect survey research data to measure voluntary efforts at conservation and simplified life styles. First of all, volunteer groups such as the Norwegian group are not representative of the population even if they resemble the national demographics. Second, the self reports on various activities are likely to be highly subjective and biased. Finally, even if one can correctly measure these activities, it is very difficult to estimate magnitudes of behavioral change. Instead, it is much more useful to conduct field experiments or observational research

Claiming Energy Conservation is no Conservation

The third paper by Semenik, Belk and Painter is an empirical study on the determinants of energy conservation. After a very extensive review of studies on energy conservation, the authors find that most studies are inconsistent and contradictory. Consequently, they fail to pinpoint what demographic and psychographic factors influence or motivate people to conserve energy. The authors carry out their own study on a sample of households in Salt Lake City. They carry out extensive

multivariate analysis of the data to conclude that beliefs about gasoline shortage and attitudes toward potential conservation methods discriminate much better than either self reported gasoline consumption behavior or household demographics.

Unfortunately, this study suffers from numerous methodological problems. For example, it is totally inappropriate to create groups out of continuous dependent measures in order to perform discriminant analysis. The groups must be naturally defined and must remain invariant. Otherwise, the resultant classification tables are likely to generate arbitrary chi squared values which can be easily changed with each redefinition of the group. The authors make further mistakes of removing the most typical energy conservers by creating two groups from the extreme ends of the energy conservation distribution. Thus, their results of discriminant analysis are more appropriate for the minority of extreme groups of conservers and nonconservers but not at all appropriate for the middle majority who are neither conservers nor nonconservers.

Second, the authors seem to imply that a multivariate analysis of variance somehow generates more significance in the data than univariate analysis of variance. Statistically, it is impossible to create greater significance out of the data than what they actually contain except of course, the illusion of greater significance generated by artifacts of analysis.

Third, the authors seem to be oblivious to issues of multicollinearity. There is not a single reference to this serious problem in interpretation of discriminant weights even though many of the independent variables seem to be correlated.

Finally, it is not a good model or theory when only eight out of 32 independent variables reach statistical significance. There is no explanation or discussion as to why the vast majority of variables failed to emerge as significant discriminators.

However, the biggest problem with this study is the definition of energy conservers and nonconservers. First of all, it is based on self-reports and therefore suffers from the same problems of subjectivity and bias as found in the previous paper. More importantly, the two self report items which determine a person will be classified as energy conservers or nonconservers may have nothing to do with energy conservation. For example, "consuming less gasoline than five years ago" may very well be due to changes in work place, life cycle, divorce, marriage and a host of other factors. Similarly, "estimated mpg of the auto being driven" can be merely a function of changes in automobiles, age of the automobile and host of factors beyond the control of the individual. In short, defining energy conservation based on such self reports which contain many alternative explanations is no conservation at all.

Once again, this study along with the previous study on simplifying life styles clearly indicates the urgency of discouraging survey research and simultaneously encouraging field experiments or observation research which will generate hard data.

CAN CONSUMERS BE PROTECTED FROM THEMSELVES?
THE CASE OF DISTILLED SPIRITS

Paul N. Bloom, University of Maryland
Frank J. Franzak, Boston College

Abstract

The effects of an assortment of state distilled spirits regulations were evaluated using a cross-sectional econometric modeling approach. The results suggest that these regulations have not been effective in reducing consumption of distilled spirits.

Introduction

Public acceptance of the concept of deregulation has grown considerably in the last few years. Government officials at all levels are currently in the process of removing or revising many of the regulations that were established over the years to protect consumers or accomplish other social objectives. Where possible, the deregulation efforts are being guided by the results of evaluation research studies on the effects of specific regulations. However, much of the evaluation work--at least in the consumer protection area--has had serious methodological weaknesses (Phillips, 1978) or has only recently commenced and has not produced final reports (Bernhardt and Mazis, 1980). There remains a shortage of informative, rigorous evaluation studies of consumer protection regulations. Such studies could help to add an element of rational discussion to the emotion-charged deregulation debate.

This paper contains a report on an evaluation of the effects of state regulations that seek to protect consumers from overconsumption of distilled spirits. This study was conducted to provide input to the heated debates currently going on in states like New Jersey and Massachusetts over how much the distilled spirits industry should be deregulated (Jacobs, 1981; Kenney, 1981). The study was also designed to provide insights into the effects of regulation (or deregulation) in general. Although the distilled spirits industry certainly has unique properties that make generalizations from its experiences difficult to extract, it is an industry that has been regulated in large part out of a desire to protect consumers from themselves, just as has been the case for the drug, cigarette, gambling, and automobile industries. It does not seem unreasonable to suggest that consumer protection regulations in the distilled spirits industry could have similar effects as parallel forms of regulation in these other major industries.

The paper is organized as follows. The types of regulations that exist in the distilled spirits industry and the nature of the debate that has gone on about these regulations are reviewed first. This is followed by a description of the cross-sectional model that was tested. The results of several regressions that were done to test the model are reported next, and an extended discussion is provided on the efforts that were taken to understand several of the complex relationships that were discovered. Finally, the implications of the results for public policy makers and for future evaluation research efforts are analyzed.

The Issues

Since the repeal of Prohibition -- which represented the ultimate in regulation (and probably the ultimate in the failure of regulation) -- an enormous variety of regulatory approaches have developed in the United States to discourage excessive drinking. Individual states have tried various combinations of the following measures to encourage moderation in drinking:

1. Limiting the population of drinkers by establishing a minimum age for purchasing alcoholic beverages.
2. Limiting the hours during which people can purchase alcoholic beverages.
3. Restricting the manner in which alcoholic beverages can be promoted to the public, including prohibitions of novelty promotions, price advertising, and billboard advertising.
4. Prohibiting the use of credit cards or other credit arrangements to purchase alcoholic beverages.
5. Limiting the size of distilled spirits containers.
6. Having licensing requirements that tend to limit the availability of alcoholic beverages.
7. Restricting the sale of packaged alcoholic beverages to state-owned "monopoly" stores (i.e., banning them in grocery or drug stores).
8. Having taxation methods or policies such as resale price maintenance and price posting that tend to stimulate higher prices for alcoholic beverages.

Of course, a desire for temperance was not the sole reason for instituting many of these regulations, as some were also passed to protect the interests of certain small retailers, to assist law enforcement officials in controlling illegal traffic, or to help certain states raise more revenues from the sale of alcoholic beverages.

Most of the above regulatory approaches have been criticized for being ineffective or wasteful. For instance, it has been argued that minimum age requirements inadvertently stimulate consumption by creating a "forbidden fruit" for young people (Wilkinson, 1970). Similarly, it has been argued that people who need to drink -- who also tend to be the ones responsible for alcohol-related social problems -- will not buy or consume less because of inconvenient hours or locations, a lack of advertising or promotion, the absence of credit privileges, the smallness of containers, the type of retailer, or the price (Bales, 1946; Popham et al., 1976). Unfortunately, until recently there has been little empirical evidence available to help judge the various arguments.

However, two recently completed studies both provide support for the critics of regulation of the distilled spirits industry. Colon (1980) found that per capita consumption of absolute alcohol in the 50 states and the District of Columbia for the year 1970 was best explained by several socio-demographic variables, with insignificant effects appearing for regulatory variables reflecting the minimum age, the existence of state monopoly control, the extent of limitations on availability, and the size of taxes. In a more extensive study, Ornstein and Hanssens (1981) found per capita consumption in the states (for the years 1974 to

1978) to be generally explained best by socio-demographic variables, although they did find restrictions against price advertising and the existence of state monopoly control to have significant negative effects on consumption. Ornstein and Hanssens found insignificant or positive effects appearing for regulatory variables reflecting the minimum age, the extent of limitations on availability, the existence of resale price maintenance, and the existence of bans on Sunday sales, bans on sales in drug stores, and bans on outdoor advertising.

The study reported upon below was designed to replicate and extend the work done by Ornstein and Hanssens (1981). As discussed in the next section, their work was extended by using (1) a slightly different data base, (2) different operationalizations of several variables, and (3) a larger assortment of regulatory and socio-demographic variables. The third step was felt to be particularly important given the need to use several dummy variables in the regressions. As Phillips (1978) has pointed out in his review of consumer protection evaluations, one must strive to include all possible explanatory variables to avoid obtaining highly biased coefficients when dummy variables are used in "correlational" evaluation studies.

The Model

The basic model that was tested took the following form:

$$C_{it} = a + \sum_{j=1}^m b_{j,R} R_{j,it} + \sum_{j=m+1}^n b_{j,M} M_{j,it} + \sum_{j=n+1}^p b_{j,S} S_{j,it} + \sum_{j=p+1}^q b_{j,CO} CO_{j,it} + \sum_{j=q+1}^r b_{j,E} E_{j,it} + e_{it}$$

where:

C_{it} = per capita consumption in wine gallons of distilled spirits in state i in year t

$R_{j,it}$ = regulatory variables ($j=1, \dots, m$)

$M_{j,it}$ = marketing variables ($j=m+1, \dots, n$)

$S_{j,it}$ = socio-demographic variables ($j=n+1, \dots, p$)

$CO_{j,it}$ = competition variables ($j=p+1, \dots, q$)

$E_{j,it}$ = enforcement variables ($j=q+1, \dots, r$)

e_{it} = error term

The model was tested in this additive form rather than in the log-linear form used by Ornstein and Hanssens (1981) because no theoretical reasons could be identified for expecting the completely multiplicative, interactive relationship implied by a log-linear model. The numerous regression runs, conducted to explore the effects of multicollinearity among the explanatory variables, were all done using ordinary least squares. The variables used under each variable category -- and the rationale for including each of them in the model -- are discussed fully in the following subsections. Sources of data are described in the Appendix.

Per Capita Consumption

It should be noted that the data used to represent consumption actually reflected sales of distilled spirits (i.e., shipments) by wholesalers and not actual consumption behavior. These data are typically used in studies of drinking. Naturally, these data could misrepresent actual drinking if (1) people did not drink all they bought, (2) people imported or exported spirits to take advantage of price differences across states, (3) sales went unreported because of a desire to avoid taxes, or (4) people consumed spirits produced illegally by themselves. An effort to control for the last three sources of bias was made by

including a border-effect variable and two enforcement variables.

Regulatory Variables

The regulatory variables that were examined included:

SUNDAY = a dummy variable set at one if the state prohibited sales of distilled spirits on Sundays (and set at zero if the state allowed it)

NOVELTY = a dummy variable set at one if the state prohibited the use of novelty promotion items

MINAGE = the minimum legal drinking age for distilled spirits

MONOP = a dummy variable set at one if the state was a "monopoly" state (and set at zero if it was a "license" state)

REMIX = a dummy variable set at one if the state prohibited retailers from selling distilled spirits along with groceries, drugs, or other items

PRCADV = a dummy variable set at one if the state prohibited price advertising

CREDIT = a dummy variable set at one if the state prohibited the use of credit to purchase distilled spirits

SIZE = the maximum allowed container size for distilled spirits

Ornstein and Hanssens (1981) tested all of these variables except CREDIT and SIZE. However, they used two dummy variables (rather than one) to represent restrictions against selling spirits in grocery stores and drug stores. They also used two dummy variables to represent restrictions against using price advertising of spirits in billboards and print. In this study, it was deemed unnecessary to use more than REMIX and PRCADV because there are very few states that ban only one type of retail mix or one type of price advertising.

If the regulations have been performing as intended, then one would expect to find negative coefficients associated with all the regulatory variables except SIZE (which would have a positive coefficient). But theory that postulates that people who are so inclined will find a way to drink regardless of the obstacles suggests that no significant coefficients should be found for the regulatory variables. This theory tends to be supported by the results of the two studies cited earlier and by reports that have described heavy consumption of spirits in highly regulated countries like Russia, while light consumption has existed in relatively regulation-free countries like Finland. Therefore, it was hypothesized that no significant coefficients would be found for the regulatory variables.

Marketing Variables

The marketing variables were defined to be:

PRICE = the average price charged for eight major brands -- weighted by the relative sales of each brand and deflated by the regional Consumer Price Index (CPI)

AVL = the number of on-premise and/or off-premise outlets for distilled spirits per capita

ADV = dollar expenditures per capita for distilled

spirits advertising in magazines, newspaper supplements, and outdoor -- deflated by the regional CPI

The use of the regional Consumer Price Index represents a refinement of the approach of Ornstein and Hanssens (1981), as they apparently deflated by only the national CPI. The use of AVL also represents a refinement of their approach, since they used two separate variables for the number of on-premise and number of off-premise outlets. The ADV variable goes beyond what Ornstein and Hanssens employed, as they only included a dummy variable reflecting whether outdoor advertising was prohibited. Unfortunately, the lack of available data on newspaper advertising expenditures (by state) forced ADV to be a less than optimal indicator of advertising intensity.

It was hypothesized that PRICE would have a negative coefficient and that AVL and ADV would have positive coefficients. Obtaining such results would tend to support marketing and economic theory, while also tending to support arguments contending that regulations that raise prices, lower availability, and limit advertising expenditures tend to reduce consumption. It was recognized, of course, that positive coefficients could appear for AVL and ADV because these variables might be determined by consumption (i.e., two-way causation could exist).

Socio-Demographic Variables

The variables used to control for the differences in the economies and people of various states were:

TEMP = average temperature in degrees centigrade

INC = per capita income deflated by the regional CPI

TOUR = dollars spent in hotels, motels, and motor hotels-- deflated by the regional CPI

URBAN= percent of the population living in standard metropolitan statistical areas

DENS = population per square mile

The first four variables were used by Ornstein and Hanssens (1981), although they apparently deflated INC by the national CPI and they operationalized TOUR using "the percent of the total state payroll going to workers in hotels, motels, and tourist courts." They also used four other control variables representing the percent of the population in the heavier drinking age groups (18 to 44) and the percent of the population that was Southern Baptist or Mormon, Catholic, and Protestant. These variables were not used in this study because (1) the age-group variable showed no effect in Ornstein and Hanssens' work and (2) data for the religion variables could not be located for the years that were analyzed. Since Ornstein and Hanssens found the religion variables to be highly correlated with TEMP, INC, TOUR, and URBAN, perhaps these other variables picked up the effects of religion in this study.

It was hypothesized that TEMP would have a negative coefficient and that the other four socio-demographic variables would have positive coefficients. Such results would be consistent with previous studies that have shown colder climates, higher incomes, healthier tourism, and greater urbanization or population density associated with heavier spirits consumption (Simon, 1966; Cahalane, Cisin, and Crossley, 1969; Smart, 1980; Ornstein and Hanssens, 1981).

Competition Variables

The two variables used to control for the effects of competitive activity were:

BORDER = [PRICE - (Lowest PRICE in an adjacent state)]/Distance between the population center of the state

and the border of the lowest-priced adjacent state¹

WINEAD = dollar expenditures per capita on wine advertising in magazines, newspaper supplements, and outdoor-- deflated by the regional CPI

Ornstein and Hanssens (1981) used a somewhat different variable to control for the effect of people being attracted to border states to save money on distilled spirits. Their variable took the ratio of the lowest adjacent-state price to the state's price and divided it by the square mileage of the state. It was believed that their variable essentially measured size of the state, since a numerator showing a ratio of prices would have very little variation in comparison to the variation in a denominator reflecting the size of a state. The variable used in this study was thought to have a similar problem but in a less severe form. On the other hand, this study's variable only attempted to control for the effect of people importing spirits from lower-priced states, and not for the effect of people exporting spirits to higher-priced states. (Ornstein and Hanssens attempted to control for both.) Accounting for the latter effect would require another complicated index. Since, as discussed later, the BORDER variable did not work out too well -- and did not, among other things, exhibit the expected negative coefficient -- a second index was not developed.

Unlike any previous studies on distilled spirits, an effort was also made to control for the effect that promotion of competing alcoholic beverages might have on distilled spirits consumption. Consequently, WINEAD was included in the model with the expectation that it would have a negative coefficient.

Enforcement Variables

Smith(1976) has pointed out the importance of considering how illegal activities (e.g., stills, nonreported sales, border-running) and the policing of these activities affects the distilled spirits industry. Following this lead, the following two variables were included in the model:

MASHSZ = gallons of mash seized by law enforcement officials

ENF = per capita expenditures on enforcing liquor control laws

Neither of these variables were used by Ornstein and Hanssens (1981). It was hypothesized that both variables would have positive coefficients, since it was believed that reporting of distilled spirits sales would be greater with more enforcement activity.

The Sample

The sample included observations from 49 states and the District of Columbia for the years 1970 and 1975 (n=100). The State of Hawaii was not included in the sample because of missing data. The years 1970 and 1975 were used because of the availability of data on advertising expenditures by state for these two years. The two years were pooled to obtain more degrees of freedom -- although two runs are reported below that examined each year separately. Pooling of two separated years was deemed acceptable after noting that Ornstein and Hanssens (1981) found no statistical problems with pooling five consecutive years and using ordinary least squares.

¹The numerator was set at zero -- implying no border effect -- if PRICE was lower than the lowest PRICE in an adjacent state.

RESULTS

The results of the various step-wise regressions are summarized in Table 1. Equations 1.1 to 1.8 in the table are displayed going from the most parsimonious to the most comprehensive, while equations 1.9 and 1.10 show the results of estimating separate comprehensive equations from the 1970 and 1975 observations. In developing this table, particular emphasis was placed on showing the effects of removing AVL and/or ADV -- the two variables producing the most problems with multicollinearity -- from the equations. The extent of multicollinearity is revealed in the correlation matrix found in Table 2.

In general, the results turned out as hypothesized. That is:

1. The regulatory variables had no significant coefficients in any of the more comprehensive equations.
2. The coefficients for the marketing variables all had the expected signs -- although only PRICE had a significant coefficient in the more comprehensive equations.
3. Four of the five socio-demographic variables had coefficients with the expected signs, and three of these (TEMP, TOUR and DENS) had significant coefficients in the more comprehensive equations.
4. WINEAD and MASHSZ had coefficients with the expected signs, although neither was significant.

The only unanticipated results came in the form of unexpected signs for the nonsignificant coefficients associated with URBAN, BORDER, AVL (in the 1970 equation only), and ENF. The negative coefficients for URBAN can probably be explained by multicollinearity, as URBAN is correlated with ADV (.62), INC (.46), TOUR (.49), and DENS (.29). The positive coefficient for BORDER can probably be attributed to a variety of difficulties with this variable, including its very high correlation with DENS (.92). The result for AVL (for 1970) probably has something to do with both two-way causation and multicollinearity. Finally, the result for ENF is not very disturbing, since this variable was one of the last to enter all of the regressions. In fact, none of these unanticipated results are very disturbing, since none of the coefficients were significant.

TABLE 1
Regression Results

Variables	Equations				
	1.1	1.2	1.3	1.4	1.5
SUNDAY	.427 (.210) ^a	.311 (.221)	.269 (.219)	.222 (.226)	.382 (.240)
NOVELTY			-.229 (.189)		-.250 (.199)
MINAGE					-.025 (.035)
MONOP					.030 (.121)
REMIK					.067 (.220)
PRCADV					-.062 (.193)
CREDIT				.134 (.156)	.051 (.180)
SIZE					.103 (.102)
PRICE	-.229 (.138) ^c	-.244 (.135) ^c	-.271 (.153) ^c	-.360 (.161) ^b	-.263 (.155) ^c
AVL		2.37 (1.12) ^b		1.92 (1.18)	
ADV			1.12 (.959)	1.66 (.956) ^c	
TEMP	-.648 (.198) ^a	-.588 (.200) ^a	-.448 (.221) ^b	-.429 (.231) ^c	-.615 (.246) ^b
INC	.0003 (.0002)		.0003 (.0002) ^c	.0002 (.0002)	.0003 (.0002)
TOUR	.000001 (.00000) ^a	.000001 (.00000) ^a	.000001 (.00000) ^a	.000001 (.00000) ^a	.000002 (.00000) ^a
URBAN			-.759 (.453) ^c	-.602 (.459)	-.580 (.455)
DENS	.0004 (.0001) ^a	.0004 (.0001) ^a	.0004 (.0001) ^a	.0004 (.0001) ^a	.0004 (.0001) ^a
BORDER					.786 (1.58)
WINEAD					
MASHSZ			.00000 (.00000)	.00000 (.00000)	
ENF					-.204 (.365)
F-RATIO	29.38 ^a	25.15 ^a	17.21 ^a	13.36 ^a	8.63 ^a
R ²	.411	.619	.633	.648	.641
n	100	100	100	100	100

^a Significant at the .01 level
^b significant at the .05 level
^c significant at the .10 level
* Variable did not enter in step-wise regression

TABLE 1 (Cont'd)

Variables	Equations				
	1.6	1.7	1.8	1.9	1.10
SUNDAY	.325 (.242)	.268 (.251)	.219 (.267)	.367 (.390)	.187 (.429)
NOVELTY	-.196 (.202)	-.208 (.201)	-.160 (.211)	-.252 (.327)	-.253 (.426)
MINAGE	-.018 (.035)	-.026 (.035)	-.019 (.036)	.074 (.111)	-.027 (.052)
MONOP		.050 (.097)	.023 (.123)	.020 (.110)	.226 (.380)
REMIK	.158 (.229)		.103 (.235)		.112 (.436)
PRCADV	-.037 (.148)		.030 (.202)		.076 (.364)
CREDIT	.036 (.172)	.083 (.167)	.085 (.180)	.061 (.234)	.034 (.315)
SIZE	.093 (.101)	.074 (.095)	.068 (.104)	.061 (.127)	.133 (.211)
PRICE	-.254 (.153) ^c	-.421 (.189) ^b	-.412 (.196) ^b	-.658 (.343) ^c	-.755 (.528)
AVL	1.71 (1.37)		1.65 (1.39)	-1.25 (1.91)	2.52 (2.49)
ADV		1.72 (1.20)	1.71 (1.29)	.230 (1.77)	1.71 (2.95)
TEMP	-.517 (.256) ^b	-.539 (.289) ^b	-.443 (.264) ^c	-.334 (.376)	-.546 (.558)
INC	.0002 (.0002)	.0003 (.0002)	.0002 (.0002)	.001 (.0005) ^c	.0002 (.0004)
TOUR	.000001 (.00000) ^a	.000001 (.00000) ^a	.000001 (.00000) ^a	.000001 (.00000)	.000001 (.00000) ^c
URBAN	-.484 (.457)	-.669 (.483)	-.576 (.500)	-1.10 (1.719)	-.747 (.856)
DENS	.0004 (.0001) ^a	.0003 (.0001) ^a	.0003 (.0001) ^b	.0002 (.0001)	.0003 (.0003)
BORDER	1.05 (1.58)	.540 (1.55)	.831 (1.61)	2.26 (2.11)	1.07 (3.51)
WINEAD		-1.78 (2.74)	-1.79 (2.78)	-2.26 (4.67)	
MASHSZ	.00000 (.00000)	.00000 (.00000)	.00000 (.00000)	.00000 (.00000)	.00002 (.00002)
ENF	-.164 (.337)	-.135 (.334)	-.103 (.370)		-.354 (.781)
F-RATIO	8.87 ^a	8.94 ^a	7.52 ^a	5.72 ^a	2.81 ^a
R ²	.648	.649	.656	.753	.640
n	100	100	100	50	50

^a Significant at the .01 level
^b significant at the .05 level
^c significant at the .10 level
* Variable did not enter in step-wise regression

TABLE 2
Correlation Matrix

	SUNDAY	NOVELTY	MINAGE	MONOP	REMIK	PRCADV	CREDIT	SIZE	PRICE	AVL	ADV	TEMP	INC	TOUR	URBAN	DENS	BORDER	WINEAD	MASHSZ	ENF	
SUNDAY																					
NOVELTY	-.23																				
MINAGE	.18	-.03																			
MONOP	-.16	.19	-.09																		
REMIK	-.35	-.34	-.17	.30																	
PRCADV	-.17	.14	-.09	.43	.24																
CREDIT	-.12	-.04	-.14	-.14	.20	.06															
SIZE	.11	-.20	.13	-.30	-.45	-.19	.11														
PRICE	.003	-.09	-.01	.06	-.07	.04	.01	.05													
AVL	.37	-.39	-.07	-.02	-.45	-.10	-.07	.21	.00												
ADV	.21	-.43	.02	-.35	-.72	-.39	.02	.30	.28	.30											
TEMP	.05	.11	.11	-.20	-.04	-.10	-.13	.09	-.10	-.42	-.07										
INC	.20	-.26	-.08	-.19	-.24	-.19	.08	.32	-.07	.49	.57	-.33									
TOUR	.31	-.24	-.03	-.16	-.13	-.16	-.18	-.04	-.02	.20	.40	.25	.29								
URBAN	.06	-.24	-.00	-.29	-.14	-.22	-.08	.23	.11	.02	.62	.26	.46	.49							
DENS	-.08	-.12	.06	-.09	-.19	-.09	.14	.14	-.03	.04	.52	.05	.34	.04	.29						
BORDER	-.12	-.15	-.01	-.13	-.23	-.13	.14	.18	.02	.03	.53	.04	.31	-.07	.28	.92					
WINEAD	-.07	-.33	-.10	-.27	-.15	-.22	.01	.17	-.14	.13	.64	.06	.56	.72	.44	.39	.38				
MASHSZ	-.10	.15	-.03	.02	.17	.10	.01	-.09	.21	-.27	.24	.27	.28	-.04	-.06	-.04	-.02	-.07			
ENF	-.10	.19	-.02	.34	.30	-.01	-.03	-.20	.02	-.08	-.14	-.13	.00	-.02	-.15	.03	.00	-.02	.08		

The overall results are consistent with those of Ornstein and Hanssens (1981), differing from their findings in four major, but relatively explainable, ways. First, they found monopoly control and price advertising restrictions (MONOP and PRCADV) to be significantly negatively related to consumption, whereas this study did not. Since these are dummy variables that are likely to pick up the effects of missing explanatory variables, their findings may be a result of not including some of the variables utilized in this study.

Second, Ornstein and Hanssens found a significant positive coefficient to be associated with number of on-premise outlets per capita, whereas this study found a positive, generally nonsignificant coefficient association with a roughly equivalent variable (AVL). The difference in results here could be a result of the different operationalizations or, most probably, the higher degrees of freedom available to Ornstein and Hanssens. In this study, the AVL coefficient was significant in several of the more parsimonious regressions having more degrees of freedom. Of course, AVL could be related to consumption because of reverse causation.

Third, Ornstein and Hanssens found their equivalents to INC and URBAN to be significantly positive related to consumption, whereas this study found marginally significant positive coefficients for INC only in a few parsimonious regressions and found negative, nonsignificant coefficients for URBAN. As with AVL, the difference in results for INC probably is a consequence of the higher degrees of freedom available to Ornstein and Hanssens -- although multicollinearity between INC and four variables that were

measured differently or not used by them (ADV, AVL, TOUR, and DENS) could also explain what happened. The difference in results for URBAN is also probably a consequence of multicollinearity between this variable and several variables (cited earlier) that were measured differently or not used by Ornstein and Hanssens.

Finally, Ornstein and Hanssens obtained significant positive coefficients for their border-effect variable. However, as argued earlier, their variable essentially measured size of the state. Thus, they were probably picking up the same effect as that obtained for DENS in this study.

In sum, the results suggest that the only way state regulations may be discouraging consumption of distilled spirits is in an indirect manner, through the effects they have on price. The evidence suggests that regulations or other forces that raise prices probably have a small ability to lower consumption, while regulations that try to limit consumption more directly, such as those represented by the regulatory variables, probably are ineffective. The results also suggest that regulations that try to reduce consumption through reducing availability and advertising probably have very limited effectiveness. Variation in consumption of distilled spirits across the states seems to be explained primarily by price, temperature, tourism, and population density.

Discussion

The results of this study provide support for the advocates of deregulation of the distilled spirits industry. As with previous studies, the results suggest that regulation has not been accomplishing very much in terms of reducing consumption. People who want to drink seem to find a way to buy spirits regardless of the obstacles.

The mounting evidence against regulation in this industry deserves careful consideration from public policymakers who are interested in eliminating wasteful, ineffective, government initiatives. However, there remains a need for further research in this area to help shore up some of the weaknesses of this study. Models are needed that will test for curvilinear and/or interactive effects of certain variables. The effects of regulations on price and availability also require study. Further, something should be done to cope with multicollinearity and, most importantly, the possible existence of two-way causation between advertising and consumption and between availability and consumption. The use of structural equation models (Bagozzi, 1980) to explore the interrelationships between regulation, price, advertising, availability, and consumption may have some promise for dealing with these issues. The authors are currently pursuing a refinement and extension of this study using a structural equation approach.

Other issues that deserve attention in future research involve the effects of population density and border-running. Questions that could be addressed include: Is density an adequate variable for picking up the border-running effect? If so, why is this the case? Do densely populated states have more low-price retailers near their borders in order to attract out-of-staters? What else about population density tends to produce higher consumption?

Future research activity could also be devoted toward longitudinal studies of states going through a deregulation experience. It might be more appropriate to draw cause-and-effect inferences about regulatory impacts from such a study than from the correlational-type study reported here.

Conclusion

Although further research is needed, this study contains

reasonably convincing evidence, in conjunction with other recent studies, that consumers cannot be protected from themselves with respect to distilled spirits. The implications of such a conclusion for other industries are highly unclear, but worth some speculation. It may be that government attempts to control where, when, and how people gamble, smoke, eat, or engage in other self-indulgences are doomed to failure. Perhaps human drives or addictions are too strong to make many health and safety regulations worthwhile.

Appendix

The sources of the data for each variable are listed below:

SUNDAY, NOVELTY, MINAGE, MONOP, REMIX, PRCADV, CREDIT, and SIZE: Distilled Spirits Council of the United States, Summary of State Laws and Regulations Relating to Distilled Spirits, 1972 and 1977, Washington, D.C.

PRICE: "Retail Prices of Leading Brands -- Fifth Sizes," Liquor Handbook, 1971 and 1976, New York: Gavin-Jobson, Inc.

AVL: Distilled Spirits Council of the United States, Annual Statistical Review, 1970 and 1975, Washington, D.C.

ADV: 1970 and 1975 "Beer, Wine, and Liquor Advertising Expenditures by State," prepared for the National Institute on Alcohol Abuse and Alcoholism by Leading National Advertisers, Inc.

TEMP: United States Department of Commerce, National Climatic Center, National Oceanic and Atmospheric Administration, Climatological Data, National Summary, vol. 21, no.13, 1971, and vol. 26, no. 13, 1976.

TOUR: United States Department of Commerce, Department of the Census, Census of Service Industries, 1972 and 1977, Washington, D.C., issued 1976 and 1980.

URBAN: United States Department of Commerce, Department of the Census, Current Population Reports, Population Estimates and Projections, Estimates of the Population of Counties and Metropolitan Areas: July 1, 1975 and 1976, Series P-25, No. 739, Washington, D.C., 1978.

INC: United States Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, 57:17, May 1977.

Other data used to compute the variables include:

Consumer Price Index for all urban consumers, selected areas, United States Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics, Bulletin 2070, Washington, D.C., December 1980.

Consumption of distilled spirits by liquor category, "Apparent Consumption of Distilled Spirits," Liquor Handbook, 1971 and 1976, New York: Gavin-Jobson, Inc.

Population by state in 1970, United States Department of Commerce, 1970 Census of the Population, vol. 1, Characteristics of the Population, Washington, D.C., June 1973.

Population by state in 1975, United States Department of Commerce, Current Population Reports, Population Estimates and Projections, Series P-25, Washington, D.C. January 1980.

State size in square miles of land mass, United States Department of Commerce, Bureau of the Census, Statistical Abstract of the United States.

State center of population, United States Department of Commerce, Centers of Population for States and Counties,

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VOLUNTARY PERFORMANCE INFORMATION DISCLOSURES:
ECONOMIC PERSPECTIVES AND AN EXPERIMENTAL TEST

Lawrence A. Crosby, University of Nebraska
Sanford L. Grossbart, University of Nebraska

Abstract

This paper discusses the economic and behavioral considerations involved in the disclosure of product performance information. Economic implications of regulated versus voluntary information disclosure are reviewed and experimental results are presented. The evidence indicates that disclosure increases preference for performance rated brands.

Introduction

Sellers have often been criticized for not disclosing the kind of information which consumers need to make quality judgements. This information relates to intrinsic or "hidden qualities" of a product that affect performance. Examples might include the cost of operation of an appliance, the expected tread life of a tire, or the wear characteristics of a carpet. The information which is provided through the seller-dominated marketing communication channels (advertising, personal selling, packaging etc.) is assumed to be heavily biased. Critics maintain that it is of little use to consumers predicting brand performance. As a consequence, they argue, there is a significant "information gap" in the marketplace (Thorelli 1977, p. 27).

On the surface, it seems that sellers have little incentive to voluntarily disclose objective information about performance characteristics. The only time it would be advantageous to disclose such information is when it presents a favorable picture of the firm's offering. The result is that while positive quality information might be used for promotional purposes, negative quality information is suppressed. There is also a strategic explanation of why firms do not disclose performance information. If a firm is practicing a strategy of product differentiation it may not be to its advantage to disclose this type of information. Product differentiation involves using differential tangible or intangible features in a brand as a basis for commanding a premium (Kotler 1976, p. 144). Whether it is advantageous for a firm using this strategy to disclose performance data, depends on how its brand is being differentiated and how competitors' brands are perceived (Beales et al 1981). If the firm has successfully cultivated the belief that its brand is of superior quality, when in fact there is no objective basis for this belief, then disclosure of performance information could be disadvantageous.

Sources of Performance Information

A counterargument would suggest that sellers are an important, but not an exclusive, source of information for consumers. Buyers may obtain performance information from personal and independent, as well as, commercial sources (Thorelli 1977). Yet these alternative sources would also appear to be inadequate.

Marketers have long recognized the importance of personal information sources, not only for their information they provide, but also for their potential impact on consumer behavior. From a social welfare

standpoint, however, there are two major problems with personal sources of information. First, each individual consumer's experiences are necessarily limited and may not provide a representative sampling of the potential outcomes of purchase. Thus, when a person asks two or three friends how long their Brand X color televisions lasted, there is a relatively large sampling error associated with the average that is obtained. A second problem is that psychological mechanisms are always operative that tend to affect the way that consumers interpret consumption experiences. Post decision dissonance reduction is a good example of such a mechanism (Margulis and Songer 1969). As a result of these psychological mechanisms, a statistical bias may exist in the information obtained from personal sources.

It is probably safe to assume that independent sources such as Consumers Reports are motivated to provide consumers with unbiased information about product performance. Whether they succeed in this endeavor depends largely on their ability to develop testing procedures that consumers view as providing accurate and valuable indications of how the product would perform in an actual consumer-use context. Another major limitation of this source is simply the vast array of products, brands, and models about which consumers desire quality information. Finally, the number of organizations engaged in this activity is limited by unfavorable economic conditions which are partly attributable to a lack of audience exclusivity. It is difficult to exclude non-buyers of product rating publications from the benefits of product use since an interested consumer can obtain and copy the information through the public library at minimal expense. Ultimately, the development of computerized data bases may provide these organizations with greater audience exclusivity (and lower dissemination costs) thus increasing the importance of this source.

Stimulating Commercial Sources

It seems clear that, in the near future, significant reductions in the consumer information gap cannot take place without the involvement of sellers. The question is whether sellers should be required to disclose information by government edict (Crosby and Taylor 1981). To some, required disclosure might seem to be an extreme measure to be used only after other, more moderate approaches had been tried without success.

Requiring disclosure of information appears to present a number of difficulties and dangers. The public policy maker who adopts this method faces serious problems of determining the socially optimal amount of information and causing exactly that amount to be supplied through regulation. There is the real danger of creating an oversupply of information above the level that consumers desire or are capable of processing. Preliminary research suggests that consumers may not use additional information (Nourse and Anderson 1973; Jacoby, Szybillo, and Busato-Schach 1977; Jacoby, Chestnut, and Silberman 1977) or may "overload" when too much is provided (Jacoby, Speller, and Berning 1974). While evidence on consumer responses to overload has been disputed (Russo 1974; Summers 1974; Wilkie 1974), creating an oversupply would have the effect of wasting resources and could lead to a net loss in utility for consumers.

If it seems desirable to increase the voluntary supply of objective product performance information from commercial sources, it is best to begin by examining factors that determine the supply of information and identifying those barriers that impede greater supply. Specific programs could then be designed to remove these barriers. Although this might not result in the optimal amount of information being voluntarily produced, continued dependence on the market mechanism might avoid the dangers of oversupply. In addition, the market mechanism allows consumers to "buy" as much information as they want, thus adjusting for individual differences in the utility of information.

An Economic Perspective

Conventional supply and demand analysis may be helpful in understanding how the output of commercial information is determined. This type of analysis has been previously applied in the area of advertising (Telser 1966), which is one component of commercial information. An advantage of this approach is its explicit recognition that information will not be voluntarily provided unless consumers demand it. In addition, it recognizes that information cannot be supplied without cost.¹

Figure 1 depicts a simplified situation where the typical consumer is allocating a fixed budget M between a divisible product and information about that product.² At an initial product price of PP_0 , the consumer could spend the entire budget on the product itself and buy M/PP_0 units. At an initial information price of PI_0 , up to M/PI_0 units of information (e.g. bits) could be purchased. Any point on or inside Line A represents the feasible budget set. Utility would be maximized by buying qp_0 units of product and qi_0 units of information which represents the tangency of the

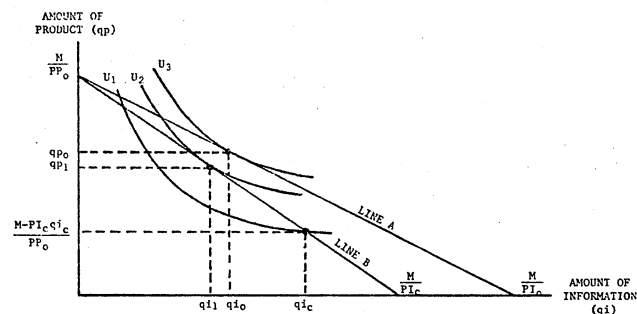


Figure 1. Analysis of consumer's demand for a product and information about that product.

¹Certain assumptions will be made in order to facilitate this analysis. First, it was assumed that information is provided as a joint product with the related good or service. Second, a direct distribution system linking producer and consumer (no resellers) was assumed to exist. Finally, consumers' perceptions of the utility of information and producers' perceptions of the cost of supply were assumed to vary from their true values due to imperfect knowledge.

²The analysis implies that the consumer has some flexibility in the decision as to how much information to buy from the commercial source. Even though the information is provided as a joint product with the related good or service, this flexibility will exist when there are many brands offering various amounts of information. The information decision can then be viewed as coupled with the brand decision.

budget line with the highest possible indifference curve U_3 .

An actual example of this process might involve the purchase of carpeting for the home. The fixed budget M represents the proportion of its discretionary income that the household wished to allocate to the purchase of carpeting. Information can be purchased to help determine the wear characteristics of the carpet, how easy it is to deep clean, and so forth. However, as more money is spent on buying information, fewer square yards of carpeting can be purchased.

By systematically varying the price of the information, noting how the utility maximizing amount of information changes and summing over all consumers, the industry demand curve can be developed. This appears as curve D_1 in Figure 2. The supply curve S_1 relates the quantity of information supplied to the price of the information.³ PI may be viewed as the information component of the price paid by consumers for the related good or service. According to this analysis, demand and supply interact to produce an output QI_0 of information at a price of PI_0 .

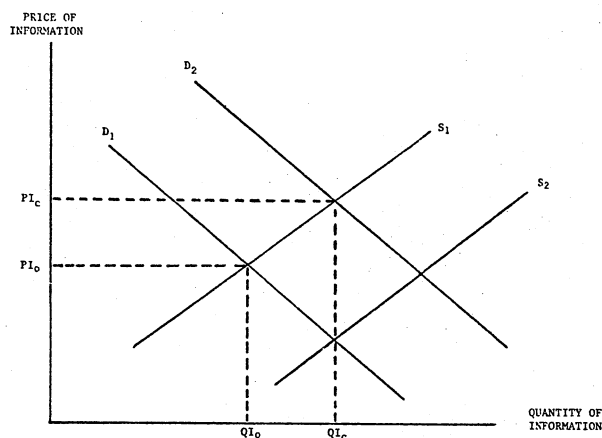


Figure 2. The demand and supply of consumer information from commercial sources.

To close the "information gap", it is necessary to shift the output of information to the right of QI_0 . There are three ways that this can be accomplished: (A) controlling the output of information at some point $QI_c > QI_0$ through regulation, (B) shifting the demand curve to the right of D_1 , or (C) shifting the supply curve to the right of S_1 . Each alternative is briefly considered below.

Consider the alternative of regulating the amount of information at some higher level, QI_c . Without regulation, producers would supply this account of information only at the price level PI_c . This, of course, is based on their perception of the cost of supplying different quantities of information as represented by the supply curve S_1 . If this perception is accurate, they can supply the additional information

³This industry supply curve for commercial information (S), assumes that the number of firms in the industry remains constant ($=n$). Since information is supplied as a joint product with the related good or service, it is reasonable that "n" is fairly stable in the short and possibly long run. The industry output at different price levels will then be $S = n \times s$, where "s" is the output of the typical firm.

$QI_c - QI_o$ and protect their profits only by increasing the price of the information by $PI_c - PI_o$.

Setting output at QI_c could have negative consequences, as shown in Figure 1. Since cost increases are likely to be passed along to consumers, the budget line shifts from A to B as PI_o increases to PI_c . Given the new price of information, the consumer's utility would be maximized at the tangency between U_2 and Line B. If the consumer's utility perceptions are correct, then $U_2 < U_3$. However, q_1 may not be the regulated amount of information that the consumer is required to buy. For example, if policy makers err in the direction of oversupply ($QI_c > QI_1$), then the consumer realizes utility U_1 where $U_1 < U_2 < U_3$.

Now it might be argued by the public policy maker that either consumers' perceptions underestimate the utility of more information and/or producers' perceptions overestimate the cost of supplying more information (Ratchford 1977). While this is possible, perhaps a better target for policy action would be to change consumer and supplier perceptions. In this way, the output of information could be increased while allowing the market mechanism to function freely.

The policy approach of consumer education could be used to increase the demand for information at any given price. Because consumers have imperfect knowledge, they may undervalue having added information. If successful, consumer education could have the effect of shifting indifference curves, as represented by U' in Figure 3.

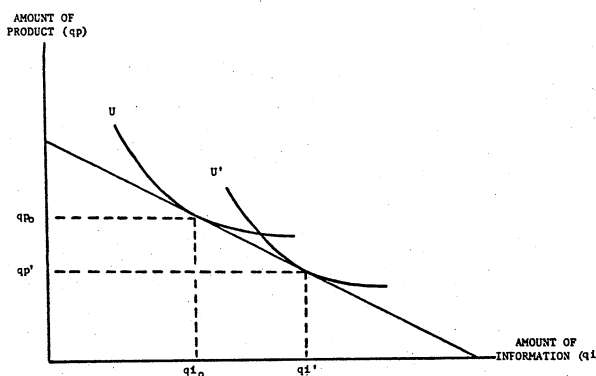


Figure 3. Possible impact of consumer education on the demand for information.

Not surprisingly, there has been recent discussion of the interface between consumer information and education (Staelin 1978). Jacoby (1977), for example, contrasted results of surveys indicating that a high percentage of consumers use nutritional label information with other findings that suggested the information has a negligible impact on purchase behavior. Based on laboratory experiments which showed that consumers tend to understand or acquire little nutrition information, Jacoby concluded that consumer education was a necessary prerequisite for interpreting and using performance information. Similar results have also been found in other disclosure areas (Nourse and Anderson 1973). Yet, perhaps too little attention has been given to communication quality. Disclosure, after all, is a form of marketing communication and the matter of educating customers to use information should not supercede the issue of how to provide information in a more usable, and less technical, form (Mazis et al 1981). Both actions are likely to shift D_1 to D_2 .

If producers are correct in judging that disclosure of added information will increase costs, government

subsidies or tax relief would probably be necessary to shift S_1 to S_2 . However, the potential welfare effects of these measures would require close examination. For example, the costs of these programs would be generally shared by consumers whether or not they were in the market for the particular product. It might be argued that those who would benefit from the information should be required to pay for it.

It is likely that some producers would experience decreased costs after they disclosed performance information. In these cases, for reasons to be discussed, sales volume might increase in response to more information being made available. As a result, the fixed costs of supplying information would be distributed over a larger number of units of output. This would tend to decrease the information component of price, PI . Competitive pressures might then force other firms to disclose added information. As customers became more aware of performance differences, certain firms which lost sales and experienced increasing costs, would be driven out of the market.

This line of reasoning again suggests the need for an educational effort by government, in this case, directed at the producers whose products meet consumers performance needs. The disclosure advocate would need factual evidence to make a persuasive case with these producers that additional information would cost less rather than more to provide.

Recapitulation

Required disclosure of information to consumers is a drastic means of closing the information gap in the marketplace. The previous analysis suggests other options which place greater emphasis on the market mechanism. In general, the more feasible alternatives call for an educational effort by government to change consumers' perceptions of the value of information and/or producers' perceptions of the costs of supply. This latter strategy, however, is based on an assumption that the disclosure would be an effective competitive weapon for the producers of products having superior performance characteristics. Unfortunately, little is known about the nature of consumer response to the voluntary disclosure of performance information. It is reasonable to expect that producers of superior products would be hesitant about disclosing even some negative quality information⁴ (in the face of non-disclosure by the producers of inferior products) and would need some assurance of an overall favorable response by consumers.

Consumers Response Possibilities

Disclosure provides opportunities for firms to realize long-run and short-run gains. A major source of consumer dissatisfaction is high performance expectations which are disconfirmed through actual usage (Anderson 1973). If unrealistic expectations result from inadequate information, then disclosure should add some realism to consumer beliefs and lead to less frequent disappointment in product performance. As a result, consumer satisfaction, brand loyalty and long term profitability are likely to increase.

⁴Any legitimate testing procedure would reveal performance variance across the product line. Presumably, higher priced models and varieties would exhibit correspondingly better performance. Evidence that not all models in the product line provide "maximum" performance could be taken as negative quality information.

In the short-run, disclosure of some negative performance ratings might increase the perceived value of seller information and thereby stimulate its use. Thus, the benefits of whatever positive information was disclosed would tend to be enhanced. As long as the information was predominantly favorable, the net effect should be positive. In addition, disclosure may make it easier for customers to buy products that fit their needs. Consumers are likely to be just as concerned with over-buying as with under-buying performance. Voluntary disclosure, therefore, might appeal to those persons who want assurance that the brand or model they select is appropriate for their needs.

Given these consequences, as Day (1976, p. 45) has suggested, consumers should feel more confident about their decisions and develop more favorable attitudes toward producers and sellers. Research conducted by Jacoby, et. al (1974) tends to support this premise. These researchers found that subjects felt more confident about their choices at higher levels of information. One limitation to achieving these gains from disclosure is that consumers may not believe the information provided to them. Not without reason, they may mistrust the motives of the source. However, one way they might evaluate the validity of the information is to compare it to what they would expect. As long as the information does not strongly disconfirm their expectations or otherwise seem suspicious, they should be inclined to believe it.

An Experimental Investigation

An experiment was conducted to provide some preliminary data regarding the nature of consumers' short-run response to voluntary disclosure. The principal hypothesis was:

Providing seller initiated performance disclosures will have a positive impact on consumer preference for a firm's offerings.

There are a number of variables that could mediate the impact of voluntary disclosure on consumer choice. These factors fall into three classifications: 1) content factors (the extent to which the information is positively or negatively valued), 2) communication factors (e.g. lack of awareness, comprehension, credibility, etc.) and 3) motivational factors (e.g. relevance of disclosed information). Any attempt to predict the impact of voluntary disclosure must take these factors into account. The approach taken in this study was to create a situation that was "ideal" for information use. If the hypothesis was not supported under highly favorable conditions, then there would seem to be little point for extending the research to other realistic and less favorable situations.

Methodology

Product

Residential carpeting was the test product used in this research. Carpeting was chosen because consumers are likely to regard carpet choice as a major purchase decision involving substantial social and financial risk. Moreover, the product contains significant hidden qualities, especially with regard to wear performance. These factors suggest that consumers would consider performance information to be relevant for this product and would be motivated to use it.

Subjects

The sampling frame was residents who had purchased a home in the previous two years. It was felt that the

population of new homeowners would have a relatively high incidence of persons who had recently purchased carpeting or had plans to do so. Subjects were selected systematically from city tax records on an every n-th name basis and recruited by telephone. Contact was made with 86% of the names, 67% of those contacted were qualified, and interviews were completed with 58% of those who were contacted and qualified. In all, 24 couples were involved in the experiment. They are referred to as decision making units (DMU's) below.

Design

A two factor mixed design with repeated measures on one factor was employed (Edwards 1960). This is basically a combination of the completely randomized design and the treatments-by-subjects design. It permits a comparison of experimental condition (disclosure of different levels of carpet performance) in terms of scores on the dependent variable. It also permits examination of the differences in scores across the experimental trials (before and after disclosure) and how this may differ by experimental condition.

Procedure

The experiment itself was conducted in subjects' homes. Couples closely examined 5 varieties of carpeting then were asked to reach a joint decision on the likelihood they would buy each carpet for a specific high traffic room in their homes. Subjects could base their preferences on the physical characteristics of the carpets or on information provided about them including price (\$9 or \$12 per square yard) and surface texture (saxony, twist, or cut and loop). In the next stage of the experiment, all subjects received performance information about some of the carpets. They were told that 2 out of the 5 carpets were manufactured by Brand A. Furthermore, they were told that Brand A rates its carpets on wearability and discloses these ratings to consumers while Brand B does not disclose performance information. Subjects read a two page description of the rating system and were provided with wear ratings for the 2 carpets. The DMU was then given an opportunity to modify its preferences in light of the new information. The assignment of 2 out of the 5 carpets to Brand A was rotated from couple to couple. This rotation of carpets between Brands A and B served to control all other product cues that might affect preference. All carpets were identified as Brand A approximately an equal number of times.

Subjects were required to engage in other activities during the experiment so that the purpose of the study became less obvious. In addition, an in-depth debriefing revealed that none of the persons involved was aware of purpose of the exercise or attempted to modify their behavior to meet any supposed research objective. Thus it was unlikely that demand artifacts were responsible for the results.

Treatments

The information treatment consisted of providing subjects with actual wear ratings provided by the carpet manufacturer. These ratings are presently disclosed to consumers. To help the subjects interpret the meaning of these ratings, they were provided with an information processing aid that related the ratings to the traffic levels of various rooms in the house (see Figure 4). Carpets used in this study were rated as II, III, or IV. Three rating combinations (IV and IV, IV and III, and IV and II), which approximated product line mixes in the marketplace were utilized.

Example

Rating	Suitability	
I	Light traffic. For areas in the home getting limited use.	
II	Moderate traffic. For most areas in the home. If heavy, special care needed.	
III	Fairly heavy traffic. For any area of home subject to appropriate care.	
IV	Heavy traffic. Especially suitable for areas of heaviest traffic.	

Figure 4. Carpet performance rating system.

Measures

Couples indicated their preference, both before and after disclosure, using a purchase probability scale (PPS). The PPS requires subjects to estimate the probability that they would purchase each carpet variety. The actual instructions given asked the couple to assign 100 points to the five alternatives as though they were placing bets on the likelihood they would buy each carpet (for the specified high traffic room).

Results

Mean probabilities of purchasing Brand A carpets (PPSs), before and after disclosure, are presented in Table 1. As shown, the likelihood of purchasing increased for all information content groups. ANOVA results are summarized in Table 2. A significant trials main effect was found ($p < .025$), indicating a significant increase in PPSs after disclosure. As expected, neither a significant conditions main effect (information content of disclosure) or trials by conditions interaction (disclosure x content) was present. As indicated in Table 1, while PPS's increased for all groups, these differences were only significant ($p < .05$) in the group which received consistently high ratings (IV and IV) and the group for which the most inconsistent information was disclosed (IV and II). Thus the hypothesis was generally supported.

TABLE 1
Total PPS Points DMU Allocated To
Brand A Carpets Before and After
Disclosure By Information Content Group

Info. Content Group (Brand A Ratings)	No. DMU's	Group Means		Pairwise t	Significance (1-tail)
		Trial 1 (Before)	Trial 2 (After)		
IV and IV	9	51.11	53.89	1.89	<.05
IV and III	7	47.86	55.00	1.51	N.S.
IV and II	8	37.50	40.63	1.93	<.05

TABLE 2
ANOVA Results

Source	SS	df	MS	F	p
Total	48,948	47			
Between Subjects	48,073	23			
Conditions	1,803	2	901.50	.41	N.S.
Error _b	46,270	21	2203.33		
Within Subjects	875	24			
Trials	208	1	208.00	7.02	<.025
Trials x Conditions	45	2	22.50	.76	N.S.
Error _c	622	21	29.62		

Discussion

While several implications are suggested by these findings, it is important to recognize the limitations inherent in the design of the study. Since the effects of voluntary disclosure have been the subject of limited research interest, an exploratory investigation was needed. Obviously, market conditions were not duplicated in this experimental context and the need for adequate controls limited the number of decision making units involved. Moreover, the procedure involved a belief change rather than a belief formation paradigm. Subjects were provided with performance information after they had a chance to form purchase intentions. Therefore, utilization of disclosed information required a possible modification of beliefs and cognitive structure. Consequently, resistance or mental inertia could have mediated the full impact of information disclosure. Certainly future research, as discussed below, can shed light on the significance and effects of these factors. Still, both the prior reasoning and these preliminary results suggest that voluntary disclosure can have a positive impact on consumer preferences. The actual impact of disclosure on sales will likely depend on the mix of performance levels represented in a firm's product line. Barring major differentials in margins for items in the product line, a firm is most interested in impact on total sales. In the experimental situation sales of each hypothetical product line increased, although only two of the three cases proved to be significant.

It might be argued that the changes in purchase probabilities in Table 1 are too small to be of practical importance. Yet changes of this magnitude are often associated with successful marketing communication strategies. The managerial question is whether the margin contribution from added sales exceeds the largely fixed costs of voluntary disclosure. Equally important, perhaps, is the fact that disclosure does not appear to be a disruptive market influence. There were no massive shifts in purchase intentions. Instead, disclosure of actual performance ratings appeared to reinforce the judgement of subjects. If this leads to fewer disconfirmed expectations and greater consumer satisfaction, these long-run benefits may even outweigh the marginal short-run gains of added sales. Marginal profitability and increased customer satisfaction would certainly provide meaningful incentives for voluntary disclosure of product performance information.

A separate issue concerns the apparent ease with which consumers utilized the disclosed information. They reported that they found it to be both easy to employ and helpful. Previous research which indicates that consumers neither understand nor use performance information may, by implication, be providing a negative evaluation of the manner in which information was presented or its salience. Disclosure is a form of marketing communication rather than technical

specificaiton. Thus, a relevant research issue is how to provide salient and interpretable performance information which benefits consumers, firms and the economic system. In the present case the information voluntarily developed by one carpet manufacturer seemed to prove helpful.

There is a need to replicate and extend this research. Replication should involve the use of other products in addition to carpeting. Extension could involve more levels of product line variability in the disclosure information. Also, various wordings and nonverbal cues for the rating categories might be tested to see how signs and symbols affect information handling. For instance, do consumers tend to ignore seller provided information when even the lowest ratings have positive connotations (e.g. firm, extra firm, and double extra firm mattresses). Further work might also involve adding external validity through field experimentation. The sampling frame could be carpet dealers who carry a particular brand. They could be carefully screened based on sales volume and breadth of product line, then randomly assigned to an information (e.g. ratings on carpet labels) or no information condition. Dealers could then be compared in terms of brand sales and customer satisfaction.

Conclusion

Perhaps the optimal solution to the consumer information gap is for government to be only minimally involved and private industry to take the initiative in improving the information environment. The societal advantage of seller initiated disclosure would be that consumers could decide whether to purchase the information or not. Not only is this consistent with the notion of consumer sovereignty, but it would help ensure that information is directed to those who can use it. Consumer researchers can provide a valuable service to all parties involved by identifying the nature of information which consumers desire and testing alternative forms of presentation.

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AN EXAMINATION OF CONSUMERS' PERCEPTIONS OF
PURPOSE AND CONTENT OF CORRECTIVE ADVERTISING

George E. Belch, San Diego State University
Michael A. Belch, San Diego State University
Robert B. Settle, San Diego State University
Lisa M. De Lucchi, San Diego State University

Abstract

Consumer's ability to comprehend the purpose and content of corrective advertising is considered by examining their perceptions of two FTC mandated corrective print advertisements - one for STP motor oil additive and one by Sugar Association, Inc. The results suggest that consumers are somewhat naive as to the purpose of corrective advertising. Also, education level, product usage and message format are shown to have an effect on consumers' perceptions of the purpose of corrective advertising and on their perceptions of efficacy claims refuted in the corrective messages.

Deceptive or misleading advertising has become an area of increasing concern over the past decade as the Federal Trade Commission has attempted to develop an advertising environment that is conducive to well-informed purchase decisions by consumers. In situations where alleged deceptive or misleading information has been given to consumers, the FTC has relied on its authority to require the affirmative disclosure of new or additional information, so that the consumer will be able to make a more informed choice. One variation of the FTC's use of affirmative disclosure remedies is corrective advertising. Corrective advertising is a special case of affirmative disclosure designed to dispel residual effects of inaccurate or misleading information in prior advertising. The rationale underlying corrective advertising is that erroneous beliefs created by past deceptive advertising may continue even after deceptive claims are discontinued, unless the past deception and true facts are disclosed to the consumer.

Since its adoption as a method for dispelling the residual effects created by deceptive advertising, corrective advertising has stimulated much interest and controversy in regard to its appropriateness and effectiveness as a remedy to misleading advertising. One major concern regarding corrective advertising is that this form of disclosure is not really understood by consumers and may be ineffective in dispelling the residual effects of deceptive advertising. In order for beliefs and attitudes to be restored to their previous level, consumers must be able to comprehend both the purpose and the content of corrective advertisements. Miscomprehension of corrective advertising impedes the ability of this remedy to achieve its intended objectives and thus lessens its effectiveness. The purpose of this study is to examine the effectiveness of two forms of corrective advertising that were instituted in compliance with orders of the Federal Trade Commission. The corrective advertisements examined in this study are those that were ordered to be run by STP Corporation and by Sugar Association, Inc. More specifically, this study focuses on the ability of consumers to 1) comprehend the purpose of corrective advertising and 2) comprehend the meaning of the information conveyed in corrective ads. Also examined are differences in comprehension by education levels and the effects of product usage on perceptions of the corrective claims and advertisers using them.

Previous Research On Corrective Advertising

A number of studies have examined the effects of corrective advertising on consumers' brand perceptions, attitudes and purchase intentions. Dyer and Kuehl (1974) examined the effects of message source (F.T.C. vs the firm) and directness and intensity with which guilt is disclosed on corrective advertising effectiveness. They found that Commission-source, and in particular Commission Source-high strength, was more effective than company-source messages in decreasing favorable attitudes in print media, although there was no difference among the two in broadcast media. Dyer and Kuehl also found that a print corrective message from a company source resulted in a more trustworthy image for the firm than a commission-source message.

Kassarjian, Carlson and Rusin (1975) also found that positive attitudes created by a deceptive advertisement could be reversed through corrective advertising. They also found that the negative effects of corrective advertising did not carry over to the retail sponsor. Studying the effects of corrective advertising presented in a video medium, Mazis and Adkinson (1976) found that there was a negative effect on consumers' beliefs about the product, as not only were the target beliefs affected, but there was a halo effect whereby beliefs not mentioned in the corrective message were also affected. Mazis and Adkinson also found that 39% of the subjects, as measured through aided recall, misperceived the corrective message.

Other studies have examined the effects of one vs two sided message presentation (Semenick 1977), message format (Semenick 1980), number of exposures (Mizerski, Allison and Calvert 1980) and longitudinal effects of corrective messages (Sawyer and Semenick, 1977. Dyer and Kuehl, 1978. Armstrong, Gurol and Ross, 1979). In sum these studies have demonstrated that 1) the form of the corrective message will yield different effects on attitudes 2) the effects of corrective message upon beliefs about the product are mixed 3) corrective ads have no significant effects on the sponsor's image, consumer purchase intention and/or product usage 4) the effects that do occur are generally short lasting and 5) that more educated consumers are more likely to change their beliefs as a result of viewing corrective advertising. Finally a study by Jacoby, Nelson and Hoyer (1981) found that remedial advertising statements proposed by the FTC for two analgesic products were miscomprehended as much as, or even more than, the advertising they were supposed to remedy.

The results of these studies, while shedding some light on the effectiveness of corrective advertising, do leave a number of questions unanswered. For example, do consumers really comprehend the purpose of corrective advertisements, and the message these ads attempt to convey? Secondly, are factors such as comprehension of the purpose of the ad or comprehension of the corrective message, affected by factors such as education or product usage? Finally, does the format of the corrective message itself lead to higher levels of comprehension and greater effects on beliefs.

Method

Corrective Messages

Two corrective advertisements mandated by the Federal Trade Commission were tested in this study, one for STP motor additive and the other for the Sugar Association, Inc. In 1977 the FTC found deceptive, STP's claim that its motor oil additive reduced oil consumption by as much as 20% (FTC Decisions, 1977) and ordered a cease and desist order. STP's subsequent violation of this order led the FTC to pursue civil penalty actions against STP which resulted in a \$700,000 settlement \$200,000 of which was mandated to be used for print corrective advertisements. These advertisements appeared in 14 periodicals with an estimated readership of 78 million. One interesting aspect of this order was that the intended audience for the messages included not only the general public, but also business and advertising executives. The FTC's goal in disseminating the message among the latter two groups was to emphasize the deterrence effect of corrective advertising. The specified media in the FTC order included the Wall Street Journal, New York Times and Newsweek. However the corrective messages were also seen by many nonbusiness consumers. The enforcement order signed by STP required that they inform consumers that:

- 1) STP has agreed to a \$700,000 settlement with the FTC and
- 2) Tests conducted by STP did not support the company's oil additive claims of reduced oil consumption.

The Sugar Association's corrective advertisement was the result of the FTC's first compulsory requirement corrective advertising which specified a design standard for copy and placement of a corrective message. The FTC found deceptive a claim by Sugar Information, Inc, a prominent sugar manufacturers' association, that eating sugar or foods containing sugar before meals would help curb appetites and aid in weight reduction. The FTC ordered the association to disseminate full page print corrective messages in specific issues of seven consumer magazines. The text of each ad is shown in the Appendix.

There are several differences between the two corrective messages. The STP advertisement directly cites the Federal Trade Commission as providing the impetus for the message and contest of the copy. The ad is very direct in informing consumers of the deceptive claim made by STP. The sugar advertisement, on the other hand, is less direct, with the motive for running the advertisement not being mentioned. While the Sugar Association message does present the required corrective message, there is no mention of the FTC nor any reason offered as to why the ad was run. Also, while the STP ad consisted of the message only, the sugar ad superimposed the message over a pictorial background.

Instrument

A self-administered questionnaire was developed which included the actual copy of the STP and Sugar Association corrective advertisements and specific questions relating to comprehension of the purpose and content of the advertisements, beliefs about the products, purchase intentions and product usage information. Respondents were instructed in the questionnaire to read each advertisement and then answer the questions related to each. This method of administration may have resulted in the corrective messages receiving more attention than they might in a normal reading situation. However, given the objectives of this study it was necessary that the respondents read the messages before responding to the questionnaire. Cost limitations prohibited the use of

personal interviews which would have afforded greater control over the administration of the corrective messages.

Respondents

Questionnaires were distributed to 420 respondents selected as a quota sample reflective of demographics of a major metropolitan area on the West Coast. From the initial distribution, 405 were returned with 402 usable. Several questionnaires were eliminated for not completing the entire form. The final sample consisted of 256 males and 146 females with an average age of 42 and average education of 13 years.

Results

The first issue considered was whether or not consumers understand the purpose or content of corrective advertisements. In order to test consumers' perception of the purpose of corrective messages, respondents were told that the advertisements they had just read appeared in several magazines and were presented five possible reasons the company ran this particular ad. (See Table 1) Respondents were asked to indicate on a five point scale the likelihood that the ad was run for a particular reason. Content comprehension of the corrective message was tested by asking respondents to indicate their level of agreement with two efficacy statements that were refuted in the corrective advertisements.

The result of the comprehension questions for the STP message are presented in Table 1.

Table 1
COMPREHENSION OF THE STP ADVERTISEMENT

Purpose: ^a	Mean
1. To sell more of their product.	2.76
2. Because STP felt they should correct a false impression created by a previous ad.	2.83
3. Because other ads STP ran were not effective in selling their product.	3.75
4. Because STP was pressured into doing so by consumer groups.	2.79
5. Because STP was ordered to do so by the United States government.	2.75
Content: ^b	
6. STP motor oil additive will reduce oil consumption.	3.33
7. Regular use of STP may prolong the life of your car's engine.	3.11

a: Measured on a five point scale where 1 = very likely, 5 = very unlikely.

b: Measured on a five point scale where 1 = strongly agree, 5 = strongly disagree.

The results in Table 1 indicate that the respondents were somewhat naive as to the purpose of the corrective message. The most likely perceived reasons as to why STP ran the corrective messages were "to sell more of their product and because STP was ordered to do so by the U.S. government". The sales intention reason is not really reflective of the purpose of the message and suggests that the respondents were unaware of the remedial intention of the corrective message. The perception that the ad was the result of a government mandate does reflect on accurate understanding as to why the ad was run. However considering the copy of the ad, one might have expected this reason to be given more often. The statement which best describes the remedial objective of the corrective message ("Because STP felt they should correct a false impression created by a previous ad") was only moderately perceived as reason for the advertisement. With respect to comprehension of content, the results suggest that respondents were somewhat skeptical concerning the performance of STP, as responses to the two efficacy statements indicated more disagreement than agreement.

Respondents exhibited stronger opinions in respect to the purpose and content of the sugar association corrective message. As can be seen in Table 2, respondents were even more naive about the purpose of the sugar ad than

Table 2
COMPREHENSION OF SUGAR ADVERTISEMENT

Purpose: ^a	Mean
1. To sell more of their product.	1.62
2. Because they felt they should correct a false impression created by a previous ad.	3.07
3. Because other ads they ran were not effective in sugar products.	2.94
4. Because they were pressured into doing so by consumer groups.	3.43
5. Because they were ordered to do so by the United States government.	3.86
Content: ^b	
6. Eating sugar before meals will help you to lose weight.	4.16
7. Sugar is an important part of a well-balanced diet.	3.14

a: Measured on a five point scale where 1 = very likely, 5 = very unlikely.

b: Measured on a five point scale where 1 = strongly agree, 5 = strongly disagree.

the STP ad. The primary reason cited for the running of the sugar ad was to sell more of the product. The corrective sugar advertisements were not generally perceived as being the result of government pressure and were only moderately perceived as having a remedial

purpose. These weaker perceptions as to the government mandated, corrective intention of the sugar ad versus the STP ad are understandable as the text of the Sugar Association corrective message did not mention the FTC or any other regulatory agency as having any connection with the advertisement, nor was the corrective statement as direct as in the STP advertisement.

With respect to content comprehension of the sugar ad, respondents exhibit a high level of disagreement with the efficacy claim that "eating sugar before meals will help you to lose weight." While this finding appears to indicate accurate comprehension of the message, it may also be the result of general beliefs and not totally due to the impact of the corrective ad. The Sugar Association ad claim that sugar is an important part of a well balanced diet received more disagreement overall than agreement.

Effects of Education and Product Usage on Comprehension

In order to examine the effects of education level on comprehension the sample was divided into three levels of educational attainment. The first group included those with a high school education or less (1-12 years), the second level consisted of those who attended or graduated from college (13 - 16 years of education) and the third group included those with post graduate education (greater than 16 years). Table 3 presents the results of the comprehension variables for the STP ad across the three education levels.

As can be seen in Table 3, for the STP ad there were

Table 3
COMPREHENSION OF STP ADVERTISEMENT BY EDUCATION LEVEL

Purpose: ^a	Education Level in Yrs		
	1-12	13-16	Over 16
1. To sell more of their product (c).	2.35	<u>3.01</u>	<u>3.22</u>
2. Because STP felt that they should correct a false impression created by a previous ad (c).	<u>2.56</u>	<u>2.84</u>	3.54
3. Because other ads STP ran were not effective in selling their product (c).	3.42	<u>3.98</u>	<u>4.10</u>
4. Because STP was pressured into doing so by consumer groups.	2.64	2.92	2.74
5. Because STP was ordered to do so by the United States government.	2.86	2.78	2.32
Content: ^b			
6. STP motor oil additive will reduce oil consumption.	3.24	3.35	3.55
7. Regular use of STP may prolong the life of your car's engine.	3.07	3.08	3.34

a: Measured on five point scale where 1 = very likely, 5 = very unlikely

b: Measured on five point scale where 1 = strongly agree, 5 = strongly disagree

- c: Differences in group means significant beyond .05 level
- d: Underlined group means are not significantly different

- d: Differences in group means are not significantly different education level.

significant differences among the three educational groups for three of the ad purpose measures. Respondents in the lowest education category were more likely to believe that the reason for the STP ad was to sell more of the product or because other ads were not effective in selling the product (although the latter reason was generally perceived as unlikely by all three educational levels). Significant differences were also found with respect to perception of the remedial purpose for the corrective message, as respondents in the first two education levels were more likely than the highest education level respondents to perceive the reason for the corrective message to be to correct a false impression created by previous advertising. Closer examination of Table 3 indicates that respondents in the highest educational group saw the corrective message as resulting from government mandate. Considering the nature of the STP corrective message it is logical to draw this conclusion as to the reason for the STP advertisement.

Table 4 presents the results of the comprehension

Table 4

COMPREHENSION OF SUGAR ADVERTISEMENT BY EDUCATIONAL LEVEL

Purpose: ^a	Education Level in Yrs		
	1-12	13-16	Over 16
1. To sell more of their product (c).	1.76	1.58	1.41
2. Because they felt they should correct a false impression created by their previous ad.	2.98	3.08	3.32
3. Because other ads they ran were not as effective in selling sugar products.	2.86	3.00	3.10
4. Because they were pressured into doing so by consumer groups.	3.39	3.54	3.30
5. Because they were ordered to do so by the United States government.	3.79	3.99	3.62
Content: ^b			
6. Eating sugar before meals will help you to lose weight.	4.07	4.20	4.30
7. Sugar is an important part of a well balanced diet (c).	2.76	<u>3.34</u>	<u>3.56</u>

- a: Measured on a five point scale where 1 = very likely, 5 = very unlikely.
- b: Measured on a five point scale where 1 = strongly agree, 5 = strongly disagree.
- c: Differences in group means significant beyond .05 level.

measures by for the Sugar Association corrective message. As can be seen in Table 4, the only purpose comprehension variable which resulted in a significant difference across the three education levels was the to "sell more of the product" measure. While respondents in all three education levels generally felt it was likely that the sugar manufacturers ran the advertisement to sell more of the product, respondents at the highest educational level were more likely to perceive this as the reason than those at the other two levels. With respect to content comprehension, respondents in the lowest education level agreed more with the statement that sugar is an important part of a well-balanced diet than did respondents at the next two education levels. All three education levels disagreed rather strongly with the claim that "eating sugar before meals will help you lose weight".

Also of interest in this study are the effects of product usage on perceptions of corrective message. In order to determine the effects of usage, respondents were classified into three product usage groups, those who use the product regularly, those who use it occasionally and nonusers. No significant differences were found between the three groups with respect to comprehension of the purpose of either the STP or Sugar Association corrective messages. However, there are differences with respect to content comprehension among the various user status groups. As shown in Table 5, respondents who use STP

Table 5

CONTENT COMPREHENSION OF CORRECTIVE ADS BY USER STATUS

Measure: ^a	User Status	Use	Use	Never
		Regularly	Occasionally	Use
1. STP motor oil additive will reduce oil consumption	(b)	2.53	3.15	3.50
2. Regular use of STP may prolong the life of your car's engine	(b)	1.93	2.81	3.39
3. Eating sugar before meals will help you to lose weight	(b)	3.98	4.19	4.51
4. Sugar is an important part of a well balanced diet	(b)	2.74	3.13	4.16

- a: Measured on a five point scale where 1 = Strongly agree, 5 = Strongly disagree.

- b: Group means significantly different beyond .05 level.

regularly are more likely than occasional and nonusers to agree that STP motor additive will reduce oil consumption and that regular use of STP may prolong the life of a car engine. Actually disagreement with the STP efficacy claims increases as frequency of use of STP decreases.

With respect to the sugar advertising claims, all three product usage groups disagree that with the statement that eating sugar before meals helps people lose weight, although those who never use sugar show more disagreement than do the user groups. Regarding the importance of sugar in a well balanced diet, Table 5 shows that disagreement with this statement increases as sugar usage decreases.

Discussion

The results of this study indicate that consumers do not accurately comprehend the purpose of corrective advertising. For both of the corrective messages examined in this study, the primary purposes perceived for running the advertisements was "to sell more of the product". However, government mandate was seen as equally motivating for the STP ad. Respondents in this study showed only moderate comprehension of the possible purpose of these messages being to corrective false impressions created by previous advertising. These findings are consistent with those of Mazis and Adkinson (1976) who found that 39% of their subjects misperceived the intent of corrective advertising. The results presented here do suggest that consumers were somewhat skeptical with respect to the efficacy claims made by both STP and the Sugar Association. However, caution must be taken in attributing these findings to the content of the corrective messages read by the respondents. Perceptions regarding the efficacy claims of the two products may have been a carry over from past beliefs and not a result of reading the corrective messages. Since a non-exposed control group was not used in this study it is difficult to separate out these effects.

The miscomprehension of the purpose of corrective advertisements raises some questions concerning the ability of corrective messages to dispel the residual effects of deceptive advertising. One of the primary objectives of corrective advertising is to restore consumers' beliefs and attitudes to the level that existed prior to exposure to the deceptive claims. Comprehension of the purpose of the corrective message is an integral part of this restoration process as it provides the consumer with a basis for synthesizing and integrating the corrective material presented.

This study also indicates that both education level and product usage status have an impact on the comprehension of corrective advertising. Consumers with a high school education or less perceived the purpose of a corrective message to be to sell more of the product - a belief that was not shared by higher educated consumers. For the most highly educated group, the primary reason seen for the STP message was that of government orders to run the ad while the intention to correct false impressions made by past ads was seen as less likely.

Product usage did not have an effect on perceptions of the purpose of the corrective message but there were significant differences with regard to perceived efficacy claims of the products under scrutiny in the corrective messages. The results of this study suggest that regular users of a particular product or brand are more likely to perceive efficacy claims as valid than are occasional or nonusers; even after reading a corrective message that refutes these claims. These findings suggest that product usage either results from, creates or reinforces beliefs that are difficult to alter through corrective advertising. It is also possible that users of a product may find the discrepant information contained in a corrective message difficult to accept from a cognitive consistency standpoint and thus choose to reject the

corrective claim. Whatever the case, these findings suggest that it may be more difficult for corrective advertising to change beliefs of regular product users - a market segment that may be most in need of information regarding the true performance of the product on brand.

This study also indicates that differences in the comprehension of the purpose of corrective ad may result from the style and content of the message. Respondents in this study exhibited a higher level of comprehension for the more overt STP ad than for the Sugar Association advertisement. This finding corroborates those of Dyer and Kuehl (1974) who found that commission - source, high strength, print corrective messages were more effective than any type of company - source corrective messages. Although the FTC was not the source of the STP advertisement, the commission was explicitly referred to in the ad as the initiator of the corrective message. Also, the intensity and directness with which STP corporation's possible guilt is mentioned is stronger than in the sugar advertisement where any wrong doing is alluded to only indirectly.

These findings suggest that the comprehension of corrective advertisements may be a function of the FTC's perceived involvement with the case as well as the intensity with which the possible deception is disclosed. The FTC, with its right to review corrective advertisements prior to their release, could enforce more stringent and overt disclosures by advertisers in order to increase consumers' understanding of the purpose of corrective advertisements.

In summary, this study on the comprehension of corrective advertising provides additional information to the existing debate on corrective advertising and its viability as a remedy for deceptive advertising. Future studies of corrective advertising and its ability to dispel the residual effects of misleading or deceptive message should give consideration to consumers' perceptions of the purpose of these ads. This study also suggests that variables such as education and product usage may moderate the effectiveness of corrective claims.

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Michael B. Mazis, The American University

Abstract

This paper reviews four papers dealing with a variety of public policy issues -corrective advertising, performance labeling, price marking and selling restrictions. Both laboratory experiments and cross-sectional economic modeling is used in these studies. While concern for research methodology and internal validity is evident, greater attention to generalizability and measurement of economic effects is needed.

Perception of Corrective Advertising

The paper by Belch, et. al., "An Examination of Consumers' Perceptions of Purpose and Content of Corrective Advertising," considers one major question frequently addressed by public policy researchers: Does corrective advertising produce the intended effects on consumer perceptions? In examining this issue, the authors employ a laboratory experiment methodology in which consumers are provided with a corrective message and are asked to respond immediately to a series of questions concerning the experimental stimulus. Since other authors (e.g. Mazis and Adkinson 1976; Mizerski, Allison and Calvert 1980; Sawyer and Seminik 1978) have discussed the importance of simulating exposure to a message under normal viewing conditions and of using non-exposed control groups, this paper will not examine these issues in depth. It should be noted, however, that both internal and external validity would have been enhanced if these issues were considered in the study design. Given the voluminous corrective advertising literature, this comment will focus on the major goals of the Belch, et. al study and its contribution to understanding corrective advertising effects.

Must Consumers Comprehend the Purpose of Corrective Advertising?

One purpose of the Belch, et. al. study was to determine if consumers "comprehend the purpose of corrective advertising." Can't corrective advertising accomplish its goal of providing needed information without informing consumers that the message is remedial in nature? A Court of Appeals struck down the Federal Trade Commission's use of the phrase, "contrary to prior advertising," because it was believed that there was no reason to inform consumers of previous sins since such disclosures would serve only to humiliate the advertiser. The Court reasoned that in the absence of convincing contrary evidence, correction of false beliefs could be accomplished by providing consumers only with needed factual information.

It should be noted that previous research has addressed this issue. Mazis and Adkinson (1976) found that identification of a corrective advertisement as emanating from the Federal Trade Commission did not result in greater recall and belief change than the identical message without source disclosure. Therefore, it may be unnecessary that "consumers must be able to comprehend both the purpose and content of corrective advertisements" in order to restore beliefs to their previous levels.

What is the Purpose of Corrective Advertising?

In order to convey the purpose of corrective advertising to consumers, it is necessary, of course, to understand that purpose. Is the purpose of a remedial message to merely make available factual information to the consumer? If consumer exposure is the principal goal of corrective advertising, a simple disclosure in the context of the advertiser's persuasive communication (e.g. "Warning: The Surgeon General has determined that cigarette smoking is dangerous to your health.") may be a satisfactory approach to discharging the advertiser's responsibilities. However, if the goal of corrective advertising is to alter consumer beliefs or behavior, the message must be interesting or it will fail to compete for the consumer's attention. As a result, consumers rarely notice the Surgeon General's warning against the backdrop of attractive models and powerful counter-messages, e.g. Newport cigarette's message, "Alive with Pleasure." This raises a philosophical question: Is it the government's role to inform or persuade? By developing governmental messages or by forcing advertisers to develop more potent messages which promote anti-consumption, isn't government attempting to persuade? On the other hand, if government focuses on mere information exposure through labels or ads as its goal, is it exercising its responsibilities to inform consumers since this information is unlikely to be noticed in the cluttered commercial marketplace? There must be a clear consensus as to the purpose of corrective advertising before effective messages can be developed. Currently, there is no clear goal and, as a result, there is no adequate procedure for judging corrective ad effectiveness.

Do Consumers Understand Corrective Advertising?

In a recent article, Jacoby, Nelson and Hoyer (1981) suggest that the FTC's remedial orders may serve to confuse consumers as much as the deceptive messages they are designed to correct. The current study indicates that a substantial portion of consumers agreed with the statement, "STP motor oil additive will reduce oil consumption," in spite of the fact that the corrective message was designed to disabuse consumers of this belief. However, the message may have been confusing since it states that tests "cannot be relied on to support the oil consumption reduction claim by STP," but that "new tests have been undertaken to determine the extent to which the oil additive affects oil consumption."

Are corrective advertisements inherently confusing to consumers? The procedure used to draft corrective advertising orders, controlled largely by attorneys, and to modify orders, accomplished by judges, frequently does not involve consumer research. While there have been changes in this process in the last few years, message development is still part of the legal process which rests in the hands of the legal profession. While corrective ads are not inherently confusing to consumers, the process of negotiation and modification often produces messages which are not pleasing to consumer researchers and communications experts.

What is the Future of Corrective Advertising Research?

Given the amount of corrective advertising research (about 20 major studies in the last ten years), what is known and unknown about corrective advertising effects? What should be the focus of future investigations? Nearly all studies have shown that corrective messages have the potential to be noticed by consumers and to affect consumer beliefs. A recent evaluation study on the impact of Listerine corrective advertising indicated that the effects tended to be logarithmic with the greatest impact occurring in the early months of the campaign. The message also affected reported Listerine use for colds and sore throats. However, a significant proportion (40%) of Listerine buyers still use the product for cold and sore throat prevention or cure (Mazis 1981).

There is, however, less known about the effects of varying corrective message design. Can messages be developed which communicate essential information to consumers without imposing a serious financial burden on advertisers? Can procedures be developed to insure that corrective messages achieve desired goals (e.g. through performance standards) at a reasonable cost?

Finally, more research is needed on the internal mechanisms used by consumers to accept or reject corrective messages. The courts have upheld the FTC's right to order corrective advertising because they view a corrective message as a form of affirmative disclosure which is needed to permit accurate reception of currently truthful ads. Is this an appropriate view of consumer reception of existing ads with and without corrective disclosures? Could other promotional vehicles be used to carry the corrective message? Is corrective marketing a more appropriate term than corrective advertising? Cognitive response models and other information processing tools might be used to provide insights into these questions.

Voluntary Performance Information Disclosures

The paper by Crosby and Grossbart address the increasingly important relationship between economic theory and the need for information disclosure. The focus of public policy discussion has been shifting from enhancing disclosure effectiveness to the appropriateness of disclosure or any other governmental intervention for solving marketplace problems. Two key questions are critical to policymakers: When is government intervention appropriate? What is the appropriate form of government involvement? (Mazis, Staelin, Beales and Salop 1981).

As the authors suggest, non-intrusive remedies should be considered before turning to government intervention. As such, the paper suggests that voluntary performance information disclosure should be considered as a practical solution to the lack of marketplace information. The reported experiment concluded that "voluntary disclosure can have a positive impact on consumer preferences." These results suggest that marketers consider voluntary disclosure as a marketing tool to increase profitability. However, the methodology used in the experiment makes it difficult to extrapolate the results beyond the laboratory setting. For example, subjects were informed that Brand A rates its carpets on wearability and discloses these ratings to consumers, while Brand B does not disclose performance information. As expected, consumers preferred the brand containing performance information perhaps attributing lack of quality to the non-disclosing brand. In the marketplace, however, consumers' attention would not be focused on disclosure information and it is unclear if the same attribution processes would take place.

What future information disclosure research should be undertaken? At this point, there is a need to carefully simulate the natural exposure conditions. Actual field studies are needed because the process through which information diffuses through society has not been examined. For example, a recent study suggests that the mass media (e.g. news stories) or word-of-mouth communication may have been more important in communicating information about unsubstantiated advertising than information disclosure (Bernhardt, Kinnear, Mazis and Reece 1981). Emphasis needs to be shifted from information processing studies on direct reception of information to diffusion research in natural settings which takes into account the varied forms of information transmission.

In addition, it must be recognized that there are economic consequences of information disclosure. If it is assumed that information disclosure will raise the costs of producing a product, the distributive effects of these increased costs must be studied. For example, if open-dating is used by a dairy producer, well-educated persons are likely to use open-dating to select the freshest merchandise. However, poorly-educated persons may not use open-dating as readily so they may receive merchandise which is less fresh than the more educated consumers. As a result, it might be argued that the costs of implementing the open-dating program fall disproportionately on the less educated consumers. Therefore, it is important to study the varied usage of disclosure information and the economic consequences of these effects.

In-Store Price Information

The paper prepared by Valarie Zeithaml was placed in this session as a result of its selection as the best consumer behavior paper based on a doctoral dissertation completed during 1980-81. By addressing an important public policy issue -- the effect of the removal of price marketing on consumer behavior -- and by studying this issue within an information processing framework, the research makes a significant contribution to the literature. The study's principle strength is its methodology, which is a fine example of a laboratory simulation. Great attention is devoted to internal validity issues. The study's major findings are that removal of price marking creates increased recall errors of product prices and causes consumers to spend more money. Given these are controversial findings, some alternative perspectives and observation may be appropriate.

Since this is a laboratory study which focuses on the short-term effects resulting from price removal, a fact which is readily acknowledged by the author, it is possible that consumers might adjust their decision making overtime by devoting greater attention to shelf labels. Any short-term effect may dissipate as consumers develop coping strategies. It should be noted that other long-term effects may emerge also. With price making, consumers are continually exposed to prices after the purchase is made. This repetition may facilitate increased recall of prices.

The artificial nature of the budget constraint may have had an impact on the results. Consumers were asked to "shop" for a list of twelve items and were instructed to stay within a \$10 budget. Consumers were not, however, permitted to keep any remaining money thereby reducing incentives to pick the most economical product. Therefore, unit price information, which exists on the shelf labels, might not have been referred to as much as might have been the case if there were greater incentives to save money.

Also, additional dependent variables might have been introduced to gain greater insights into consumer behavior. While recall errors of the exact and relative prices of products selected are important measures, other recall measures could be examined also. Knowledge of the "best buy" within a product category and recall of relative prices of chosen and unchosen alternatives within a given product category should be studied also. Perhaps shelf tags would be more helpful than individual price marking in these cases.

Encoding and brand loyalty measures might be refined in subsequent studies. Both covariates employ general construct measures ("I notice price changes," "I make price comparisons"; "I buy brand names"). As a result, these variables do not provide much explanatory power. More specific encoding measures designed to assess actual processing in the experiment and brand loyalty toward the products studied are preferred.

Finally, the study does not address the key economic question: Is consumer welfare enhanced by maintaining price marketing? In order to study this issue, consumer savings through using price marking must be compared against the retailer's cost saving obtained through price removal. Since some estimate of economic effects may be deduced from the experimental data, the author is encouraged to pursue this analysis.

Alcoholic Beverage Restrictions

The Bloom and Franzak study differs substantially from the previous three studies since it employs cross-sectional economic modeling rather than a laboratory experiment. Since few consumer research studies use this approach, it is pleasing to see an appropriate alternative methodology applied to an important public policy problem—restrictions on the sale of alcoholic beverages. Since varying states employ different restrictions, this presented the opportunity to use a quasi-experimental design.

However, the study is limited by the data base, sales of distilled spirits by wholesalers, since actual consumption behavior is not measured. Given that wholesalers may sell across state lines and consumers may travel across state borders to avoid legal restrictions, measurement on an individual consumer level would have been preferred. The attempt to deal with these issues through a proxy variable (BORDER), does not appear to be satisfactory. Therefore, retention of the null hypotheses must await confirmation using a more sensitive data base. An alternative approach is the use of interrupted time series analysis examining localities that had changed regulations over time. Also structural equations could have been used and some form of cross-validation might have been attempted.

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EFFECTS OF PRODUCT KNOWLEDGE ON COMPARISON, MEMORY, EVALUATION, AND CHOICE:
A MODEL OF EXPERTISE IN CONSUMER DECISION-MAKING

Ann E. Beattie, Carnegie-Mellon University

Abstract

Model Preview

A consumer information processing model is proposed whereby product class experts and novices judge a specific brand's similarity to an ideal product in different ways. By virtue of their complex knowledge structures in memory, expert consumers can process and use information about both similarities and differences between a specific brand and a perceived ideal product. Novices, though, are restricted to processing only similarity information due to the rudimentary nature of their knowledge structures. The differential use of similarity and difference information in the brand/ideal comparison process has implications for brand evaluation and choice by consumer experts and novices.

In terms of product attributes, most consumers have a general idea of what a product can provide. In fact several theories suggest that consumers have conceptual images of ideal products and their attribute combinations (for example, see Kotler, 1980 on the ideal-product model). Yet, in a complex product category, such as stereo equipment, or automobiles, experts would seem to have an advantage over novices. The advantage lies in complex knowledge structures about product classes that experts hold in memory. Product familiarity provides this knowledge and can direct attention to a product's important features.

Introduction

Many decisions rely on domain-specific knowledge: decisions as basic as category membership ("Is this a Toyota?"), and as complex as making evaluations and choices ("Do I want to buy it?"). Domain-specific knowledge has been conceptualized as expertise in cognitive and social psychology, and more specifically as product familiarity in consumer psychology. Expertise influences attention to inputs when stimuli are encountered, the processing and structuring of that information in memory, and how information is used in making decisions.

Expertise in a product domain can also facilitate the processing of new product information. The central hypothesis to be argued here is that consumer experts can make use of both similarities and differences when comparing a specific brand to an ideal product in memory. Product class experts can survey an array of brands, identify important attributes, compare these attributes with the ideal product attributes, and process and use information about the similarities and differences of specific brands with the ideal. Novices, on the other hand, disperse attention across all features of a product. They tend to judge brands in terms of overall similarity to a simplistic, or externally defined ideal.

Considerable evidence indicates that expert-novice differences in decision-making are based on the representation of knowledge in memory. These representations can be viewed as schemata: "cognitive structures of organized prior knowledge abstracted from experiences with specific instances" (Fiske & Linville, 1980). Such cognitive representations are built up through accumulated experience in a domain, and with increasing expertise or familiarity, schemata change in predictable ways. Expert-novice differences apparently lie both in the amount of information within a schema, and in the organization of that information.

The expert's ability to use both similarity and difference information in comparing products to an ideal is a critical feature in distinguishing him from the novice--and has considerable effect on decisions involving brand evaluation and choice. Evidence for this theory of consumer expertise and decision making will be discussed under each component of the model: attention, prototypical representation, and comparisons.

Expertise and Attention to Product Attributes

For instance, Chase and Simon (1973) demonstrated that chess masters were better able to remember board positions than were novices, due to "a vast, organized long-term memory of specific information about chess-board patterns" (p. 279). Similarly, a well developed product schema should contain structured knowledge about general product class information, product attributes, brands, and use information (Marks & Olson, 1981). Experts' schemata, though, are not limited to specific items of knowledge. Experts also have more associations between items and more strategies for using information. Problem solving research (e.g., Larkin, McDermott, Simon & Simon, 1977) indicates that experts categorize problems to define optimal heuristics in obtaining solutions. Consequently, consumers with expertise in a product class may well incorporate purchase criteria and decision strategies in their product schemata (Olson, 1978).

As a result of accumulated experience with a product class, experts' schemata contain knowledge of which attributes of a product are the most important (Einhorn, 1975; Johnson & Russo, 1980). In viewing various brands, then, expert consumers selectively attend to those attributes they consider relevant to decision making (Gardner, 1981). Novice consumers do not have the necessary knowledge to distinguish important product attributes. Instead, their attention will be captured by salient perceptual features (see McArthur, 1980; Taylor & Fiske, 1978 for reviews).

Schematic content and complexity have implications for recall and decisions made on the basis of new information. Discussion in this paper will center on how schema development, or expertise, can affect consumers' attention to various aspects of a product, and provide heuristics for evaluating and selecting brands. The basic model for processing information and making decisions will involve: attention to product attributes, a comparison to memorial information, and consequent decisions.

For example, suppose a racquetball expert and novice both were in the market for a new racquet. The expert consumer will notice racquet weight and grip size, as two of the most important features in a racquet. The novice, though, is more likely to give equal but cursory attention to every feature (assuming no one feature is particularly salient). The well structured racquet schema of the expert directs attention to important product features. The novice has no such guide for selectively noticing critical product attributes. If a racquet has a flashy color, or some other non-essential but salient attribute, the novice is likely to be at the mercy of such perceptual tricks.

Expertise and Prototypical Representation

Keeping in mind the racquetball example, consider how the

expert might assess the quality of a racquet she is considering. An expert's knowledge is not limited to identifying which features merit attention. The expert also knows the values each feature should take in a high quality product; that is, experts have decision criteria.

We will argue that individuals familiar with a category hold prototypes made up of exemplary object attributes. The prototype notion stems from work on categorization processes. Rosch (1978) has defined prototypicality as the clearest cases of category membership, that is, "goodness of membership" in a category. In fact, experts seem to have representations of prototypical elements in memory, around which their domain-specific knowledge centers (e.g., Goldin, 1978; Rosch, 1975). In the context of purchasing products, it is reasonable to suppose some consumers have notions of prototypical "ideals" for particular product categories.

Specifically, consumer experts should have "ideal" prototypes structured within a product schema, based on extensive experience with a product class. These ideals identify important product attributes, the levels these attributes should take in a high quality product, associations between product attributes, and each attribute's utility. This conception of an ideal prototype for experts is similar to well developed product schemata outlined by others (see Marks & Olson, 1981; Johnson & Russo, 1980). The difference lies in the hypothesis of a specific ideal prototype to which new products are compared. In contrast to experts, a novice consumer does not have sufficient experience with a product class to have built complex knowledge structures. It is unlikely, then, that novices would hold clear conceptions of an ideal prototype in memory.

In order to engage in any kind of comparison process, novices must select an externally defined ideal; for example, by word of mouth or consultation with an expert. It is more likely, though, that novices represent the ideal as the highest price brand in a product class. In terms of price-quality relationship theory, the most expensive brand available will be perceived as having the highest quality. Novice consumers can simply compare affordable products to the most expensive brand on the market shelves.

While both experts and novice consumers can hold perceived ideals for new product comparison, novices are at a disadvantage. They are limited to an externally defined ideal, while experts hold prototypical ideals, embedded in rich knowledge structures that are based on experience with a product class. This allows experts to assess product information differently than novices in judging brand similarity to an ideal.

Expertise and Comparisons: Similarities and Differences

Experts, with complex schemata, can isolate important product attributes and focus on both similarities and differences between a specific brand and a prototypical ideal. Novices should view the comparison process differently. Without a guide to important product features, novices only have the capacity to focus on product information in terms of overall similarity to an ideal.

Concrete support for differential ability to handle similarity and difference information by experts and novices comes from work on political information processing. Fiske and Kinder (1980) suggest that the political expert possesses sophisticated and elaborate political schemata, in comparison with the political novice. Processing political information, they conclude, varies as a function of political schema complexity. Specifically, their subjects read about a country that was labeled either Democratic or Communist, but the description actually contained attributes of both ideologies. When given a free recall task, novice subjects remembered only information that was

ideologically similar to the countries' political label. Experts, though, recalled information that was both similar and different from the political label they were given. Experts, with well developed political schemata, apparently could use both attribute similarities and differences in processing political information. In that research, particular schemata were cued by a label. Novices evidently attended only to information that was similar to the label, having inadequate capacity with which to process both similarities and differences.

The rich, complexly structured schemata of experts allows for fine-grained interpretation of incoming information. Experts have a superior understanding of how new information relates to the body of knowledge they already possess. Thus experts may view "difference" information in comparing a product to an ideal as particularly attention-provoking and diagnostic. As Hastie (1980) notes, well-developed schemata may enable more complex perception and comprehension strategies in accounting for difference information. Lengthy and perhaps deeper processing produces stable and enduring memory traces for information concerning differences. Novices, with very little information about a product class stored in memory, would not be expected to find difference information particularly salient. With rudimentary background knowledge, it would be difficult for them to interpret how differences between a specific brand and an ideal would affect product performance.

In addition, the elaborated schemata of experts allow them to "chunk" information (Chase & Simon, 1973; Dyer & Fiske, 1981) so that several components of information are viewed as a single representation in memory. For the expert, a single more general concept can represent several other closely associated concepts (Marks & Olson, 1980). Novices do not have complex knowledge structures that would allow information chunking. Instead, they must view each item of information as a separate unit.

Both experts and novices are limited in the amount of information that can be processed simultaneously in memory. Unless some information is transferred to long term memory, the cognitive limitations of short term memory restrict the number of cognitive units that can be held at one time (five to seven). Since experts can chunk information, though, they have the capacity to process more information in STM than do novices, who are limited to single items of information. Experts then, have the ability to simultaneously process both similarity and difference information by virtue of chunking, while novices, with simple knowledge structures, process information by single items of similarity information. Thus experts are able to process both similarity and difference information because of: 1) the way they organize incoming information, and 2) the attention given to difference information as being particularly diagnostic.

Integration With Existing Theories

A body of literature regarding the biasing effect of prior beliefs suggests that people have a predilection towards noting and remembering information that is consistent (similar) with their previously held hypotheses. The data generated by these theories are not as incompatible with the present analysis as they may first seem. For example, research on hypothesis-confirmation (see Snyder & Gangestad, 1981) involves giving subjects a defined hypothesis and noting the kind of information they choose to use in testing that hypothesis. Results show that subjects tend to request or remember information that would serve to confirm the hypothesis rather than disconfirm it. This research does not attempt to draw distinctions between experts and novices--deviations in individual subjects' knowledge regarding the hypothesis are not measured. Subjects are given an externally (experimenter) defined hypothesis to work with, much like the external ideal

product novices are proposed to work with here. The propensity to use confirming information, then, appears perfectly reasonable.

Another set of research on illusory correlation has shown that people are biased towards over-weighting the co-occurrence of associated (similar) events. For example, Chapman and Chapman (1969) make an expert-novice distinction in their work, with the finding that both clinicians (experts) and students (novices) base their evaluation of the correlation between symptoms and test results on the association of the two, rather than on the actual co-occurrence. Subjects in these studies were comparing information with preconceived theories (the association between symptom and test result). For novices, it is not surprising that similarities are over-weighted. For expert clinicians, who have performed the task countless times, the task may be rather simplistic. To the extent that such tasks are overlearned, attention becomes minimal, and performance is automatic (Norman, 1976). In a case where attention is perfunctory, it would not be surprising that difference information is overlooked. Furthermore, the illusory correlation phenomena depends on attention to the occurrence and non-occurrence of events. It is difficult to equate the non-occurrence of an event with information about differences when comparing information to an ideal.

The model of expertise outlined here, with special attention to the use of similarity and difference information, is also perfectly compatible with existing theories of decision making (e.g., Bayesian, regression), research approaches to consumer evaluation and choice (e.g., information processing, attitude formation models), and biases in decision making (e.g., availability and representativeness heuristics). In fact, it outlines a bias that novice consumers are often prey to--judging specific brands in terms of overall similarity to a perceived ideal product without accounting for differences.

**Predictions: Comparisons and Judged Similarity
In Consumer Decisions**

The expert-novice distinctions outlined so far will emerge most clearly in the comparison of products to an ideal. As an example, consider the hypothetical product class in Table 1. The rather obvious task for consumers in making any decisions about an array of products is to select the brand that will provide optimal performance. For simplicity's sake, assume the same ideal in the product class represents perfection for both expert and novice consumers.

TABLE 1
An Example Product-Attribute Matrix

Product	Attributes-Levels				Sum	Mean	Variance
	A	B	C	D			
Ideal							
Prototype	10	10	10	10	40	10	0
Brand X	9	9	5	5	28	7	2
Brand Y	5	5	9	9	28	7	2
Brand Z	7	7	7	7	28	7	0

Thus, the ideal ranks a 10 on all four product attributes. Each of the three brands available to consumers exhibits different levels on the four attributes, with a value of 9 being closer, or more similar, to the ideal than a value of 5. Yet each brand's attribute levels sum to 28 and average 7. The expert, with a well defined product schema, knows that two attributes (A and B) are important to product

quality, while two attributes (C and D) are relatively unimportant. In comparing each brand's similarity to the prototype, then, the expert will view Brand X as closest to the ideal, followed by Brand Z, and lastly Brand Y. Since all brands evidence the same mean value across attributes, the judgment of similarity rests only on the pattern of attribute values--a pattern showing some attributes to be more similar to the ideal, and some as more different.

The novice's judgment of brand similarity to the ideal does not take attribute importance into account. When asked for similarity judgments, the novice should (mistakenly) view Brand Z as the most similar to the ideal, followed by both Brands X and Y. The novice does not perceive and use difference information in the same way that an expert does. Brand Z exhibits the same mean attribute level as Brands X and Y, but has a variance of zero. Similarity is judged equally across all attributes for the novice--and it is Brand Z that shows the most overall similarity to the ideal.

Predictions: Expertise and Memory

Expertise affects both the amount of new information that is recalled, and the organization of that information. Existing evidence thus far indicates that the amount of product information recalled by both expert and novice consumers depends on task instructions. Johnson and Russo (1980) found that when subjects were instructed to make a choice between products, both product experts and novices remembered less than moderately experienced consumers.¹ In contrast to this curvilinear effect, when consumers were instructed to evaluate products a linear effect was observed for expertise, such that experts always recalled more product information than novices. Johnson and Russo suggest that choice and evaluation tasks require different patterns of information processing. Consumers who make choices use phased rules that eliminate alternatives, while in evaluation, expertise leads to a highly selective search of information, according to attribute importance.

The decision strategies outlined by Johnson and Russo are perfectly reasonable in terms of the information processing view suggested here. But how does consumer memory for product information occur when no specific task instructions (choice or evaluation) are suggested prior to viewing information? How do product attribute similarities and differences to an ideal affect recall of new information in the more ecologically valid case of no instructions? Other evidence indicates that expertise does not necessarily affect the amount of information recalled when no task instructions are given (as in a real world situation). Rather, expertise can influence the organization of new information in memory--and it is here that attention to similarities and differences in schematic processing come into play.

Recall the political expertise study by Fiske and Kinder (1980). Political experts recalled information that was both similar and different from a schematic label, while novices remembered only label-similar information. There were no differences in the total amount of information recalled. But politically expert subjects organized information in a more sophisticated manner than did the political novices. Fiske and Kinder analyzed subjects' recall of label-similar and label-dissimilar attribute clusters,

¹These recall results replicated Bettman and Park's (1980) findings for information search. Moderately experienced consumers searched for more information than did consumer experts and novices. Bettman and Park suggest that while novice consumers have difficulty understanding product information, and experts have no need of it, moderately experienced consumers can both understand and use new product information.

controlling for total recall of each type. Politically in-expert subjects organized information rather mechanically, by similarity. Political experts organized information by a more complex criterion, clustering information by differences from the schematic label. Fiske and Kinder suggest different processing rules for experts and novices--inexperienced people may proceed through information noticing schema-similar attributes and ignoring the rest. Experts seem to notice schema-similar and different attributes, collecting together difference information.

The evidence for expertise and memory lends support to our model of comparison to an ideal. Experts compare information to a prototype based on prior experience. They should recall both prototype-similar and -discrepant information, clustering it in complex ways. An experienced consumer comparing a brand to an internal product ideal can attend to and recall attribute similarities and differences. Novices compare information to more rudimentary knowledge structures, and recall only information that is similar to what little they know. Inexperienced consumers comparing brands to an external product ideal remember only those brand attributes that are similar to the ideal.

Expertise affects the integration of information into knowledge structures, in terms of similarities and differences, as argued so far. It also has effects on the way product evaluations and choices are made. Since evaluations and choices indicate different underlying processes, they will be discussed separately.

Predictions: Expertise and Product Evaluations

Referring back to the simplified example in Table 1, evaluation of the various brands should follow the judged similarity of brands to the ideal prototype, for both experts and novices. That is, regardless of the degree of product familiarity or expertise, consumers will evaluate the brands seen as most similar to the ideal the most highly. But expertise can have an effect on how evaluations proceed, once the similarity judgment has been made.

The schematic processing of experts influences how evaluations are derived from similarity judgments. Work in person perception on "schema-triggered affect" (Fiske, Beattie & Milberg, 1981) has shown that when someone "fits" or matches the important features of a schema developed from experience with a person category, an affective response associated with the schema is triggered for the new person. The closer a match the new person provides to the schema, the more likely the person will receive the affect linked to the schema. People who only partially match the schema elicit "mixed" affective responses. Comparison of people to schemata based on past experience provides immediate evaluations when matches occur. Schema-triggered affect is hypothesized to short circuit the more cognitively laborious task depicted by traditional models of social perception (e.g., Anderson, 1967; Schneider, 1973).

Applied to product evaluation, the development of a complex product schema allows evaluation of products to proceed on the basis of schematic match. For an expert, comparison of products to an ideal (built from experience with a product class) elicits evaluations according to degree of fit. A product with attribute levels that are similar to the ideal should elicit positive evaluations. When a product is similar on some attributes and different on others, resulting evaluations will be mixed--with both positive and negative affect contributing to overall evaluation. Further, experts will judge similarity on the basis of important features only. Thus, schematic match, and consequently, schema-triggered affect will depend only on important attributes.

Novices have no notion of attribute importance, and will likely evaluate brands in terms of similarity to an ideal

across all attributes. While novices can have an externally defined product ideal, they have no elaborated schemata to process information and assign affect. Their evaluations of brands should rely on overall product similarity to an ideal, and require more attention and cognitive processing, as in traditional models of product evaluation (i.e., Fishbein & Ajzen, 1975).

Predictions: Expertise and Product Choices

Once again in reference to Table 1, consumers' brand choice should follow the patterns of judged similarity to the ideal exhibited by experts and novices. Brand choice differences for experts and novices, though, can be considered in light of rank ordering complexity. Ranked choices represent a hierarchy that can be informally regarded as "most preferred" through "least preferred." People familiar with a domain tend to use a greater number of evaluative dimensions in thinking about objects in that domain.²

Product experts, then, are likely to view brands in a product set with greater distinction in preference ordering. Novices may tend to clump brands together in preference ordering, viewing fewer distinctions between them. When making choices among the brands represented in Table 1, those more familiar with the product class should use more levels in ranking choice alternatives than should inexpert consumers. This would reflect the judged brand similarity to the ideal pattern suggested for experts and novices. Experts should choose Brands X, Y, and Z respectively, while novices should choose Brand Z as the most preferred, followed by both Brands X and Y as equally preferred.

Summary and Implications

For experts, with well defined product schemata, prior knowledge can direct focus of attention to important attributes on new products. Novices, without structured schemata to guide attention, distribute their attention diffusely over all product attributes, unless a particular feature is perceptually salient. Attributes of the specific products being surveyed are then compared to the attribute quality levels of an ideal for that product class. Novice consumers engage in the product attribute comparison process by using a price-quality relationship to identify the "ideal" product from the market shelves. Experts, however, will have built an ideal prototype for a product class within an internal knowledge structure in memory. They will have the benefits of knowing optimal attribute levels for the ideal product, and the relationship between attributes.

The increased benefits of schematic information processing that experts possess allows them to more fully use similarity and difference information. Experts can attend to and remember a brand's similarities and differences to an ideal's attribute levels. Taken in conjunction with knowing which attributes to focus on, experts' evaluations and choices concerning brands can proceed on a more discriminating level than can novices'. Novices tend to focus on ideal similarity across all of a brand's attributes. In assessing specific brands, both experts and novice consumers want the "best buys"--brands that most closely match ideal product prototypes. However, because of the difference in attention to brand attribute/ideal product attribute similarities and differences, expert and novice consumers will judge brand similarity to the prototype by different criteria.

²This is conceptually similar to Linville's (1981) theory that people familiar with specific person categories use a greater number of dimensions in thinking about persons from that category than do people unfamiliar with the category.

Expert consumers judge similarity to an ideal on important attributes, while novice consumers judge overall similarity across attributes. Evaluations of brands reflect these patterns, but experts' brand evaluations are triggered in memory by similarity to an internal product prototype. Choices also follow upon judged similarity, with experts evidencing more complex choice hierarchies than novices.

Organization of new product information in memory differs for expert and novice consumers. Experienced consumers recall both similarities and differences between brand and ideal and cluster them accordingly. Inexperienced consumers remember and organize information only by attribute similarities. Considerable evidence suggests that consumer experts perceive, process, and use information differently than novices in assessing brands via stored prior knowledge.

The implications for marketing strategies are fairly straightforward. Considering the information processing strategies outlined here, different patterns of product attribute quality levels appeal to product-familiar and product-unfamiliar consumer segments. A product expert can use and remember product attribute quality information on important features. A manufacturer wishing to appeal to expert consumers will concentrate efforts on identifying and improving quality on these product elements. Strategies designed for product novices can concentrate on overall quality of a product, without necessarily having to expend resources to ensure top-quality on any particular set of attributes. When directing marketing efforts to product-unfamiliar consumers, an effective strategy will concentrate on perceptual saliency of the product and its packaging. Expert consumers have their own conception of important or salient product attributes, based on prior knowledge. They will be swayed more by attribute similarities and differences to a perceived ideal product. Novice consumers, without any such knowledge base, will rely on a product's overall similarities to an ideal product, in the absence of manipulated attention to specific attributes.

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DISTINGUISHING BETWEEN TWO
DIFFERENT KINDS OF CONSUMER NUTRITION KNOWLEDGE*

Joel Saegert, The University of Texas at San Antonio
Eleanor A. Young, The University of Texas Health Science Center at San Antonio

Abstract

In measures of consumer nutrition knowledge, a distinction was proposed between general nutrition knowledge items and health-food-related items. The former address relatively uncontroversial nutrition facts while the latter deal with popular beliefs about health food products in addition to the factual information. Data from a survey of 601 consumers suggested that the association between health-food-related knowledge and nutrition behavior could be accounted for by health food attitudes as measured by Fishbein operationalizations; this was not the case for general nutrition items. Previous measures of consumer nutrition knowledge have not distinguished between the two types of knowledge items.

Introduction

Consumer behavior analysts have recently attempted to measure consumers' level of nutrition knowledge for comparisons with a number of behavioral variables. For example, the US Food and Drug Administration (1973, 1975) looked for relationships between knowledge and behaviors such as the use of nutrition labeling and the use of health food products. More recently, Rudell (1979) investigated the effect of nutrition knowledge and consumer information acquisition and processing through use of the "cognitive response" technique. Other recent examples of research using the nutrition knowledge construct include Jacoby, Chestnut and Silverman (1977), Grotkowski and Sims (1978) and Yetley and Roderuck (1980).

As with any hypothetical construct, providing a valid and reliable operational definition for nutrition knowledge is problematical. Typically, this issue has been addressed through true-false or multiple choice tests made up of items concerning such information as what foods contain certain nutrients and what function the nutrients play in human health. (See Olson and Sims, 1980, for some suggested alternative methods of knowledge assessment through monitoring of cognitive responses.) In addition to the usual problems of validity and reliability the topic of nutrition information is quite controversial today with many consumers espousing beliefs about health foods and nutrition supplements which are questioned by professionals in the health care field (e.g., Bruch, 1974). In developing a nutrition knowledge assessment scale to include in a battery of instruments designed to investigate health food consumption, it became evident to the present authors that many items found on published nutrition knowledge tests dealt with ideas often professed by health food enthusiasts but which are denied or qualified by health professionals. For such items, it is difficult to know whether an "incorrect" response reflects a genuine lack of awareness of a particular nutrition fact or is an expression of the attitudes and opinions which are so adamantly espoused by health food proponents. Thus, a case can be made for differentiating between at least two

different kinds of nutrition knowledge scale items: 1) those which deal with issues concerning popular health food beliefs, and 2) those which deal with factual nutritional information unrelated to popular health food beliefs.

An example of these two types of items will help clarify the distinction. An item such as "Fruits like oranges and grapefruit are rich in vitamin C" would seem to be relatively uncontroversial and does not conflict with tenets of health food enthusiasts. On the other hand, an item such as "Man made vitamins are just as good as natural vitamins", while technically correct according to nutrition professionals (e.g., Fusillo and Beloian, 1977), is clearly related to popular attitudes about health food products and categorically denied by their proponents.

For purposes of the present discussion, the two types of items will be labeled "health-food-related" knowledge and "general" knowledge. From a practical standpoint, the implications of acknowledging the two different kinds of items seem to be important in formulating a scale to measure the hypothetical construct of nutrition knowledge. If the two types are not separated, as they have not been in numerous studies which have used nutrition knowledge instruments, a consumer's knowledge score may reflect a combination of awareness of medically-based nutrition facts and his/her opinions or attitudes about nutrition based on popular health food beliefs. These latter beliefs may or may not be consistent with the findings of nutrition research.

From a theoretical standpoint, the two types of items are less easy to distinguish. A recent discussion of nutrition knowledge structures by Olson and Sims (1980) has considered the problem from the background of the popular Fishbein model of attitudes and behavior. These authors discuss cognitive knowledge structures as being made up of beliefs, attitudes and behavioral intentions. In the present context, it is tempting to postulate that the "knowledge" reflected by a "general" nutrition scale item corresponds to a "belief" in the Fishbein model. In another discussion of nutrition attitudes, Sims (1981) promotes this view by citing Fishbein's definition of a belief as "the probability that a particular relationship exists between the object of belief and some other object, concept or goal." This would seem to fit such a knowledge scale item as "Oranges contain vitamin C."

Developing this line of argument further, a health food related item might be said to contain an attitudinal component reflecting a person's affective feelings over and above his/her factual knowledge. This seems possible for an item like "Natural vitamins are superior to synthetic." However, this distinction does not correspond in simple fashion to conventional operationalizations of Fishbein constructs. The Fishbein model typically defines two attitude components: 1) the belief that a given behavior will result in a given outcome and 2) a positive or negative feeling or evaluation of that outcome (cf. Ryan and Bonfield, 1980). While it might be said that consumer knowledge in the present context could be represented by the "belief about outcomes" component of the Fishbein model, the evaluation component seems irrelevant to the distinction between "general" and "health food related" knowledge. Thus, the Fishbein model does not

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seem to be applicable to a case where cognitive knowledge is assessed in terms of whether or not the consumer's belief is supported by the researcher's a priori assumptions.

From a behavioral standpoint, it may be argued that a consumer's behavior will be based on what he/she believes to be true, regardless of whether the belief is "correct." On the other hand, much consumer research attempts to assess the level of consumer knowledge in the population prior to the implementation of consumer information campaigns. The distinction between "general" vs "health-food-related" (popular) knowledge would seem to be important in any case where consumer's knowledge of facts, as specified a priori by the investigator, is required.

The purpose of the present paper is to provide empirical justification for separation of general vs health-food-related nutrition knowledge. It is argued that health-food-related knowledge basically reflects attitudes toward health food products and behaviors while general knowledge of nutrition information does not. Thus, if an independent measure of health food attitudes is made, this variable should be closely related to performance on a health-food-related knowledge scale. On the other hand, general knowledge scale performance should be relatively independent of health food attitudes.

Previous Studies of Nutrition Knowledge and Nutrition Behavior

The degree to which nutrition knowledge predicts desirable nutrition behaviors has been the subject of a number of recent studies. For example, Jacoby, et al. (1977) found college student respondents to have a low level of performance on a 19-item knowledge test and a correspondingly low level of selection of nutrition information in an information acquisition task. Another study by Sims and Morris (1974) found low to moderate associations between nutrition status (presumably a reflection of nutrition practices) and family nutrition knowledge, assessed on a 35-item test. However, Sims (1978) later found that knowledge of nutrition had positive correlations with desirable intake of four nutrients by lactating mothers (r 's between .52 and .41). In the present study, it was of interest to separate consumers' knowledge as measured by general and health-food-related items and to assess the degree to which the two types of nutrition knowledge predict the nutrition behavior of health food use. While this behavior may not be considered "desirable" by health professionals, it is nonetheless a consumer behavior which suggests strong "involvement" in the consumption process and hence can be predicted to be associated with knowledge level.

Numerous treatises on health food consumption (e.g. Rynearson, 1974) have argued that such consumers are the victims of nutrition misinformation, implying low nutrition knowledge. However, studies in the nutrition literature appear to be contradictory concerning the relationship between health food advocacy and nutrition knowledge. For example, Grotkowski and Sims (1978) reported negative correlations between health food interest statements and nutrition knowledge scores. On the other hand, an FDA study (1973) found that consumer households with high nutrition knowledge were more likely to be health food (vitamin) consumers than were low knowledge households (59% vs 43%). Such contradictory findings can possibly be explained by the distinction between general and health-food-related test items in knowledge measurement instruments; that is, some of the knowledge scales may have included health food items while others did not, hence confounding the measurement of knowledge, per se. Thus, in the present study, the relationship between nutrition knowledge and health food consumption was further investigated.

Method

Measurement Instruments Used in the Study

Nutrition Knowledge. Two sets of items were constructed to measure health-food-related and general knowledge respectively. For the health-food-related scale, 13 of the total 18 items were taken from a study conducted for the FDA in 1972. These items deal with popular health food issues such as the safety of the food supply and the efficacy of nutrition supplements. The five additional items in this scale were made up by the present authors to reflect knowledge about other health food related issues not addressed by the original 13 items. The general nutrition items were developed from information tested in another FDA research program (FDA, 1973, 1975). This 16-item scale deals with the nutrient content of certain foods and the degree of difficulty of obtaining nutrients in the diet. For both knowledge subscales, the items were similar to those found in at least a dozen published reports of attempts to measure nutrition knowledge. Response alternatives for all of the items included "true", "false", or "don't know"; however, credit was assigned only for items marked correctly true or false.

Health Food Attitudes and Social Norms. Scales to measure attitudes toward health foods were patterned after recently proposed operationalizations of the Fishbein method of summing across the products of beliefs² and evaluations about outcomes (Oliver and Berger, 1979).³

The belief scale consisted of agreement or disagreement with statements about benefits attributed to health food practices measured on a bipolar 5-point scale (Example: "Taking vitamin supplements will result in better overall health"). The second scale was an evaluation of proposed outcomes of these same health food practices (Example: "Missing some nutrients in my diet"). This was measured on a bipolar 5-point scale ranging from "good" to "bad". The health food attitude scale was the sum of the products of 10 practices on these measures.

The social norm variable was similarly assessed. Social influencers of health food practices (e.g., family doctor, spouse, etc.) were identified on a 3-point scale from "never" to "always tries to influence me." This value was multiplied times a similar scale which measured the respondents motivation to comply with the influencer, again on a 3-point scale. The social norm variable was then the sum of the product of 8 such pairs.

General Nutrition Concern. This variable was designed to be an overall index of the degree to which respondents were concerned about nutrition. Most of the 17 items on the scale were taken from a study designed to profile "nutrition-conscious" consumers conducted by Needham, Harper and Steers (Wells, 1978). (Example: "It is important for the food that I eat to have high nutritional value".) Respondents indicated agreement or disagreement on a 6-point scale.

²As discussed in the introduction, it is clear that "beliefs" as a cognitive knowledge component (Olson & Sims, 1980) and "beliefs about outcomes" as operationalized by Oliver and Berger (1979) are not corresponding constructs. In the Fishbein variable discussed herein, beliefs are one of the two components of attitude, in this case, attitude toward health foods. In Olson and Sims, "beliefs" appear to be isomorphic to "concepts", implying factual information.

³The authors thank Dr. Richard Oliver for providing examples of Fishbein scales.

Health Food Use Index. Since products marketed with such health food claims as "natural" or "without preservatives" are so pervasive in our culture today, and since vitamin products are so universally consumed, it is difficult to devise a clear operational definition of "health food" for use in identifying consumption. In the present study, respondents were simply asked questions about their use of a number of specific health food products; an index of health food use was constructed by summing points for each product. Points were assigned as follows:

Behavior	Points
Uses "vitamins" or "multivitamins"	1
Named N specific vitamins used	N
Named N specific mineral or other supplements used	N
Reported supplements to be prescribed by a physician	-1
Purchased foods frequently from health food stores	2
Purchased foods occasionally from health food stores	1
Had eaten a meal in a health food store within past 2 years	1
Had purchased organically grown foods within past 2 years	1

Table 1 shows statistical data from the present study for the six variables described above. The values in the "Possible Range" column for the first five variables reflect possible maxima and minima for the rating scales or products of rating scales; however, in the case of the health food index, the actual range is given. Alpha coefficients are modest but acceptable by standards suggested by Nunnally (1967, p. 226).

TABLE 1

Means, Standard Deviations, Possible Ranges and Cronbach Alpha Coefficients for Scales in the Study

Scale	Mean	Standard Deviation	Possible Range	Alpha
Health-Food-Related Knowledge	5.44	2.75	0-18	.60
General Nutrition Knowledge	8.41	2.82	0-16	.64
Health Food Attitudes	3.68	6.75	-40-40	.57
Social Health Food Norms	1.33	2.14	-8-8	.65
General Nutrition Concern	73.74	14.77	17-102	.90
Health Food Use Index	1.74	2.18	0-13*	.65

*Actual Range

Sample and Procedure

The survey instruments were administered as part of a larger study of health food attitudes and behavior. The sample was selected using systematic random area probability sampling. Twenty census tracts were randomly chosen in each of three Texas cities: Houston, Dallas and San Antonio. To insure adequate representation in the sample of lower income and ethnic minority consumers, sampling of tracts was stratified on the basis of income level (% below the median) and minority composition (% of blacks and hispanics). Streets were randomly selected for each tract and interviews were conducted at households along both sides of the street between designated cross streets. Ten interviews per tract were thus completed.

A total of 601 interviews (approximately 200 per city) were conducted. In each case, the first adult contacted in each residence approached by the interviewer was interviewed. Of 1761 households who responded to the interviewer's knock, 67% were ineligible or refused to be interviewed. Reasons for ineligibility were "no adult present" or "respondent could not read English". Thus, the 601 interviews which were conducted constitute a completion rate of 33% of households contacted. Interviews lasted approximately 45 minutes. About half of the interviewers were graduate students specifically trained to conduct the interviews and half were employees of professional field interview firms.

Results

The mean probability of a correct response to items on the two nutrition knowledge scales was .30 for the health-food-related scale and .53 for the general nutrition scale. This difference was significant by paired-comparisons t-test, $t = 25.4$, $df = 600$, $p < .001$. The overall level of performance on the general scale is comparable to the calculated probability correct for items on scales reported by other researchers for samples roughly similar to that of the present study. For example, the following response probabilities have been found: .51 (Yetley and Roderuck, 1980); .54 (Eppright, Fox, Fryer, Lamkin and Vivian, 1970); .52 (Jacoby, et al., 1977); .63 (Rudell, 1979). Since "incorrect responses" on health-food-related items indicate agreement with popular health food arguments, the lower performance on the health-food-related scale can be taken to reflect a high degree of belief in the efficiency of health food products by the general public.

Table 2 shows Pearson product-moment correlation coefficients between health-food-related and general nutrition knowledge items, health food attitudes and health food social norms, general nutrition concern and the health food use index, as well as the demographic measures of age, income, education and minority status (minority vs. non-minority; minority included blacks and hispanics). The latter three variables were dichotomized as follows: income-less than \$15,000 annual income=0, more than \$15,000=1; education-no college=0, at least some college=1; minority status-minority=0, non-minority=1. Roughly half of the sample was represented by each of the subgroups for each variable.

The degree of association between the two knowledge scores was small but significantly different from zero. Correlation of the two knowledge variables with the demographic variables showed association between income, education, and minority status for general nutrition knowledge, but only for income for the health-food-related scale. Thus, general nutrition knowledge seems to be related to socioeconomic status, more so than health-food-related knowledge.

TABLE 2

Correlation Coefficients for the Health-Food-Related and General Nutrition Knowledge Scales

	Health-Food-Related Knowledge	General Nutrition Knowledge
Age	.02	-.07
Income	.11**	.19**
Education	.07	.23**
Minority Status	.07	.25**
General Nutrition Concern	-.12**	.20**
Health Food Attitudes	-.34**	.18**
Health Food Social Norms	-.04	.08*
Health Food Use Index	-.10*	.30**
Health-Food-Related Knowledge		.15**

* p < .05

** p < .01

The two knowledge scales both correlated significantly with health food attitudes but the correlation was negative for the health-food-related knowledge scale. This reflects the fact that agreement with a health food statement constitutes incorrect information from a knowledge standpoint. The positive correlation between the general nutrition knowledge instrument and attitudes indicates that individuals with positive attitudes toward health foods also have higher levels of overall nutrition knowledge. This finding argues against the notion proposed by some nutrition researchers that health food advocates are lower than non-advocates in nutrition knowledge per se (e.g., Bruch, 1974; Rynearson, 1974) and supports findings by some researchers that health food advocates are more knowledgeable (FDA, 1973).

A similar result was observed for the health food use index; both nutrition knowledge scales correlated significantly with use; again, the health-food-related scale correlation was negative while the general scale correlation was positive. That is, low health-food-related knowledge, and high general knowledge are associated with high use of health food products.

Finally, the social influence variable did not correlate with either of the two knowledge variables. This is consistent with the low associations between the social norm variable and attitudes and behaviors found in other recent consumer behavior studies using Fishbein scales (e.g., Ryan and Bonfield, 1980).

To assess the degree to which health-food-related and general nutrition knowledge predicted the nutrition behavior of health food use, a multiple regression analysis was performed. Variables were grouped into sets and entered hierarchically to see what effect progressive adjustment for antecedent variables would have on the prediction of the dependent variable (Cohen and Cohen, 1975, p. 127). The first set consisted of the four demographic variables; to allow adjustment for socioeconomic status. Set 2 was the general nutrition concern index, alone, which adjusted

for overall nutrition interest. The two knowledge variables were then entered as set 3 to see if they would predict behavior when general nutrition attitudes and demographic background were controlled. Finally, the two Fishbein variables, health food attitudes and health food social norms were entered as set 4. Specifically, based on the assumption that the health-food-related measure is not independent of health food attitudes, it was predicted that adding the attitudes toward health foods variable to the regression equation would attenuate the effect of the health-food-related knowledge scale but would not affect the general nutrition scale.

As can be seen from Table 3, both education level and the minority status variable were significant predictors of health food use while income and age level were not. The education result is consistent with earlier studies (FDA, 1973; Rhee and Stubbs, 1976) showing greater health food use associated with higher education levels; the minority status result (higher usage for non-minorities) is inconsistent, however, with a study of Mexican Americans which did not find an association between health food use and ethnicity when income and education level were adjusted statistically (Saegert, Young and Saegert, 1977). The age result suggests that health food behavior is not necessarily positively associated with age, as reported by Jalso, Burns and Rivers (1970).

TABLE 3

Setwise Regression Analysis with Health Food Use Index as the Dependent Variable (Values Presented are Standardized Regression Beta Coefficients)

Set Entry No.	Variable	Set 1	Sets 1 & 2	Sets 1, 2 & 3	Sets 1, 2, 3 & 4
1	Age	.01	-.004	.02	.03
1	Income	.03	.03	.02	.01
1	Minority Status	.19**	.17**	.14**	.12**
1	Education	.17**	.14**	.12**	.12**
2	General Nutrition Concern			.23**	.18**
3	Health-Food-Related Nutrition Knowledge				-.14**
3	General Nutrition Knowledge			.22**	.17**
4	Health Food Attitudes				.25**
4	Health Food Social Norms				.06
	R ²	.09	.14	.19	.24
	Adjusted R ²	.08	.13	.18	.23
	Standard Error	2.09	2.02	1.97	1.91
	F(df=k, 543)	13.37**	18.04**	18.59**	19.31**

** P < .01

k = No. of Independent Variables

Adding the overall nutrition concern variable improved the prediction equation considerably. This supports the findings by Sims (1978) and Grotkowski and Sims (1978) that statements such as "nutrition is important" are associated with nutrition behaviors.

Both of the knowledge scales were significant predictors of health food use with the health-food-related scale being negatively associated (low scores on "health-food-related" items associated with high health food use) and the general nutrition knowledge scale being positively associated, as previously indicated by the zero-order correlations. Of principal interest, however, is the finding that the health-food-related scale beta weight was no longer significant when the two Fishbein items were included in the equation. It is assumed that this result can be attributed to overlap in variance accounted for between the health food attitude scale and the health-food-related nutrition knowledge scale. The general knowledge scale, however, remains a significant predictor. In all, 24 per cent of the variability in health food use was accounted for by all the variables in the equation. This is comparable to the amount of variability explained in similar studies predicting nutrition behaviors (e.g., Sims, 1978; Grotkowski and Sims, 1978; Rudell, 1979).

Discussion

American consumers today generally seem to have heightened awareness of nutrition. This suggests that consumer knowledge of nutrition information will become of increasing interest to food manufacturers, retailers, public policy makers and nutrition educators. For example, a 1977 special report by the Marketing Science Institute (Quelch and Clayton, 1977) found that respondents from a wide range of nutrition interest groups (farmers, food manufacturers, retailers, etc.) rated "nutrition education material" to be a top requirement of the food industry to address nutritional well-being of consumers (the average agreement was over 90%). It is doubtful that assessment of the effectiveness of providing such materials can be carried out without valid and reliable measures of nutrition knowledge.

While no claims can be made in the present study that appropriate validation procedures have been carried out in the development of the two knowledge scales, the differences in respondents' scores for the two scales and the inability of the health-food-related scale to predict nutrition behavior over and above health food attitudes, indicates that nutrition knowledge scales used heretofore may have failed to separate out two important components of nutrition cognitive knowledge, i.e., general information (true awareness of nutrition facts) and popular health food beliefs (evaluations based on health food lore). One implication of this result is that previous attempts to measure knowledge may be qualified to the extent that they did not separate out general information from health food beliefs. This may explain discrepancies in the results reported as well as account for low associations between knowledge and behavioral variables.

A second important implication of the present results deals with health food consumption. The data from this and other studies indicate that health food users are better educated, of higher socioeconomic status overall and have higher nutrition knowledge compared to non-users of health food products. The finding of positive correlations between health food use and knowledge as measured by the general nutrition scale make it particularly clear that users do not suffer from lack of nutrition information as implied by nutrition educators (e.g. Bruch, 1974; Rynearson, 1974). The low scores the consumers made

on the health-food-related scale can be accounted for by the widespread belief in the efficacy of health foods, an attitude seemingly held independently of high general knowledge of nutrition.

Nutritionists who have looked for explanations for health food behaviors have often resorted to psychological variables (e.g. Schafer and Yetley, 1975), although little empirical evidence has been forthcoming. It can be said that it will be of interest to the food marketing industry, against whom many health food beliefs are aimed, to determine the reasons behind health food behavior. This will require considerable study using personality indices and other social-psychological scales as predictor variables.

Although a number of researchers have attempted to standardize a general nutrition knowledge scale, none to date has effectively distinguished among different types of nutrition knowledge (e.g. desirable cooking procedures, kinds of nutrients needed, necessity of supplements, etc.) or has successfully distinguished between knowledge per se and knowledge reflective of popular health food attitudes. Future work in the development of nutrition knowledge subscales should rely on standard procedures for establishing measurement indices such as factor analysis and the multitrait-multimethod matrix. Until such work is forthcoming, a meaningful operational definition of the knowledge construct, independent of health food attitudes, is unavailable.

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MEMORY FOR LOGICALLY-DEDUCED CONCLUSIONS

Barbara Loken, University of Minnesota

Abstract

An experiment was conducted to determine whether (1) memory for conclusions improved when logically- but not illogically-related premises were also shown, and (2) false memory for conclusions occurred more often when logically- than when illogically-related premises were shown. Results suggested the second but not the first effect. Subjects exposed to logically-related statements were more likely to falsely identify the conclusions of these statements as having been presented (when they were not) than were persons who were exposed to illogically-related statements. Moreover, recognition was found to be nonsignificantly related to belief strength.

Introduction

Research in psychology shows that people will learn and better remember stimulus information when they are able to organize the information than when they are not. Early studies in verbal learning found that rote learning was less effective than "meaningful" learning (Katona 1940) and that organizing the items in a stimulus list improved recall of these items (Garner and Whitman 1965, Tulving and Pearlstone 1960). More recently, the effects of organization involving more complex and "realistic" situations have been examined by resurrecting the notion of schemata (Bartlett 1932). A schema is generally described as a framework for organizing information around a particular concept (Olson 1978), such as a brand name. Studies have shown that organization of information with respect to general themes (Lingle, Geva, Ostrom and Leippe 1979, Bower 1970) or rules (Bear and Hodun 1975, Potts 1972) later improved memory for this information.

In the past few years, consumer researchers have addressed similar information-processing issues as those explored by cognitive psychologists, including some speculation about the manner in which information is encoded, organized in memory, and later retrieved from memory. For example, it is generally agreed that information may be encoded, i.e., represented in memory, in several different forms and levels of abstraction. If an advertisement claims that an automobile has front-wheel drive, one consumer may encode this information isomorphically, simply as "Brand X has front-wheel drive", a second consumer may encode this as "Brand X is safer than other brands in winter", and a third consumer may encode this as "Brand X has favorable attributes". Thus, the same information may be encoded at different levels of abstraction (Russo and Johnson 1980, Olson 1978).

Furthermore, it is generally assumed that the manner in which external information is encoded and stored in memory will depend upon already-existing cognitions or "knowledge structures" (Olson 1980 Mitchell 1980). Previous knowledge and newly-acquired information are presumably integrated using one or more of several different processes or rules, e.g. perhaps an algebraic process or decision rule when an evaluative decision is being made, or logical reasoning and probabilistic consistency when the validity of a proposition is being judged. The use of such rules for predicting people's decisions or judgments has been well-documented in both social psychology and consumer research.

With respect to one of these integration processes, logical reasoning, past research (McGuire 1960, Wyer and Goldberg 1970) has generally supported the notion that people's judgments of the validity of premises are consistent with their judgments of the validity of logically-deduced con-

clusions. Thus, logical deduction may frequently be used by people as a rule of inference. Nevertheless, logical deduction has seldom been examined as one of memory's organizing principles. Although much evidence exists for the use of thematic principles on organization, basic logical processes have largely been ignored. In fact, investigators have sometimes stressed that thematic principles of thinking are more pragmatic than they are logical (Bruner, Goodnow, and Austin 1956).

The present study investigates the use of logical reasoning as an organizing rule for memory. If, for example, a logical structure has been imposed on a set of stimulus information, propositions that are logically-related may be stored together in memory. Support for the effects of imposed structures on consumer memory has been shown in other forms of consumer research. Johnson and Russo (1978) found that memory for product information depended upon whether the purchase environment was attribute-based or brand-based. Furthermore, as Newell and Simon (1972) argue, the structure of the task that a subject performs may affect the processing strategies that will be used. In support of this agreement, Bettman and Kakkar (1977) found that consumers acquired information in the fashion that was easiest given a brand-attribute information display. Attribute processing was found when the display facilitated attribute and discouraged brand processing. Brand processing was found when the display facilitated brand processing and discouraged attribute processing.

Another research finding is relevant in discussing the use of organizing rules in memory. Memory research (cf. Wyer and Srull 1980) suggests not only that consumers may store information in memory that is quite different from the stimulus information received, but also that additional thoughts generated by the stimulus information may be stored in memory along with the stimulus information. Thus, for example, if two logically-related premises are received as information by a consumer, a conclusion deduced from these premises may be stored in memory instead of or in addition to the two premises. Further, a single premise received combined with previously-acquired knowledge may lead to a conclusion. For example, suppose a product advertisement states that a brand of mouthwash kills germs. A consumer who already believes that "killing germs prevents illness" may come to the conclusion that the mouthwash in the ad prevents illness. At a later point in time, when asked to recall the original stimulus information, a subject may be unable to distinguish information from derived conclusions (i.e. that the mouthwash prevents illness) generated at the time information was received.

The inability of a subject to distinguish presented and not presented information has been used in cognitive psychology as a tool for understanding memory processes. Generally speaking, memory research has found that people will say a stimulus item was presented even when it was not presented if the item was consistent with a central organizational theme. For example, people often fill gaps in their visual representations. Missing information from a story, setting, or description of a person is filled in by the experimental subject when the information is consistent with or taken for granted in the overall description, and later on subjects are more likely to say that this information was presented than they are to say information inconsistent with the description was presented (Jenkins, Wald, and Pittenger 1978, Bear and Hodun 1975, Sulin and Dooling

1974, Bransford and Franks 1971). At least two possibilities exist for these results to occur, generally inseparable in memory research. One possibility is that the original information is stored along with thoughts generated by the subject at the time the information is received. A second possibility is that stimulus information is stored in memory as a simplified abstract representation, the basis for recreating and elaborating the original information at a later point in time. However, regardless of whether each of these possibilities occurs, this research suggests further possibilities for the influence of visual and conceptual organizing principles. Moreover, these findings occur not only as a result of recently learned principles (Bear and Hodun 1975) but also as a result of previous experience with similar situations (Bransford and Franks 1971).

The implications for the present research, which explores the use of logical deduction as an organizing principle, are as follows: suppose a person is exposed to two statements, of the forms "A leads to B" (or "If A then B") and "B leads to C" (or "If B then C"), and later on is asked whether "A leads to C" (or "If A then C") was presented. If this person says (incorrectly) that s/he was exposed to "A leads to C", s/he may do so for at least two reasons. First, structural similarities between "A leads to C" on the one hand and "A leads to B" and "B leads to C" on the other hand exist in that both premises and conclusion contain the elements "A" and "C", and the elements "A", "B", and "C" may be stored separately in memory. People may confuse the context in which these elements were presented and report that "A leads to C" was originally presented. Second, false identification due to organizational factors may exist if people logically connect "A leads to B" and "B leads to C" to form the conclusion "A leads to C", store all three statements together in memory, and later on say that "A leads to C" was originally presented. It is expected that, although effects due to structural similarities may exist, organizational factors using syllogistic reasoning should occur over and above any effects due to similarity in structure. Furthermore, it is proposed that the same organizational properties should improve one's memory for the statements that were presented ("A leads to B", "B leads to C", and when it is presented, "A leads to C").

An additional issue is explored in the present investigation, concerning the relationship between a person's belief in a statement (e.g. the subjective probability that A leads to B) and her/his subsequent recognition of the statement. Studies have sometimes found that people's opinions facilitate recall of information consistent with these opinions (Levine and Murphy 1943) or that personal biases govern how one thinks (Janis and Frick 1943), although the reasons for such findings are unclear (Jones and Aneshansel 1956, Waly and Cook 1966). It may be that information is more readily organized around one's own opinions, perhaps because the opinions are highly familiar (Waly and Cook 1966). Recently, some consumer researchers have also argued that familiarity and greater prior knowledge may sometimes facilitate learning (Johnson and Russo 1978). Other studies refute the notion that information consistent with one's opinions is better recalled and claim that differences in recall or reasoning as a function of one's own position do not exist (Henle 1962, Brigham and Cook 1966). Finally, some researchers have argued that memory for propositions may be better when the information is inconsistent with one's own opinion or implausible to the subject (Wyer and Henninger 1978) since judging the validity of such statements may result in a greater amount of processing effort (Craik and Lockhart 1972). The present investigation will also explore this issue, as it relates to memory for conclusions that were preceded either by logically and illogically-related propositions.

An experiment was designed to test: (1) whether information is better remembered when it is logically related

(than when it is not), (2) whether information not presented is more likely to be incorrectly or falsely identified or "remembered" when it logically follows from statements preceding it (than when it does not follow logically from statements preceding it), and (3) whether memory for presented information changes as a function of original beliefs about the information.

Method

Sample and Design

Subjects were 60 females, 15 in each cell of a 2 x 2 factorial design. Design factors were logical-relatedness (exposure to logically-related or illogically-related statements) and exposure to conclusions (exposure or non-exposure). Subjects participated in the experiment as partial fulfillment for a requirement in an introductory psychology course.

Stimuli and Procedure

Belief questionnaires were designed as a means for exposing subjects to information about "relevant social issues". The individual belief statements were formed such that the structural similarities between premises and conclusions were held constant for logically-related and illogically-related statements. Conclusions were of the form "A leads to C". The first premises or propositions were either of the form "A leads to B" (for logically-related statements) or of the form "A leads to D" (for illogically-related statements), i.e. both containing the element "A". The second premises were either of the form "B leads to C" (for logically-related statements) or of the form "E leads to C" (for illogically-related statements), i.e. both containing the element "C". Thus, both logical and illogical conditions received the same number of "A" and "C" elements, although the conclusion "A leads to C" followed from the earlier statements presented in the former but not the latter conditions.

Subjects were exposed to only one of the four combinations of belief statements (samples are shown in Table 1), but to 15 different sets of the same type, each set representing

TABLE 1
Examples of Stimulus Items, Each Condition

Logical-Conclusion Condition

Taking large doses of Vitamin C will increase my resistance to infections.
Increasing my resistance to infections will help prevent colds.
Taking large doses of Vitamin C will help prevent colds.
Taking Excedrin will relieve painful headaches.
Medication that relieves painful headaches may cause heart failure.
Taking Excedrin may cause heart failure.

Logical-No Conclusion Condition

Taking large doses of Vitamin C will increase my resistance to infections.
Increasing my resistance to infections will help prevent colds.
Taking Excedrin will relieve painful headaches.
Medication that relieves painful headaches may cause heart failure.

Illogical-Conclusion Condition

Taking large doses of Vitamin C will show others my interest in nutrition.
Keeping out of the rain will help prevent colds.
Taking large doses of Vitamin C will help prevent colds.
Taking Excedrin will help me to fall asleep at night.
Too much physical exercise may cause heart failure.
Taking Excedrin may cause heart failure.

Illogical-No Conclusion Condition

Taking large doses of Vitamin C will show others my interest in nutrition.
Keeping out of the rain will help prevent colds.
Taking Excedrin will help me to fall asleep at night.
Too much physical exercise may cause heart failure.

a different domain. The task required was to indicate the strength of agreement with the presented statements on a scale from 0 to 10 ("not at all likely" to "extremely likely"). Thus, subjects in the "logical-conclusion" condition completed 45 items, 15 of the form "A leads to B" (premise 1), 15 of the form "B leads to C" (premise 2), and 15 of the form "A leads to C" (conclusions), in that order. Subjects in the "logical-no conclusion" condition completed 30 items, the same 15 first and second premises. The "illogical-conclusion" condition consisted of 15 items of the form "A leads to D", 15 of the form "E leads to C", and 15 conclusions ("A leads to C"). Finally, the "illogical-no conclusion" condition included 30 items, 15 of the form "A leads to D" and 15 of the form "E leads to C". The content of these statements pertained to social and other issues with which subjects may already have been familiar. To this extent, it should be noted that results obtained using these items may not be generalizable to the use of unfamiliar or more abstract belief items. Finally, to make all belief questionnaires comparable in length, other completely unrelated belief items were added.

Following the belief questionnaire, subjects completed an unrelated intervening task to decrease rehearsal and short term memory effects of belief statements. This task lasted about 20 minutes, after which subjects completed (1) cued-recall and (2) recognition tasks.¹ Subjects were not informed in advance that they would be asked to remember the content of the belief statements.

Measures of Memory

In the cued-recall task, subjects were presented with the first part of each of the belief statements (e.g. "Taking large doses of Vitamin C...") and were asked to recall the ending of the statements. Subjects were informed that for some of the statements two different endings had appeared in the earlier questionnaire, for some of the statements one ending had appeared, and for other of the statements no ending had appeared. They were instructed to write down endings to all of those statements they could remember. All conditions were presented with the same list of beginning phrases.

The recognition task was designed to test recognition of the 15 possible conclusions. Subjects were instructed to indicate whether each item was or was not ("yes" or "no") presented in the earlier belief questionnaire and a confidence rating of their judgment on a 0 to 10 scale ("not at all confident" to "extremely confident"). To measure recognition, the confidence rating for each conclusion was multiplied by the yes-no (+1 or -1) response. The possible range for recognition scores was therefore -10 to +10.

Results

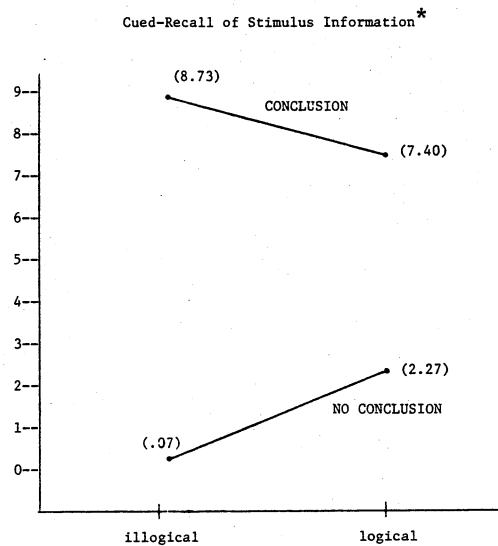
Recall and Recognition of Conclusions

Cued recall (i.e. recall of the ending of each statement) was scored dichotomously (+1 or 0) for "identification" or "no identification" of the content of each premise and conclusion. Therefore, "identification" of a statement "A leads to C" reflects correct recall in logical-conclusion and illogical-conclusion conditions but reflects incorrect recall, i.e. a false positive response (saying a statement was presented when it was not); in logical-no conclusion and illogical-no conclusion conditions. Analyses of cued

recall were performed on a general measure of recall computed by summing the number of positive identifications over the 15 replications. Similarly, a general measure of recognition was computed by summing recognition scores for the 15 conclusions. Two 2 x 2 (logical - illogical x conclusion - no conclusion) analyses of variance were performed with cued recall and recognition of conclusions as dependent measures.

Results of the cued-recall analysis indicated a significant main effect for conclusion presence, $F(1,56) = 145.7$, $p < .001$, and a significant interaction effect, $F(1,56) = 9.55$, $p < .01$. Conclusions were more likely to be mentioned or identified if presented ($M = 8.07$) than if not presented ($M = 1.1$), and, as shown in Figure 1, the number of false positive responses in "no conclusion" conditions was greater when logical ($M = 2.27$) than when illogical ($M = .07$) statements were presented. A simple effects test of this latter effect was significant, $F(1,56) = 114.79$, $p < .01$, as predicted. However, in "conclusion" conditions, correct recall of conclusions was not better when preceded by logically-related ($M = 7.40$) than when preceded by illogically-related ($M = 8.73$) statements.

FIGURE 1



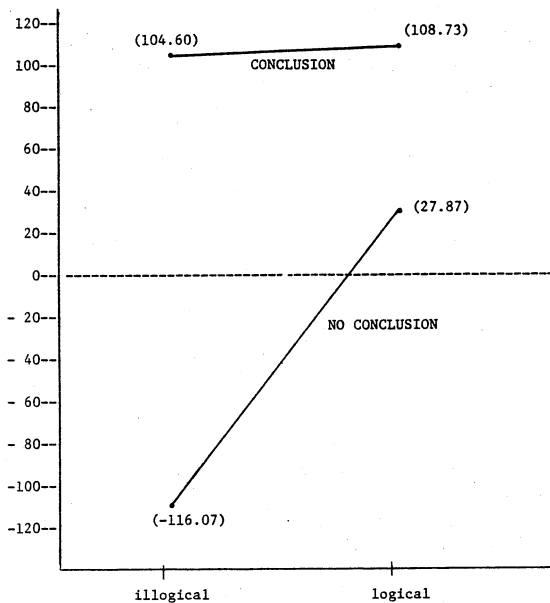
*I.e., correct recall in "conclusion" conditions and false recall (a false positive response of information not actually presented) in "no conclusion" conditions.

Results of the recognition analysis revealed significant main effects for both logical-relatedness, $F(1,56) = 45.56$, $p < .01$, and conclusion presence, $F(1,56) = 188.95$, $p < .01$. The interaction was also significant, $F(1,56) = 40.62$, $p < .01$. Subjects were more likely to say conclusions were presented in logical ($M = 68.30$) than in illogical ($M = -5.73$) conditions, and trivially, in conclusion ($M = 106.67$) than in no conclusion ($M = -44.10$) conditions. Simple effects tests of the interaction term indicated that the differences between logical and illogical conditions were in the two no-conclusion conditions, $F(1,56) = 86.11$, $p < .01$, and not in the conclusion conditions, $F(1,56) = .07$, n.s. Results are diagrammed in Figure 2. Subjects exposed to conclusions accurately recognized the conclusions ($M = 108.73$ and 104.60 for "logical-conclusion" and "illogical-no conclusion" conditions, respectively) and subjects in the "illogical-no conclusion" condition accurately recognized that the conclusions were not presented ($M = -116.07$). In contrast, and consistent with findings from cued recall

¹The recognition task was always administered following the recall task. It is unknown whether the measurement of recall could have affected the subsequent recognition of items, but it seems unlikely that the experimental hypotheses would be influenced by such effects.

data, subjects in the "logical-no conclusion" condition made a substantial number of errors in recognition ($M = 27.87$). They tended to report that the conclusions had been presented when, in fact, they had not been presented.

FIGURE 2
Recognition of Stimulus Information*



*I.e., correct recognition in "conclusion" conditions and false recognition in "no conclusion" conditions.

Since this latter result reflects a combination of a dichotomous yes-no response and a confidence rating, it is interesting to determine whether each of these factors were affected separately. Internal analyses suggest that subjects in the logical-no conclusion condition reported a higher frequency of "yes" responses (indicating false positive identifications of conclusions) than did subjects in illogical-no conclusion conditions but a lower frequency than subjects in logical-conclusion conditions. That is, 59% of the total number of responses (15 persons x 15 replicates = 225 total) in the logical-no conclusion condition, 1% in the illogical-no conclusion conditions and 88% in the logical-conclusion condition were "yes" responses. (In illogical-conclusion conditions, 86% were "yes" responses.) On the other hand, subjects in the former condition reported less confidence in their recognition judgments than subjects in the latter conditions. In particular, 80% of the responses in logical-no conclusion conditions were at least moderate in confidence (responses greater than 5 on a 0 to 10 scale), whereas this figure was 96% in both illogical-no conclusion and logical-conclusion conditions. (This figure was 86% in illogical-conclusion conditions.) Therefore, not surprisingly, subjects in logical-no conclusion conditions misrecalled conclusions quite frequently (59% of the times), and tended to be at least moderately confident of their judgments (80% of the times), although somewhat less confident than subjects in logical-conclusion and illogical-no conclusion conditions.

Belief Strength and Memory

To determine whether memory was a function of belief strength, correlations were computed between subjects' original beliefs (scaled from 0 to 10) and their subsequent recognition of the items (scaled from -10 to +10), for each of the 15 individual conclusions, and separately for

"logical" and "illogical" conditions. Naturally, only "conclusion" conditions were used to compute these correlations. Correlations ranged from very positive (.73) to very negative (-.68) for the individual items. However the average positive and the average negative correlations across the 15 items (converting r to z -scores, averaging the z -scores, and converting back to r) were nonsignificant ($p > .05$) in both logical conditions (average $r = .108$ and $-.245$ for positive and negative correlations, respectively) and illogical conditions (average $r = .384$ and $-.341$, respectively).

Thus, although individual differences in the items occurred, overall there was little evidence that subjects tended to better recognize items with which they agreed (cf. Levine and Murphy 1943) or items inconsistent with their opinions (cf. Craik and Lockhart 1972). Furthermore, these results do not appear to be due to general agreement or disagreement with the belief items. The mean belief strength of individual items was slightly positive (overall average was 5.60) with a range from 2.90 to 8.04.

Discussion

Findings and Implications

The findings are consistent with the notion that logical reasoning is used as an organizing principle in memory. This is noted by the tendency for subjects to say that a logically-deduced conclusion was presented when in fact it was not. Both cued recall and recognition data supported this hypothesis. Furthermore, this effect could not be attributed to the structural similarities (i.e. each containing the same elements "A" and "C") between logically-related premises and conclusions. Thus, some people remember seeing conclusions they in fact have not seen, perhaps because they match the conclusions with their integrated understanding of premise statements. The present study used a belief questionnaire to expose subjects to stimuli, a technique which may have increased subjects' tendencies to process semantic aspects of the information in an integrated form.

On the other hand, exposure to logically-related premises in addition to conclusions did not improve memory for conclusions over that of exposure to illogically-related premises and conclusions. If anything, results suggest slight interference effects of premises when they are logically-related, but the nature of these effects is unclear. Furthermore, it should be noted that ceiling effects may exist with regard to the recognition data. When a conclusion was presented, most subjects were later able to accurately report this with strong confidence. Ceiling effects were less evident in the cued-recall data.

The present results may have several important implications, perhaps one of the more important being in the area of advertising research. Suppose that a product advertisement does not actually state a claim (or conclusion), but that this claim is implied by statements that are shown in the advertisement. At a later point in time, some proportion of the audience may have derived this conclusion and be unable to distinguish it from the original information presented in the ad. Furthermore, suppose a statement "Buying Brand A leads to consequence X" appears in an ad, and the target population exposed to the ad already tends to believe "Consequence X leads to Y". Among some members of this audience the conclusion "Buying Brand A leads to Y" may not only be inferred, but later mistaken as having been presented. Implications for deception in advertising exist as well. The occurrence of a significantly large number of false positive responses, i.e., inaccuracies in memory such that people believe a statement was presented, raises the question of whether an advertisement is deceptive if conclusions derived logically from information contained in the ad are deceptive.

Finally, the hypothesis that people's opinions affect their memory for information was not supported. Although individual differences in stimulus items occurred, there was no general tendency for subjects to better recognize items that were consistent or items that were inconsistent with their own opinions.

Study Limitations

Two limitations of the present investigation need to be reiterated at this point. First, it is important to note that the present results do not tell us whether the conclusions of logically-related premises were derived at the time the premises were presented to the subject, or whether they were derived later on at the time of the recall/recognition task. Memory processes are relevant to both of these possibilities to the extent that the subject's error is an error in recall or recognition. In both cases, logical processes are used as organizing principles for remembering information. However, if the conclusion is inferred at the time of the memory task, it is incorrect to assume that the conclusion already exists in memory along with the logically-related premises prior to the memory task.

The second limitation concerns the generalizability of results to other sets of stimuli. The present stimuli were familiar issues in the form of belief statements. If subjects had been asked, for example, simply to read the statements rather than to judge the validity of each one, perhaps they would not have thought as extensively about each of the items. Furthermore, if the statements had dealt with unfamiliar issues, with symbolic rather than descriptive statements, with nonsense statements or words rather than meaningful statements, perhaps a different set of results would have occurred.

Future Research Suggestions

Several questions are raised by this research, not the least of which is the actual stage of information processes the logical inferences are made. Research that is able to experimentally manipulate and explore the processes of memory (encoding, retrieval, etc.) is needed in all areas of memory research. Furthermore, since only a certain proportion of the subjects made false positive responses to any given item, it would be interesting to see whether the incidence of false positives is an individual difference characteristic, and if so, whether it is related to individual abilities and tendencies to reason logically.

Another research topic to explore concerns the conditions under which false positives occur. For example, the occurrence of false positives may depend upon the order in which the premises and conclusions are shown and the nature of the information shown.

Finally, the extent to which memory errors may impact on subsequent judgments, evaluations, or purchase decisions is important. For example, consumers may use derived "conclusions" or advertising claims differently depending on whether they perceive that a source gave them the information or whether they perceive that they reached a particular conclusion on their own.

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COMMENTS ON "THEORETICAL AND EMPIRICAL PERSPECTIVES ON MEMORY"

John G. Lynch, Jr., University of Florida

The papers at this session are almost surely as diverse as those at any session at the convention this year. All of the papers can be loosely construed to deal with the effects of consumers' prior knowledge on some aspect of information processing and decision making. However, the papers by Beattie and by Loken have highly theoretical concerns with frontier issues in consumer information processing. In contrast, the paper by Saegert and Young was motivated by a pragmatic interest in concrete problem -- to assess baseline knowledge levels among consumers so that the effects of nutrition information campaigns could be properly ascertained.

When I first received these papers, I was unconvinced that any common threads tied them together. In fact, I suspected that, as a set, they comprised a sort of ACR discussant's Rorschach. Upon closer study, though, I have been able to discern some very interesting commonalities. I will try to develop these common themes as I discuss each separate paper.

"Effects of Product Knowledge on Comparison, Memory, Evaluation, and Choice: A Model of Expertise in Consumer Decision Making"

At the 1979 ACR convention in San Francisco, a distinguished panel pondered the question, "Why don't consumers search more for information?", motivated by mounting evidence that consumers engage in amazingly little external search prior to purchase, even in expensive and presumably "involving" product categories. One of the ideas that was advanced at that session was that consumers often lack the requisite knowledge to be able to assimilate information about complex products. Therefore, extensive search for relevant external information would only serve to confuse rather than enlighten the consumer. The implication of this line of argument is that, if only consumers knew more about a product class, they would voluntarily seek out more information, and would more effectively assimilate the information to which they were exposed.

Since those ideas were first proposed, Bettman and Park (1980) have explored their implications for external search, and Johnson and Russo (1981) have explored their implications for the recall of product information. Beattie's paper makes a theoretical contribution that complements these empirical efforts, in that it further specifies the relationships between prior knowledge and attention. "Ideal brand" schemata serve to overcome, to some extent, the limitations of human attentional capacity by allowing new information to be chunked in terms of schema relevant concepts, and by directing the focus of attention to schema relevant features and away from schema irrelevant features. This allows experts to process more information than novices. Experts are assumed to use their spare capacity to process information about differences from an ideal as well as the similarities to the ideal. Novices, because they cannot chunk information in terms of schema-relevant concepts, have only enough capacity to process information about features of a brand that make it similar to some ad hoc ideal -- e.g., to the most expensive brand present in the display. This is quite an interesting hypothesis, and certainly deserves empirical investigation.

I have one small clarifying point about the illustration Beattie provides of how experts and novices might differ in their decision making processes. In the example given, experts engage in processes identical to those of novice

consumers, except that the former give relatively greater weight to "important" dimensions, and less to "unimportant" ones in evaluating the distance of a brand from an ideal. This conveys the idea that expert consumers' "ideal brand" schemata serve to focus their attention on schema relevant attributes. Nothing in the example, though, implies that novices use only similarity information and that experts use both similarity and difference information. One might incorporate this into the formal model by saying that the probability that a given dimension will be salient (and contribute to perceived distance of a brand from the ideal) is a negative function of "objective" distance between the two on that attribute dimension for novices, but a quadratic function of this distance for experts. Some such modification must be made if the example is to convey the idea of the proposed strategic differences between expert and novice consumers. The particular modification proposed ties in rather nicely with non-ideal-point models of overall evaluation (Fiske, 1980) that hypothesize that greater weight is given to attribute information that is extremely positive (very close to the ideal) or negative (very far from the ideal), with relatively less attention given to product information that is evaluatively neutral (moderately distant from the ideal).

Finally, I would like to call attention to one extremely interesting aspect of Beattie's model that was discussed only briefly. She alludes to the idea that novice consumers have attentional foci that are at once diffuse and shallow. Their attention is easily shifted by salient perceptual cues. Attention researchers distinguish between the breadth of the attentional focus (number of attributes considered) and the stability of that focus (i.e., the degree to which attention vacillates among the attributes that receive attention). The latter issue has not been extensively studied, but Kahneman (1973) has noted that highly labile attention has a number of dysfunctional consequences for task performance. In Beattie's context, novice consumers may experience this state of lability of attention, in which one is engaged in an involuntary search of memory for concepts relevant to encoding the information. In such a search, the external material may take contact with a number of concepts, all of which are only weakly and briefly activated. In such a state of lability, no concept makes a close enough match with the external information to gain ascendancy, and so the new material receives very little of what Mandler (1980) calls "intra-item integration." One function of well-formed schemata may be to prevent this dysfunctional state of attentional lability, so that the attended items receive sufficiently high levels of intra-item integration for retrievable traces to be stored in memory.

"Memory for Logically Deduced Conclusions"

Loken's paper is like Beattie's, in that it deals with the effects of a schema-like cognitive structure -- in this case, the consumer's understanding of the rules of logic. However, Loken's emphasis is not on how some knowledge structure facilitates the encoding of new information, but upon how formal logic serves as an organizational principle in memory that facilitates retrieval processes. Loken predicted that logically related propositions would be organized (which I take to mean "stored") together in memory, and thus each such proposition could cue the others with which it was associated. This prediction was not supported. If anything, there was a trend for subjects to evidence superior recall of a presented "conclusion" if

it was not logically related to its "premises" in comparison with conditions in which the conclusion followed logically from the premises. The data did support the prediction that when a conclusion (A implies C) was not explicitly presented, it was more likely to be falsely recalled as having been presented if the subject had been exposed to premises from which it could be logically deduced. These intrusions were taken as evidence that formal logic acts as an organizational principle in memory.

Loken has already noted the most important limitation of her study. We cannot say with confidence that when subjects who have been exposed to statements "A leads to B" and "B leads to C" falsely recall and recognize "A leads to C", the latter proposition must have been stored in memory. It is possible that subjects have simply stored the constituent premises, and generated "A leads to C" at the time of the memory test. This sort of interpretive ambiguity is not peculiar to Loken's study. Indeed, the problem is endemic to memory research. We often have difficulty pinpointing a given stage of information processing as the locus of the (in this case, intrusion) effects to be explained.

The obtained results could be interpreted as indicating that subjects exposed to "A leads to B" and "B leads to C" draw the inference that "A leads to C" after exposure to the second "premise", and all three elements are stored together in memory. Alternatively, subjects may infer that "A leads to C" after exposure to the two premises, and all three assertions may be stored separately (as if they were organized in terms of order of occurrence). A third possibility is that logically related statements are stored together in memory, not because of their logical relation, but because they share common elements ("A leads to B" and "B leads to C" share the element "B", whereas "A leads to D" and "E leads to C" share no common elements). Assertions that are stored together may be recalled as a unit. At the time of recall, subjects may draw the inference that "A leads to C" must have also been presented. These inferences could be based on logical deduction, or they may be based upon simple guessing that A was presented together with some element that was stored together with it. Quite often, subjects may guess that it was "C" that was paired with "A", producing intrusions in the Logical, No Conclusion condition. Under this last interpretation, formal logic need not play a role in either the initial interpretation of the information, its stored organization in memory, retrieval processes, or the generation of intrusions.

This is not to say that I personally find these alternative explanations to be as compelling as that advanced by Loken. In fact, I would judge her account of her data to be considerably more plausible. I am simply trying to point out the kinds of interpretive ambiguities that attend research on such a difficult topic. Loken's a priori hypotheses seem both interesting and reasonable, her experiment was well designed, and here data are provocative. It would certainly be worthwhile for consumer researchers to pursue this topic in an attempt to sort out some of the alternative process explanations.

Perhaps the greatest contribution of Loken's work is to call consumer researchers' attention to the importance of inference processes. Although work within the multiattribute attitude tradition (Fishbein & Ajzen, 1975) has raised the issue of inferential belief formation, consumer researchers have displayed remarkably little interest in inference making, with the exception of some activity in the attribution area. Clearly, however, such processes are extremely important in areas such as deceptive advertising. With the completion of the landmark 4 A's study by Jacoby and his colleagues last year, more and more researchers are becoming concerned with consumers' miscomprehension of product information. Certainly the study of

inference making will be critical to understanding this "miscomprehension", and we will have to explore both logical and nonlogical rules of inference to progress. I noticed that Phillip Dover is presenting a paper at this conference that concerns inferential belief formation. I am certain that his paper and Loken's paper will stimulate consumer researchers' interest in this very important topic.

"Distinguishing Between Two Different Kinds of Consumer Nutrition Knowledge"

I suspect that Saegert and Young were dismayed by the published title of the present session, as it is not particularly descriptive of their paper. As I understand it, their study was motivated by a desire to assess baseline levels of consumer awareness of various nutrition facts so that the effects of nutrition information campaigns could be assessed. It is interesting to note that many of the issues that were raised with respect to Loken's theoretical paper are of concern in Saegert and Young's applied research. In particular, Saegert and Young imply that when consumers answer incorrectly on a true-false test of nutrition knowledge, they may err for one of three reasons:

- a. They may have no pertinent knowledge stored in memory, and either guess wrong, or say "don't know";
- b. They may have pertinent beliefs stored in memory that are "incorrect" from the perspective of nutrition experts;
- c. They may have no specific knowledge stored in memory, but have some conceptually related cognitive structures (e.g., their attitudes toward health foods) from which they make an inference at the time of the true-false test that is scored as "incorrect".

One would expect errors of the first type (a) to be random, while errors of the second two types might be reliable in a test-retest sense.

Saegert and Young note that, in the pools of items commonly used to measure nutrition knowledge, many pertain to the use of health foods. They reason that interpretive ambiguities of the sort mentioned above are especially problematic for these items. Thus, while there is no theoretical reason to distinguish "health food beliefs" and "general nutrition beliefs" that are actually stored in memory, there may be considerable practical value in separating test items pertaining to these two types of beliefs. It seems that "General Nutrition" items are likely to be scored wrong primarily because of a lack of awareness (i.e., explanation (a) above), while (b) mistaken beliefs and (c) errors based upon inference are also distinct possibilities for "Health Food Knowledge" items. This also suggests that consumer education campaigns aimed at disseminating accurate Health Food information may be less efficacious than those aimed at engendering accurate General Nutrition Knowledge.

The authors were also interested in the relationships between nutrition knowledge and behavior. I could not tell whether this was because they were intrinsically interested in such a link, or because they thought it would shed some light on the hypothesis that "Health Food Knowledge" responses tend to be inferred from the consumers' attitudes toward health foods. Perhaps the idea is that for "General Nutrition Knowledge" items, beliefs that are already held might be assumed to shape the consumers' attitudes toward health foods and their consumption, while for "Health Food Knowledge" items, expressed beliefs were inferred from (caused by) attitudes. As far as I

could tell, the issues with which Saegart and Young were concerned do not fall nicely within any existing attitude framework. No theory available would clearly predict any relationship between scores on the two nutrition knowledge scales and behavior.

One small suggestion that I would make for future work in this area would be to exclude the "don't know" response category on the nutrition knowledge tests, in spite of the many reasons that could be advanced to justify its inclusion. If consumers were forced to respond either "true" or "false", we could better assess whether their scores on the test exceeded that which would be expected by chance. (To minimize the effects of response biases in this approach, each "true" item should have a parallel form in which the correct answer is "false". Sets of questions would then be composed under the constraint that half be true and half be false.) As it now stands, consumers seem to be "correct" on many of these items considerably less than half of the time, but it is not clear what can be said about this. Further, the provision of a "don't know" category may cause spurious differences in consumers' (and demographic groups') scores on the nutrition knowledge tests, simply because people differ in terms of how uncertain they must be before saying "don't know" (i.e., they differ in their response biases).

Summary

Taken together the papers in this session point suggest the following directions for future research:

- a. We must attempt to come to grips with the methodological problem of discerning whether information "recalled" has been retrieved from storage in long term memory, or has been generated (e.g. inferred) at the time of the memory test on the basis of other related information.
- b. Further work is needed to study the processes by which consumers form inferences about products on the basis of externally provided information (e.g., advertisements) and information stored in memory.
- c. The role of prior knowledge in the organization of new information in memory seems likely to be a fruitful avenue for further research.
- d. Students of consumer decision making ought to actively pursue the how prior knowledge guides encoding and especially attention during consumer choice.

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MODELING BUY/NO BUY DECISIONS:
A COMPARISON OF TWO METHODS

Joel Huber, Duke University
Andrew L. Czajka, Survey Data Research

Abstract

The decision making process for some products can be characterized as a determination of whether individual brands are acceptable for purchase rather than a search for the optimal brand within a set. For firms with such products modeling demand with tasks that force comparisons among competing products may not be appropriate. This paper contrasts the results of demand estimates that do and do not require explicit comparisons and finds that each has a unique but complementary role in modeling demand.

Introduction

Understanding the determinants of demand for offerings with different benefits and prices is one of the more important planning functions of the marketing manager. Every time a new product is introduced or a current one modified, there is an implicit assumption about the effect of these changes on demand. A number of laboratory and field techniques exists for estimating demand for individual items before introduction into the marketplace (see Tauber 1977 for a review, and Sawyer, Worthing and Sendak 1979, and Nevin 1974, for examples).

Two techniques commonly used for estimating demand for a number of hypothetical product bundles are conjoint analysis (Green and Srinivasan 1978) and the dollarmetric comparison (Pessemer and Teach 1970). In both techniques consumers make evaluations on alternative competitive offerings. Conjoint analysis requires rankings or ratings of different profiles while the dollarmetric comparison asks for the difference in monetary value between pairs of offerings. Both tasks focus respondent attention on the relative value of objects defined by a set of product attributes.

Consider, however, the modeling of shopping contexts where such direct comparison of attributes do not occur; that is, situations where the consumer does not shop by comparing some or all of the alternatives but simply evaluates an alternative and on the basis of that evaluation makes a choice. In effect the consumer is deciding whether to buy or not rather than finding the best in a set. In such a choice mode, both dollarmetric and conjoint analyses are strictly inappropriate for predicting choice since the customer is not evaluating every product in a set, as these models assume, but merely deciding if a particular option is adequate. Consider as examples the homebuyer who purchases the first acceptable house, the industrial buyer who accepts the first bid that meets specifications, or the rushed shopper who selects the first gift in the correct price range. Olshavski and Granbois (1979) review a large number of studies giving evidence of just such lack of explicit choice comparisons prior to purchase.

Retail credit insurance presents a similar situation. This insurance is offered to customers in connection with a retail credit purchase. It protects the customer's ability to make credit payments in the face of events beyond the debtor's control, such as death or the loss of earning power due to illness or layoffs. The insurance package is typically offered at a price which the customer may accept or reject but typically cannot modify. Furthermore, since credit insurance is a relatively small part of the entire transaction it is rare to switch stores on the basis of the credit insurance offering.

Thus, explicit comparisons are rarely possible in the purchase of credit insurance. Using this product class on an example, the purpose of this paper is to provide guidance to those firms whose customers generally make similar, non-comparative, purchase decisions. Standard conjoint analysis, with a task that asks respondents to evaluate 16 credit insurance offers, is contrasted with a single choice task that asks for a simple "buy," "no buy" decision. It is shown that the single choice data can be analyzed quite efficiently using logistic regression and produces results that are consistent with theory and other research. For its part, the analysis of the 16 ratings results in a reasonable segmentation scheme that is difficult to derive using other methods. In addition some theoretical reasons are given for collecting and analyzing multiple ratings data even when this task is demonstrably different from the actual purchase situation.

The Credit Insurance Survey

The survey was sent by mail to the customers of three retail firms that offer credit insurance. These three retail firms were chosen to be quite different in terms of (1) relative size, (2) breadth of line and (3) average income of customers, thereby assuring that various demographic and customer groups would be represented in the survey.

Conceptually, there were three parts to the questionnaire. The first described credit insurance and offered one plan in the context of a hypothetical retail purchase. This part attempted to stimulate the learning and simple choice that accompanies the sale of credit insurance on a retail transaction. The second part asked respondents to rate 16 insurance packages on a six-point scale of relative liking. This section is similar to commercial application of a standard conjoint task. Finally, the third section of the questionnaire asked a series of demographic and attitude questions to help categorize the results.

The purpose of the simulated purchase question was to estimate the effect of various changes in offerings or price on expressed willingness to purchase. The package offered varied over the coverages provided (life, accident and health, property, and employment) and four levels of price. Each coverage had associated with it a variable cost that contributed to the total cost of the package. The particular fixed cost level was then added to the costs of the coverages to derive the total cost of the package. Thus, packages with more coverages tended to cost more, making the set more realistic, but the effect of price was still estimable since the fixed cost varied across offerings.

Each respondent had an equal chance of evaluating one of the 64 ($2^4 \times 4$) different packages. The administration of such a questionnaire was made feasible by having those parts that differed across respondents printed by a computer on pre-printed forms.

Following the decision on the individual package, the respondents were asked to rate 16 packages. These 16 formed an orthogonal array over the coverages offered and price

so that for each respondent the main effect of each factor was estimable. Thus, for example, the overall effect of life insurance on liking could be evaluated for a respondent but not the interaction of life coverage and accident and health. Across respondents the particular orthogonal array was randomized so it was possible to estimate interactions for groups or segments.

Thus, the two parts of the credit questionnaire provide a chance to evaluate contrasting ways to model demand. The analysis and results of the simulated purchase question are presented followed by the results of the 16 ratings. These are shown to be quite different both in correct mode of analysis and in the managerial meaning of their results.

Analysis of the Simulated Purchase Question

For each of the 370 respondents who returned the questionnaire, the following data was generated: an indication that the respondent would buy (coded 1) or not buy (coded 0), the terms of the offer, and various customer characteristics. The objective of the analysis was to predict penetration, measured as the percent indicating "buy," as a function of the description of the offer and the customer.

A simple way to analyze this data is by a linear probability model which directly regresses the (0-1) choices against the predictors. This model is inappropriate and was not used for two reasons. First, the assumption of equality (homoscedasticity) of error variance is violated. This violation results in inefficient parameter estimates, in invalid confidence intervals and statistical tests (Nerlove and Press, 1973). Second, the linear probability model is logically inconsistent in that predicted probabilities may lie outside of the 0-1 range.

To avoid the problems inherent in a linear probability analysis, a logistic analysis was used. In this analysis, likelihood of purchase, instead of being a linear function of the predictors, is assumed to be related to them by a logistic or S-shaped function. Such a function is very similar to a family of sigmoid functions such as the normal ogive or the arcsin (Cox 1970). Thus logistic analysis is empirically indistinguishable from either probit analysis (Rao and Winter 1978), or angular analysis (Bock and Jones 1968). The critical properties of any of these analyses are that (1) the predicted probabilities are strictly bounded between 0.0 and 1.0, and (2) the marginal effect of any variable is greatest in the middle ranges and decreases as the predicted probabilities approach 0.0 or 1.0. Translated into marketing terms, this latter property implies that the effect of a variable on market share is lowest if the other aspects of the offer are very well liked (and thus leave few customers to win over), or are not liked at all (and thus put the offer outside of the consideration set). Thus both the logical consistency of the logistic model and its empirical assumptions are appropriate to many marketing situations.

The particular program used was a multivariate logistic program designed by Nerlove and Press (1973). This model assumes that there is a utility for each stimulus, (U_i) that is a linear function of the levels of each of the predictor variables (X_{ij}), so that

$$U_i = a_0 + \sum_j a_j x_{ij} \quad (1)$$

This utility is then related to the predicted penetration or quantity sold (Q_i) by the logistic function,

$$Q_i = 1/(1+\exp(-U_i)) \quad (2)$$

so that

$$Q_i = 1/(1+\exp(-a_0 - \sum_j a_j x_{ij})) \quad (3)$$

The Nerlove and Press algorithm starts with the linear probability model and then searches for parameter values (a_j 's) that maximize the likelihood of the actual choices given their predicted probabilities. Significance tests for the parameters and the entire model are based on a chi-square test which is exact for large numbers of observations (Wilks 1972, p. 419).

Empirical Results

The coefficients for the logistic regression predicting choice as a function of the offer are shown in Table 1.

TABLE 1

Coefficients of Logistic Regression

	Constant	Life Ins.	Accident & Health	Employment	Property	Price
Logistic Coefficient	1.07*	0.53*	0.67*	0.51	0.73*	-1.13*
Asymptotic Standard Error	(.39)	(.27)	(.30)	(.27)	(.31)	(.41)

*Coefficient is asymptotically significant at $p < 0.05$ level.

The overall relationship was significant at the $p < .05$ level as were five out of the six coefficients. It is difficult to directly interpret these coefficients since they do not additively translate into probabilities but do so only through the logistic transform in Equation 3. Thus the advantage of the logistic formulation -- that the effect of a variable depends on the other variables that make up the package -- is a disadvantage in presenting the results to others.

In order to avoid these difficulties of interpretation, it is often useful, following Flath and Leonard (1979), to indicate changes in penetration given various reference stimuli. These estimates are shown in Table 2. The reference stimuli were chosen to span the range of options offered in the questionnaire. The item with the lowest predicted penetration (44%) had only employment coverage and the largest price boost (\$1.00). The items with the highest predicted penetration (74%) had all of the coverages and the lowest price boost (25%). Table 2 indicates that the coverages added between 10 and 20 percentage points to penetration, with greater gains (although the differences are not statistically significant) coming from accident and health and property coverages. Adding a dollar to the price of a package rather consistently dropped penetration by about 30 percentage points.

Another commonly used measure of price sensitivity is elasticity of demand, the percent change in penetration over the percent change in price. Given the logistic model, elasticity changes depending on the reference stimulus, but point elasticity can be easily computed for each. If Q is penetration and P is price, and B is the logistic coefficient for price, point elasticity can be derived from Equation 3 as:

$$e = (dQ/Q) \div (dP/P)$$

$$e = (1-Q)P \cdot B \quad (4)$$

Using Equation 4 the elasticity of the average stimuli is $-.71$, so that a 10% increase in price results in a 7% decrease in demand, and indication of rather substantial price sensitivity.

TABLE 2

Predicted Changes in Penetration
Due to Discrete Changes in the Offer

Change Made	Predicted Change in Penetration From Reference Stimulus		
	Average Q=0.61	Least Liked Q=0.44	Most Liked Q=0.74
Add Life Coverage	.12*	.13	.09
Add Accident and Health	.14	.16	.11
Add Employment	.11	.13	.09
Add Property	.15	.18	.11
Add \$1.00 to Price	-.32	-.28	-.31

*Read: From a stimulus with a predicted penetration of 61% adding life coverage at no cost increases expected penetration by 12 percentage points.

Effect of Customer Characteristics on Penetration

While Table 2 summarizes the sensitivity of customers to changes in the offering, it does not discriminate between different segments or customer groups. Customer characteristics may be used as interaction terms in the logistic regression to model changes in price sensitivity of various customer groups. First, however, the past research in the area is briefly considered. This foray is important to show the correspondence between this method and more traditional research.

Several studies provide some evidence as to the effect of customer characteristics on the price sensitivity of demand for credit insurance. Juster and Shay (1964) examined sensitivity to finance rates for "rationed" customers and "nonrationed" customers. A rationed customer was conceptualized as one who had difficulty securing as much credit as desired given regulated finance rates. Juster and Shay operationalized this concept as those with lower incomes who are in the early stage (first 15 years) of family development, and found that these rationed customers were indeed less sensitive than nonrationed customers to higher interest rates or monthly payments in hypothetical credit packages.

Similar results can be predicted for credit insurance for two reasons. First, to the extent that credit insurance lessens chance of foreclosure and thus increases the probability of obtaining future credit, credit insurance may be seen as a mechanism for increasing the supply of credit available for a rationed customer, and thus be differentially valued by that group. Second, in the context of a \$400 retail purchase situation described in the questionnaire, the need for credit insurance to assure one's ability to pay such a relatively small level of indebtedness can be expected to come most strongly from those who do not have the economic slack to make payments in the face of an emergency. These are likely to be the same households who, on the credit supply side, are rationed. Thus, although the reasoning is different, the influences on the demand for credit insurance should parallel those for credit in general.

In an earlier study of attitudes towards credit insurance (Huber 1978), a stronger desire for credit insurance was indeed found among those with (1) less education, (2) lower income and (3) less optimism with respect to their current financial situation.

The data on individual credit insurance choices was used to test the effect of these customer characteristics on price sensitivity. New variables were formed by multiplying a dummy variable for each characteristic by the price of the offer. Thus the price coefficient was modified whenever that characteristic was present. Table 3 shows the change in the price coefficient due to home ownership, high income, and perceived financial security.

TABLE 3

The Effect of Customer Characteristics
on Price Sensitivity

OVERALL	CHANGE DUE TO			
	Family Income ≥ \$20,000	Confidence In Future	Own House	
Price Coefficient	-1.13	-.50*	-.40	-.35
Asymptotic Standard Error	(.41)	(.16)	(.16)	(.18)

*Read: The logistic coefficient is -1.13 for all groups pooled. Those with family incomes greater or equal to \$20,000 have a coefficient .50 less than those with less annual income. All coefficients shown are asymptotically significant at $p > 0.05$ level.

For example, the slope (dQ/dP) is significantly steeper for those with family incomes over \$20,000 compared with those having less income. The three effects tested were statistically significant and in a direction expected by theory and past research. That is, high income, home ownership, and financial confidence were all expected to increase price sensitivity as manifested in an increase in the negative slope of the demand curve.

To summarize, a series of different individual choices across hypothetical products was efficiently analyzed using logistic regression. The model was generalized with the use of dummy variables to include customer characteristics. These characteristics had coefficients that were consistent with theory and past research. For many purposes it might be sufficient to stop the analysis at this point. However, it will be shown that an analysis of the relative ratings of the 16 plans provided additional insight into the nature of demand not tapped by the single choice question.

Trade-off Analysis of 16 Insurance Profiles

In the profile task respondents evaluated 16 insurance packages. The analysis of this data was identical to the logistic analysis of the single choice data except it was done at the level of the individual rather than the group and the dependent variable was the rating rather than the choice. This last difference enabled the use of standard rather than logistic regression. The average values for the individual coefficients are given in Table 4. The meaning of each coverage coefficient is the expected change in rating if that coverage is added at no charge. For example, life insurance adds on expected 1.23 units out of 6.0 possible to the average respondent's rating. Increasing the price of the package decreases the rating in proportion to the price coefficient so that if life insurance were offered at a \$1.00 incremental charge its expected rating would increase by 1.23 less 1.09 for the cost = 0.14 units.

TABLE 4

The Average Raw Coefficients and Indifference Values for the Components of the Offer

	Accident and Health	Emply	Prpty	Add \$1.00 to Price	
Average of the Raw Coefficients (N=370)	1.23	1.20	0.71	0.68	-1.09
Standard Error	(.09)	(.10)	(.09)	(.10)	(.14)
<u>Indifference Values</u>					
Price for Coverages Which Leaves:					
<u>From Trade-Off</u>					
Avenue Rating Unchanged	\$1.13	\$1.10	\$.65	\$.62	
<u>From Logistic</u>					
Expected Penetration Unchanged	\$.40	\$.51	\$.39	\$.56	

The dollar value of each coverage was estimated by dividing the coefficient of money by the coefficient for coverage. This trade-off value has the advantage of being independent of the six-point concept scale and represents the price at which the value of the coverage is just offset by its incremental cost. These indifference values are given in the third line of Table 4. For comparative purposes the analogous indifference prices from the logistic analysis of the single choices are given on the fourth line. These provide the price at which predicted penetration remained unchanged while the line above indicates the price at which the predicted rating was unchanged. Comparing these lines the rating indifference prices are different from the penetration indifferences in two ways. First, the dollar value of all coverages is greater in the multiple task. Second, there is more discrimination between coverages in the rating task, both in terms of the estimated differences between coverages and the standard errors of those estimates (comparing the standard errors in Table 1 and Table 4).

Thus it appears that there are differences in the results from the analyses of the two kinds of data. While the reasons for and implications of such differences are discussed later, an even greater contrast may be found in a segmentation analysis whereby individual indifference prices of the coverages are broken down by demographic subgroups.

Table 5 illustrates the individual trade-off values broken down by demographic subgroups. It is possible to characterize those groups that expressed the largest trade-off values for the various kinds of insurance. Since the managerial question often centers around the kinds of insurance to offer customers, such analysis is useful in defining optimum packages to different customer segments.

TABLE 5

The Effect of Customer Characteristics on The Trade-Off Values of Insurance Types

Group	% of Sample	Avg. Dollar Value of Credit Ins.			
		Life	Accident and Health	Employment	Prpty.
Overall	N 369	\$1.13	\$1.10	\$.65	\$.62
Age:					
Under 35	52%	- 1 ⁽¹⁾	+18*	+21*	+19*
35-55	38%	+ 3	-23	-11	-17
Over 55	10%	- 6	+ 3	-60	-29
Education:					
Some High School	11%	+29	-34*	- 2	0
Some College	34%	+ 8	+18	+10	- 4
Graduated College	55%	- 8	- 4	- 5	+ 3
Sex:					
Male	64%	- 7	- 8*	- 9	- 3
Female	36%	+13	+15	+16	+ 5
Married:					
Married	76%	+ 5	- 9*	- 7*	- 8*
Unmarried	24%	-18	+29	+23	+26
Number in Home:					
1	9%	- 5	+31	+ 9	+25
2	26%	-15	- 7	- 3	+ 6
3 or more	65%	+ 7	- 1	0	- 6
Number Working:					
1	39%	+ 6	+10	+11	+ 9
2	46%	- 3	0	-10	0
3 or more	15%	- 4	-25	+ 3	-23
Dwelling Type:					
Home	75%	+ 1	- 7	- 4	0
Apartment	17%	-23	+31	+25	0
Mobile Home	8%	+33	- 2	-17	- 1
Ownership:					
Own	68%	+ 6	- 9*	- 7	0
Rent	32%	-14	+19	+16	0
Family Income:					
Less Than \$10,000	17%	+ 9	+25*	- 8	+ 3
\$10,000-\$20,000	47%	+ 2	+ 4	+22	+ 9
More Than \$20,000	36%	- 4	-16	-18	-14

(1) Read: Overall the average value for life is \$1.13 but in the under 35 age group this decreases by 1¢

* Statistically Significant at P<.05 Level.

The highest trade-off value for life coverage came from those who had less than a high school education, were married, and had three or more residents in an owner occupied dwelling. Thus, the ideal market for credit life appears to be the family and the promotional emphasis would be on the continued well-being of the family members.

By contrast, the other three forms of credit insurance: accident and health, property and employment, all had the highest trade-off values among those who had more education, were under 35 years of age, unmarried or had small families, and rented rather than owned their dwelling. These characteristics reflect customers who may be more concerned with perpetuating their own life style rather than assuring family continuity. Accordingly the coverages might best be promoted by stressing the use of the product that is being purchased and the positive benefits of credit

insurance allowing the preservation of one's life style in the face of various eventualities.

As plausible as the above segments may be, they had not been revealed in previous research. An earlier study had directly asked for attitudes toward four kinds of credit insurance coverages (Huber 1978, p. 11) and had not found these differences in orientation. Similarly in the logistic analysis of individual choices the interaction of customer characteristics and the different kinds of credit insurance were in the same direction as the trade-off study but failed to reach required levels of significance.

Thus, the analysis of the 16 trade-off ratings produced the expected greater sensitivity to customer characteristics by suggesting a segmentation strategy not revealed elsewhere.

Summary: A Choice-of-One Versus Multiple Ratings

Using the credit insurance data as an example, the preceding has compared the use of a single choice task with one that requires a relative evaluation of many alternatives. It was shown that the results from these two tasks differed in several ways. First, the indifference prices from the two methods would lead to somewhat, although not markedly different conclusions. For example, the single choice data put property coverage first while the multiple ratings put life first. Second, the multiple ratings resulted in far more stable parameter estimates. This stability follows from the fact that ratings increase the sample size by a factor of 16 and because there is more information in a 6-point scale than there is in binary choice. This additional power allows the kinds of segmentation analyses that can only be suggested by other methods.

In spite of its statistical power, the theoretical and conceptual differences between multiple ratings and single choice tasks argue against these being substitute methodologies. Indeed, consider the logical link between the two. An individual could consistently accept an item that is least liked in a rating task, simply because all of the items are acceptable taken individually. Conversely a person could reject what he or she considered to be the best item in the set because no insurance was needed by that person. Put differently, the relative ratings only compare items, they do not indicate the general acceptance level of the set. Thus there is only a weak correspondence between an individual's ratings and his or her choice.

Worse still, the fact of making comparisons may alter the criteria for making decisions. Such ratings may share with paired comparisons (see Blankenship 1966) a tendency to highlight product differences that may not be as important in a monadic, or single choice context. Indeed, the greater sensitivity to the different coverages found in the analysis of the rating data is consistent with just such a task effect.

Thus, if a firm has a product whose purchase conditions parallel credit insurance in the sense of single choices that can be either accepted or rejected, then the foregoing would argue that demand be modeled by single choices rather than multiple ratings. That is, if a conflict developed between the methods, the single choice method should dominate because its task best simulates the actual purchase conditions. However, the methods need not conflict and may be seen as complementary. Indeed, there are three reasons for firm to collect the multiple ratings data even if it does not precisely simulate their customers' purchase behavior.

First a firm may wish to collect multiple ratings as a biased but more reliable estimate of the single choice

sales context. The higher reliability allows more options to be considered and permits the evaluation of elaborate segmentation strategies. The most promising of the options or segments can then be tested using the single choice task. Such a perspective on multiple ratings as a prior screening parallels Day's (1968) suggestion that multiple comparisons be used in the early stages of product design to develop a small set of good candidates for the less powerful but more valid monadic tests.

Secondly, a firm may collect multiple ratings that may be paradoxically more valid in the long term than the single choice task. This possibility stems from the fact that in a multiple rating task respondents become familiar with product differences. This learning may parallel the development of the choice criteria (Howard 1977) that evolves as consumers develop experience with the product class. If such a process occurs then the values derived from the multiple ratings may foreshadow single choices as the product class becomes more mature. For example, in the credit insurance data, the single choice task revealed less difference between the coverages than did the multiple ratings. A company relying on single choice data might be vulnerable to a promotional campaign by a competitor that stresses differences between coverages.

Finally, a firm may use results from multiple ratings data simply as the best mechanism for maximizing consumer welfare. That is, even though choices in the marketplace may not be made with full knowledge of alternatives, certainly a utility surface generated with such consumer knowledge is superior from the consumer's perspective to one that limits possible information. Thus, it can be argued that consumer well-being will be improved by using the results from the ratings data over the single choices, and that a firm is better off knowing these results even if they are not used because of pressure to maintain short run sales and profitability.

To summarize, this paper has been made a distinction between two kinds of purchase situations. The first involves a decision made with fairly good knowledge of the alternatives where a choice is made from among competitive offerings. The second involves a choice to buy or not buy a particular item without explicit product comparisons. While most decisions lie between these two extremes, the multiple ratings task appears to simulate the first context while the second context is best simulated by the single choice task.

From the example given, it appears that even if a firm has an offering where the decision is a single choice mode (as credit insurance clearly is) both methods of data should be collected. The logistic analysis provides a reasonable estimate of the effect of the offering and price on short term demand while the multiple ratings result in stable, segment-based information that may be the best predictor of long term demand. Thus both methods have conceptually separate but complementary uses in modeling demand.

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THE IMPACT OF INDIVIDUAL DIFFERENCES ON THE VALIDITY
OF CONJOINT ANALYSIS

Armen Tashchian, Florida State University
Roobina O. Tashchian, Florida State University
Mark E. Slama (student), Florida State University

Abstract

The effects of five demographic variables were measured with respect to (1) willingness to complete a conjoint card sort task and (2) quality of response. In addition, the respondents' prior knowledge of the subject matter was related to response quality. The findings indicate that demographic variables are significantly related to willingness to complete the conjoint card sort task, and the validity of conjoint analysis findings. In addition, prior knowledge of the subject matter is an important determinant of conjoint validity.

Introduction

The importance of conjoint analysis as a practical and popular marketing research technique has been emphasized several times in recent marketing literature (Green and Srinivasan, 1978; Cattin and Weinberger 1979; Acito and Jain 1980). Since conjoint analysis now plays a substantial role in the multi-attribute modeling of consumer preferences, the reliability and validity of its results are important topics (Cattin and Weinberger 1979). Methods for determining reliability and validity were discussed by Green and Srinivasan in their 1978 review article. Since that time several articles have addressed reliability and validity in conjoint analysis. These articles have focused primarily on three issues.

The first issue is data collection. Segal and Gates (1979) considered the reliability and validity effects of differing data collection techniques. They compared the multiple factor evaluation (MFE) technique to the two factor evaluation (TFE) technique and found both techniques highly reliable although the TFE approach was slightly less reliable than the MFE method. Acito (1979) analyzed three factors affecting the reliability of conjoint analysis; the number of profiles rated, the number of attributes per profile, and respondent attitudes. He found the number of profiles to be positively related to reliability, the number of attributes was negatively related to reliability, and attitudes had no effect on reliability. Barden and Belkus (1979) examined the external validity of conjoint analysis by comparing it to the 1 to 10 scale for preference measurement. They found a moderate degree of convergence between the two techniques and indicated that further research seems warranted. Segal (1980) compared the relative importance ratings obtained from conjoint analysis using both the MFE and the TFE data collection techniques to importance ratings found using an eleven point scale. The conjoint methods produced a different ordering of the importance of attributes than the eleven point scale. Finally, Acito and Olshavsky (1980) compared a model with two levels per attribute to a model with three levels per attribute and found the two level model produced higher response validity.

The second topic discussed in current research is the temporal and structural reliability of conjoint analysis. McCullough and Best (1979) dealt with this topic and found that conjoint analysis results are "stable over time and reliable in the presence of structural perturbations."

The third recent concern has been over the methods of measuring reliability and validity. Cattin and Weinberger (1979) reviewed the current measures of reliability and

validity. In their review they discussed the effects which varying the number of stimuli or the number of attributes per stimulus would have on each validity measure. More recently Acito and Jain (1980) compared several methods of evaluating conjoint analysis results. They found that differences in the methods exist and stated that the evaluation method should be selected according to the purposes of the particular investigation.

The current study differs from previous research on the reliability and validity of conjoint analysis. Previous efforts focused primarily on methodology. They compared methods of data collection or methods of reliability measurement. This analysis, however, deals with how individual differences affect validity. Acito touched on this issue in his 1979 article when he examined the effect of respondent attitudes on reliability and found no significant relationship. The purpose of this study is to extend marketing knowledge with respect to how individual differences affect the validity of conjoint analysis results.

Specifically, three questions guide the research effort. First, does willingness to complete the data collection (card sort) task vary across demographic groups? Second, does internal validity vary across demographic groups? Third, does previous knowledge of the subject matter (on which the data is being collected) affect the validity of the results?

Data and Hypotheses

The respondents in this study, a representative sample of adults in Austin, Texas, were selected by a two-stage cluster-sampling procedure. Based on the 1970 census tracts of Austin and 1975 updates of Austin population each census tract was weighted by the size of its population. Thus, in the first stage of the sampling, the tracts with high population density had a better chance of being selected. Eight tracts were randomly selected from the total of thirty-four tracts comprising the city of Austin. The tracts were judged random since they were spread evenly over the city and represented a cross-section of all the racial and ethnic groups. Within each tract, six blocks were selected at random, by giving considerations to commercial blocks or areas that included parks, churches, or schools. Each interviewer was given a map of the area and was instructed to randomly select any house on the block and then to interview every other house until the quota for that block was filled.

This sampling procedure provided a sample quite representative of Austin population with respect to sex, marital status, age, race, and family income (Table 1). Of the 458 responses, seven were unusable and were discarded. The resulting sample was highly representative of the city's population based on several demographic variables.

The respondents were asked to complete a personal interview which took 20-45 minutes. The first part of the interview was designed to collect preference data for a four-attribute model. The first two attributes had three levels each and the other two had two levels each. The method of data collection was the full profile approach involving a fractional factorial design with 12 calibration profiles

and 1 validation profile.¹

TABLE 1
COMPARISON OF SAMPLE AND POPULATION ON
SELECTED DEMOGRAPHIC VARIABLES

	Sample N = 451	Population Austin SMSA
Male	49.9	48.9
Female	50.1	51.1
White	74.9	72.2
Black	12.0	10.7
Mexican-American	13.1	14.6
Single	44.6	43.9
Married	55.4	56.1
18-34 years old	44.9	50.9
34-64 years old	39.5	37.5
65 years or more	16.0	11.5
Median income	\$14,205	\$13,540

The second part of the interview was an assessment of the respondents' knowledge about energy related matters. To achieve this end a 10-question multiple choice "energy quiz" was administered. The sources used for the construction of the quiz were National Assessment of Education Progress (1978) and Energy Index (1979a; 1979b). The last part of the interview was designed to collect demographic information. Three of the demographic variables: age, income and education were broken into categories for analysis. Age was split into three categories: 18-34 years old, 35-64 years old, and 65 years or older. These categories are consistent with the groupings used by the Bureau of the Census. Income was also broken into three categories: low (less than \$10,000), medium (\$10,000 to \$25,000), and high (\$25,000 or over). The median years of education for the particular city where the data was collected is 11.8; thus education was dichotomized into the categories: low (high school or less) and high (college or professional degrees).

The data was used to investigate three hypotheses which arose from the original research questions.

- H₁: There are no differences across demographic groups with respect to completion of the card sort task.
- H₂: There are no differences across demographic groups with respect to the validity of conjoint results.
- H₃: There is no relationship between prior knowledge of the respondents and the validity of conjoint results.

Analysis and Results

In order to test the first hypothesis, the group which refused to complete the card sort task was compared to the rest of the sample on the basis of demographic variables. Thirty-eight individuals had completed the questionnaire but were unable or unwilling to complete the card sort task. This group (non-participants) was compared with the rest of the sample on five demographic variables (sex, education, income, age and race). Comparisons were made by computing the log-odds (G) from crosstabulation of participants/non-participants on the demographic variables. It was necessary to calculate G because chi-square values are sensitive to skewed marginal distributions which the G statistic does not suffer from this weakness.²

¹There were actually three different versions of the validation profile. Respondents were assigned to each version on a random basis.

²Discussion of the log-odds measure can be found in the appendix.

Analysis of participant/non-participant data indicates that race, age, and education have significant effects on participation rates. White respondents have a higher participation rate than either blacks or mexican-americans. The latter two groups do not differ significantly in terms of participation. Older individuals (65 and over) have a lower participation rate than people in either the 18-34 or 35-64 age categories. Finally, there is a significant and direct relationship between education and participation rate. In contrast to the effects produced by race, age and education, no significant effects were found for income or sex (Table 2).

TABLE 2
ANALYSIS OF DEMOGRAPHIC DIFFERENCES BETWEEN
PARTICIPANTS AND NON-PARTICIPANTS

	Log- Odds	Std. Error	Z-value	Prob.
<u>Sex</u>				
male/female	-0.506	0.433	-1.169	0.121
<u>Education</u>				
high school or less/ college or more	0.726	0.422	1.719	0.042
<u>Income</u>				
<\$10,000/\$10,000-\$25,000	-0.232	0.480	-0.484	0.314
<\$10,000/>\$25,000	0.754	0.689	1.094	0.137
\$10,000-\$25,000/>\$25,000	0.896	0.724	1.238	0.108
<u>Age</u>				
18-34/35-64 years	-0.235	0.528	-0.445	0.328
18-34/65 or older	-1.303	0.524	-2.485	0.006
35-64/65 or older	-1.067	0.507	-2.104	0.018
<u>Race</u>				
white/black	-1.121	0.517	-2.167	0.015
white/mexican-american	-0.858	0.547	-1.569	0.058
black/mexican-american	0.262	0.638	0.411	0.340

As stated above, the second hypothesis concerned the validity of response. In particular, how do variables measuring this factor relate to respondent background? Three separate measures of validity were used in addressing this issue. The first two measures tested the internal consistency of the findings. The third measure indicated the ability of the model to predict the ranking of profiles not used in the estimation of its parameters.

The first two measures are generated by the LINMPIII computer program (Shocker and Srinivasan 1979), which was used to analyze the data. These are: the C index of fit (CIF) and Kendall's rank correlation coefficient (KRCC). The first measure is analogous to the value of stress obtained in multidimensional scaling programs--a low stress value indicates good fit. More explanation of CIF can be found in Young and Lewyckyj (1980). Kendall's rank correlation coefficient is similar to the Pearson product moment correlation and is used for ordinal data. A complete discussion of this measure can be found in Kendall (1948).

The third measure of validity was obtained by use of the validation profiles. In order to compute this measure the input rankings for each individual were reranked in the absence of the thirteenth (validation) profile. The attribute weights obtained from LINMPIII were used to predict the rank (R̄) of the holdout profile. The difference in ranks between the validation profile's original rank (R) and its predicted rank (R̄) constitutes the third validity measure--large absolute differences would indicate poor predictive validity. The correlation among these three measures of validity were all significant at the .01 level with the signs of the correlation coefficients in the expected direction (Table 3).

To analyze the effects of respondent background (sex, age, race, education and income) on the three validity measures,

one-way analyses of covariance were performed using each of the independent variables with education as a covariate. Education was chosen as a covariate because it seemed to be the most logical explanation of differences in response quality, therefore it had to be controlled for in assessing the effects of other demographic variables. The results of the analyses are presented in Table 4. Education is the only variable which produces significant differences (at the .05 level) in validity.

TABLE 3
CORRELATION COEFFICIENT AMONG THREE
DIFFERENT VALIDITY MEASURES

	CIF	KRCC	$|R-\hat{R}|$
CIF	---	-0.696*	0.378*
KRCC		--	-0.324*
$|R-\hat{R}|$			

n=413
*p < 0.01

TABLE 4
RESPONSE QUALITY AND THE DEMOGRAPHICS OF RESPONDENTS
WITH EDUCATION AS A COVARIATE

	Unadjusted Mean Responses			Sample Size	F-ratio		
	CIF	KRCC	$|R-\hat{R}|$		CIF	KRCC	$|R-\hat{R}|$
Male	0.025	0.741	2.106	208	0.090	0.006	0.001
Female	0.027	0.741	2.122	205			
18-34	0.032	0.735	2.245	184	2.437*	1.132	0.484
35-64	0.020	0.748	0.082	164			
65 or older	0.025	0.738	2.108	65			
less than \$10,000	0.023	0.747	2.184	133	2.621*	1.962	0.457
\$10,000-\$25,000	0.036	0.725	2.300	145			
more than \$25,000	0.016	0.752	1.965	100			
White	0.021	0.749	2.069	313	1.704	2.481*	0.300
Black	0.039	0.731	2.186	48			
Mexican-American	0.047	0.700	2.673	52			
high school or less college or more	0.042 0.014	0.698 0.764	2.521 1.896	149 260	15.177**	8.528**	4.335***

*p < 0.1
**p < 0.01
***p < 0.05

The third hypothesis dealt with the relationship between prior knowledge of respondents and the validity of conjoint results. To assess this relationship the score of each respondent on the energy quiz was correlated with the three validity measures. The results indicate that for each measure, respondents' prior knowledge about energy related matters is significantly related to the validity of conjoint analysis (Table 5).

TABLE 5
THE CORRELATION OF RESPONDENTS' PRIOR KNOWLEDGE
ABOUT ENERGY RELATED MATTERS WITH THE
VALIDITY OF CONJOINT ANALYSIS

	Score
CFIR	-0.156*
KRCC	0.133*
$|R-\hat{R}|$	-0.185*

n=413; *p < 0.01

Summary and Conclusions.

Individual differences have significant effects on both completion of the conjoint card sort task and the validity of conjoint results. Race, age and education are significantly related to task completion, and education is significantly related to validity. Furthermore, the respondents' prior knowledge of the subject matter is a significant determinant of conjoint validity.

Although the above findings do not represent strong relationships and are yet to be replicated certain implications for research efforts employing conjoint analysis seem to emerge. First, the stimuli presented to the respondents for ranking should be realistic and familiar. Unfamiliar stimuli will tend to produce invalid results. Second, special care should be taken in designing research dealing with low education, old or minority market segments. More attention, assistance and a clear explanation of the task during data collection might increase both participation and validity for these demographic groups. The third implication is for research dealing specifically with reliability and validity issues in conjoint analysis. Such research efforts in the past have typically used convenience samples composed of college students. The high education level of college students leads to high reliability and validity measures which should not be generalized to other population segments. The fourth and final implication concerns the use of conjoint analysis in new product concept testing. Innovative new products will be unfamiliar to the respondents. Giving them information about the product prior to the data collection task should improve response quality.

Appendix

For 2 x 2 tables G statistics can be computed as follows: let f_{ij} denote the observed frequency in the i th row ($i = 1, 2$) and j th column ($j = 1, 2$). The ratio of $(f_{11}/f_{21}) / (f_{12}/f_{22})$ is called the odds ratio. The odds ratio ranges from 0 to ∞ with 1 indicating statistical independence. Values in the 0 to 1 range imply a negative relationship while values greater than 1 indicate a positive relationship. G is the logarithm of the odds ratio. It may be computed as follows:

$$G = \log(f_{11}/f_{12}) / (f_{21}/f_{22}) \\ = g_{11} + g_{22} - g_{12} - g_{21}$$

G (the log-odds) varies from $-\infty$ to $+\infty$ with 0 indicating independence. The standard error (S) of G has the form

$$S = (h_{11} + h_{22} + h_{12} + h_{21})^{1/2}$$

where $h_{ij} = 1/f_{ij}$ for $i = 1, 2; j = 1, 2$. Thus the quotient G/S is analogous to testing the hypothesis that the log-odds is zero. The resulting Z value has a standard normal distribution. The same logic can be extended to larger tables. More discussion and proofs for the formulas of the 2 x 2 and general R x C forms can be found in Bishop, Fienberg and Holland (1975), and Goodman (1969).

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SOME FINDINGS ON THE ESTIMATION OF
CONTINUOUS UTILITY FUNCTIONS IN CONJOINT ANALYSIS

Philippe Cattin, University of Connecticut

ABSTRACT

Several functions can be used for representing the utility function of interval-scaled attributes, including the part worth function and continuous functions. Pekelman and Sen have shown that a quadratic function can improve predictions over a part worth function. But then, one can often use a linear function instead of a quadratic or part worth function. The purpose of this paper is to illustrate, with a pilot empirical study, what happens, especially with respect to predictive validity, when using linear functions instead of quadratic or part worth functions.

INTRODUCTION

In conjoint analysis a consumer's utility for a continuous attribute is often estimated for several discrete levels of the attribute using a part-worth function model. The utility of an intermediate level must then be interpolated, if needed. Alternatively, a continuous utility function can be assumed and estimated. While only the part worth function model can be used with categorical attributes, continuous attributes can be represented with several models. There are three major types of model: two continuous types (the vector model, usually represented by a linear function, and the ideal point model, usually represented by a quadratic function), and the part worth function model (Green and Srinivasan 1978, Figure, p. 106). Flexibility increases from the vector, to the ideal point, and to the part worth function models allowing more shapes for a utility function. But then, the number of degrees of freedom decreases. Hence, "the reliability of the estimated parameters is likely to improve in reverse order. Consequently, from the point of view of predictive validity, the relative desirability of the three models is not clear" (Green and Srinivasan 1978, p. 106)."

Pekelman and Sen (1979a, 1979b) have shown that quadratic utility functions improve predictions over part-worth functions when using data produced with quadratic functions, and when the number of attribute levels is at least four. A major reason is that the part worth function requires more parameter estimates (3 or more) than the quadratic function (2); hence, the parameter estimates of the part worth function are not as reliable.¹ But then, one can often assume a linear function instead of a quadratic or of a part-worth function. In practice, a priori expectations can be used to help decide which function to select (Green and Srinivasan 1978, p. 107). For instance, one expects a priori that everybody has a preferred (finite) level of sugar content in (say) a dessert. Hence, the quadratic function is appropriate in this case. In other instances, an attribute utility is expected to be monotone increasing or decreasing. Moreover, it can depend upon the consumer as to whether it is of the monotone or ideal point type.

¹With only 3 attribute levels both the quadratic and part worth functions estimate 2 parameters (beyond an intercept), and will produce the same attribute utility estimates for the 3 levels (and thus will have the same predictive validity if only the 3 levels are used). Attribute utility estimates for intermediate levels will differ because one uses a continuous function, the other interpolation; the function that best represents the actual choice rule will have more predictive validity. With only two attribute levels, the quadratic function cannot be used. The linear function and the part worth function (with interpolation between levels) can. They produce the same attribute utility estimates for all levels.

These expectations were used as a starting point to build Figure 1. For each type of expectation, the appropriate (mathematical) function(s) are shown along with the constraint on the parameter(s) of each function that ensures that the function is indeed as expected (i.e., has a maximum and not a minimum in case 1; is increasing in case 2; is decreasing in case 3; and does not have a minimum in case 4b). The part-worth function which can be used in all cases is not shown in Figure 1.²

Figure 1 shows that except for the ideal point case (case 1), where only the quadratic and part worth functions should be used, the linear, quadratic and part worth functions can all be used for cases 2, 3, and 4.³ In these cases, the part worth and quadratic functions will tend to have more predictive validity if the linear function is sufficiently different from the underlying choice rule, and if the amount of noise in the data is sufficiently small (otherwise, the part worth and quadratic (parameter) estimates would not be reliable enough). But then, how much noise does it take and when is the linear function a close enough representation for the linear function to have more predictive validity than the quadratic or part worth function?

It should be noted that the only nonlinear continuous function that is suggested is the quadratic function. Green and Srinivasan (1978, p. 106-107) and Pekelman and Sen (1979a, 1979b) have also emphasized the quadratic function. There are other nonlinear functions that can be used. For instance, both the logarithmic and the exponential functions are monotone (increasing or decreasing) and nonlinear. But then, their mathematical representations

²Sometimes, one may expect multiple peaks. Such an expectation is not included in Figure 1. Tea (if the range of levels goes from cold to hot) falls in the multiple peaks category because consumers tend to prefer iced and hot tea to in-between temperature levels (Green and Srinivasan 1978, p. 106). This implies two peaks (ideal points). But then, one could argue that iced tea and hot tea belong to two different product categories. Moreover, as argued by Pekelman and Sen (1979a, p. 266), this type of function seems more likely to occur when aggregating responses across consumers than at the individual level. For instance, there are consumers who prefer low suds detergent and others high suds detergent which gives two ideal points at the aggregate level (Kuehn and Day 1962, Exhibit 2) but not at the individual level. Since the concern here is with individual-level models (which are used in the market simulations often done in conjoint analysis studies), the multiple peaks case is not included in Figure 1.

³A compensatory model is assumed in conjoint analysis and in the work reported in this paper. In one study, respondents asked to think aloud while doing a conjoint task were found to use mostly noncompensatory rules (Olshavsky and Acito 1980). But then, compensatory models were found to have about as much internal and external validity as models built with noncompensatory rules. Two reasons for this phenomenon are that compensatory models can approximate noncompensatory rules and that it is not easy to properly identify noncompensatory rules (Cattin 1981). Additional results in psychology (e.g., Dawes 1974) tend to show that compensatory functions are a good approximation to noncompensatory rules.

(e.g. $U_i = \log(a_i + b_i X_i)$ for the logarithmic function and $U_i = \exp(a_i + b_i X_i)$ for the exponential function) are not linear in X_i . If one attribute is represented by a logarithmic or exponential function and another attribute by another function, the resulting multiattribute model is nonlinear and a special estimation procedure is required. On the other hand, the quadratic function ($a_i X_i + b_i X_i^2$) has one term linear in X_i and the other linear in X_i^2 . Most of the common estimation procedures can be used as long as the other attributes are also represented by linear or "linearized" functions.

In summary, a priori expectations are helpful. However, there is still often some uncertainty as to whether the function with the most predictive validity was selected for all respondents (in a survey). We now turn to a pilot study which illustrates changes in predictive validity as a function of the utility function. It is assumed throughout that there is no interaction. If an interaction is expected, the appropriate interaction term should be added. Alternatively, the attributes can be referred to eliminate the interaction (Green and Srinivasan 1978, p. 107).

A PILOT STUDY

Data were obtained from a group of eleven French graduate students in business with some working experience. All of them were asked to evaluate an orthogonal array of eighteen hypothetical cars defined on four attributes. They were told beforehand to assume that they were in the market for a car. The dependent variable was an 11-point scale. The purpose of the exercise was to illustrate conjoint analysis with a practical example, as part of a short course in Multivariate Analysis taken by the eleven students. The data were collected before noon and each participant's attribute utilities (using part worth functions) were estimated during the lunch break and handed back to them afterwards.

The attributes and the three levels of each attribute were: (1) Gas Consumption (6, 9 and 12 liter/100 km); (2) Price (15,000, 22,500 and 30,000 Francs); (3) Maximum Speed (110, 130 and 150 km/hour); and (4) Number of Seats (4, 5 and 6). For each attribute the extreme (lowest and highest) levels will be assumed to represent the relevant (c, d) range of attribute levels (e.g., the attribute utility for less than 6 liter/100 km of gas consumption is of no interest). In a real conjoint analysis study the decision makers involved must specify the relevant range of each attribute (based on what they feel they can develop, market, and so on).

The first three attributes are metric and continuous. Utilities for gas consumption and price are expected to be monotone and decreasing (case 3). (With gas consumption defined as it is, it should indeed be decreasing rather than increasing which it is with mpg). The appropriate mathematical function is the linear or the quadratic function depending upon how much nonlinearity and noise there is. One can expect the utility for maximum speed to have an ideal point. But then, it is likely to be monotone and increasing for some respondents over the relevant range (case 4). (The maximum speed of 150 km/hour is not very high). Thus, here again, both the linear and the quadratic functions may be appropriate. The fourth attribute takes on discrete values only. Hence, the part worth function is appropriate. However, the part worth function values may be represented by a nonlinear function (or even by a linear function). In summary, both linear and quadratic functions appear appropriate for gas consumption, price and maximum speed, while the part worth, quadratic and linear functions may be appropriate for the number of seats.

There are no validation data. But then, regression can be used as the estimation procedure since the dependent variable is an 11-point scale. As a result, (a) one can obtain an F-value for each estimated parameter (indicating its significance), and (b) one can estimate the predictive validity of each regression model using a formula derived by Rozeboom (1979) for the fixed (predictor variables) case (Cattin 1980, p. 411). Rozeboom's formula is:

$$\hat{\rho}^2 = \frac{(N-1)\rho^4 + \rho^2}{(N-p)\rho^2 + p} \quad (1)$$

where N is the number of observations in the estimation sample, p the number of regression parameters (excluding the intercept) and ρ^2 can be estimated with the adjusted

R^2 (i.e., $\hat{\rho}^2 = 1 - \frac{(N-1)}{(N-p-1)}(1-R^2)$). Rozeboom's formula

does indeed estimate the predictive validity of a regression model without any validation sample, since it estimates the squared population cross-validated multiple correlation (i.e., the squared correlation that can be expected between the actual and predicted values of the dependent variable on observations not used in the estimation, where the predicted values are obtained using the regression-estimated parameters). The advantage of formula (1) over sample crossvalidation is that it does not require a validation sample and that it produces more precise estimates (Cattin 1980).

Of course, R^2 increases with the number of parameters. But then, so does the shrinkage between R^2 and $\hat{\rho}^2$. Hence, the squared crossvalidated multiple correlation of a model that includes parameters (e.g., quadratic terms) that were added to a first model (e.g., linear terms only) may or may not have more predictive validity than the first model. It will have more predictive validity if the R^2 is sufficiently higher than the R^2 of the first model, i.e. if the additional parameters contribute sufficiently to the R^2 or are significant enough.

The analyses that were done with the data collected from the eleven respondents can be categorized into three steps. They are now discussed.

Step 1

Three regressions were run for each respondent assuming in turn the three following models: (1) Quadratic utility functions for the first three attributes and part worth function for the number of seats (called thereafter the Fully Quadratic Model); (2) Linear utility functions for the first three attributes and part worth function for the number of seats; (3) Linear utility functions for all attributes (called thereafter the Fully Linear Model). The predictive validity of each model was then computed using (1). The results are shown in Table 1 along with the R-squares. It should be pointed out (see footnote 1 and footnote (a) of Table 1) that the quadratic and part worth functions produce the same R^2 and the same predictive validity (as estimated with (1)), when the attributes take on three levels in the estimation sample. This is because both functions estimate two parameters, and because the quadratic function fits perfectly the three points of the part worth function.

The results (Table 1) indicate that the Fully Quadratic Model has more predictive validity than model 2 for only three respondents (Respondents No. 3, 5 and 11). Moreover, the Fully Quadratic Model has more predictive validity than the Fully Linear Model for four respondents (Respondents No. 3, 5, 10 and 11), while model 2 has more predictive than the Fully Linear Model for only two respondents (Respondents No. 5 and 10). Hence, the Fully Linear Model has more predictive validity than the other

models more often than not. Moreover, the Fully Linear Model has a slightly greater average predictive validity (.684) than model 2 (.680). The average predictive validity of the Fully Quadratic Model is lower (.653). A clear implication of these results is that, if quadratic functions are assumed across the board for all attributes and respondents, the overall predictive validity may be affected.

Step 2

The second step involved attempts to add quadratic terms to the Fully Linear Model to increase the predictive validity estimated with (1). This was done on a stepwise basis starting with the quadratic term that had the highest F-value in the fully Quadratic Model. The procedure was stopped when the predictive validity of the resulting model did not increase any more.

Table 2 shows the results obtained for the respondents whose predictive validity was increased by the addition of at least one quadratic term. One quadratic term was added to the model of five respondents (Respondents No. 1, 2, 8, 10 and 11) and three quadratic terms to the model of one respondent (Respondent No. 5). The predictive validity of the model of the five remaining respondents was not increased by the addition of the quadratic term with the highest F-value. In other words, the choice rules used by the respondents (whatever they were) are such that they are, more often than not, best represented by linear functions rather than by quadratic or part worth functions (since, as indicated earlier, the predictive validities obtained in this study with quadratic and part worth functions are equal).

It should be noted that the resulting predictive validities estimated with (1) are likely to overestimate the actual predictive validities because the derivation of (1) assumes that the predictor variables in the regression model were selected a priori and not with a stepwise procedure. However, the resulting models are likely to have more predictive validity than the Fully Linear or the Fully Quadratic Models for the six respondents in Table 2. The resulting average R^2 and $\hat{\rho}_c^2$ were .840 and .738 respectively. (The Fully Linear Model had an average $\hat{\rho}_c^2$ of .684).

The F-values of the added quadratic terms are also shown in Table 2. Both the F-values in the Full Quadratic Model and to enter (i.e., to enter into the previous model in the stepwise procedure) are shown. The two sets of F-values (in the model and to enter) are not quite the same because they are based on different models with different p (number of predictor variables) values, but they are not very different.

It is instructive to note that the highest F-value that did not increase the predictive validity (across all respondents) was 1.600 in the Fully Quadratic Model (and 1.794 to enter). These values are lower than all the F-values in Table 2. However, there is no guarantee that this would hold in other instances. The relationship between F and $\hat{\rho}_c^2$ is far from linear. Nevertheless, this indicates that, if the quadratic term of a quadratic function is not significant enough, its inclusion in the model lowers the predictive validity. Whenever this is the case, it seems appropriate to drop it.

For all practical purposes, as long as an orthogonal array or a fractional factorial design is used, and as long as there are not too many continuous attributes (e.g., 3, 4 or 5), the stepwise procedure used to select quadratic terms is likely to produce the model with the highest $\hat{\rho}_c^2$. With more attributes it is less and less likely because the number of alternative models (2^k where k is the number of continuous attributes) increases geometrically.

It is noteworthy that the quadratic function was not found to improve predictive validity very often. It improved it in four respondents out of eleven for gas consumption, in two respondents for both price and the number of seats, and in zero respondent for maximum speed. (For the maximum speed attribute the utility was found to increase with maximum speed for 10 respondents. It was found to decrease with one respondent, but not significantly ($F=.645$ in the Fully Linear Model). Had there been a "clear cut" ideal point attribute (e.g., sugar from none to a lot), the quadratic function would probably have been found to have more predictive validity for most respondents.

Step 3

So far it has been assumed that there is no constraint on any of the parameters. However, as noted earlier, it can be expected that the utility for both gas consumption and price be monotone and decreasing (or at least not increasing) over the relevant range of attribute levels. Hence, the constraints shown in Figure 1 (Cases 3a and 3b) apply. For both maximum speed and the number of seats, we shall assume that both ideal point and monotone (decreasing or increasing) cases are possible. In this case, there is no constraint on a linear function (Figure 1, Case 4a), but there is a constraint on a quadratic function (Figure 1, Case 4b). The linear and quadratic utility functions obtained in Step 2 on each attribute for each respondent were then inspected to determine whether there is any inconsistency, i.e., whether any constraint was violated. Six inconsistencies were found. They are shown in Table 3. Four quadratic functions were found to have a maximum or a minimum within the relevant range, when they should not. Moreover, two linear functions were found to have a positive slope when they should not, but with low F-values (.284 and .336).

At this point, LINMAP (Srinivasan and Shocker 1973) can be used for estimating the models that have inconsistencies. It handles the above constraints and would eliminate the inconsistencies. Alternatively, a least squares procedure with linear constraints (Theil 1971, p. 42-46) can be used. This can be achieved with ALSAS (Perreault and Young 1979). Whatever the estimation procedure the slopes of the two inconsistent linear functions would be constrained to be zero rather than positive, and the quadratic functions to have their maximum or minimum at one of the extreme ends of the relevant range rather than within range. There is no formula for estimating the predictive validity of the resulting models. However, the elimination of inconsistencies can only improve the predictive validity.

SUMMARY AND CONCLUDING COMMENTS






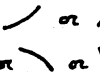
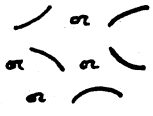
The major findings of the pilot study can be summarized as follows: (a) The Fully Linear Models were found to have more predictive validity than the Fully Quadratic Models for seven respondents out of eleven; (b) A stepwise procedure was then used to find the model with the highest (or close to the highest) predictive validity for each respondent; (c) A few inconsistencies were found (in five of the eleven resulting models); LINMAP or a constrained least squares procedure can be used to eliminate these inconsistencies and improve the predictive validity. Some additional work (whether it be simulation or analytical) would be useful. It would be valuable, for instance, to know in what conditions the linear function improves the predictive validity compared to the quadratic and part worth function, when the underlying function is expected to be monotone (cases 2 and 3 in Figure 1), or maybe monotone (case 4). Moreover, how much of a difference would a constrained estimation procedure make? A procedure that could be used in commercial studies and

and that would "optimize" predictive validity would be useful. It would be somewhat cumbersome to use (in a commercial study) the 3 step procedure used in the above pilot study. It was meant to illustrate what happens when using linear vs. quadratic or part worth functions (e.g., changes in predictive validity, inconsistencies in parameter estimates, and so on).

FIGURE 1

Major Types of Utility Functions

(The linear function is represented by $a_i X_i$ and the quadratic function by $a_i X_i + b_i X_i^2$ where a_i and b_i are the parameters and X_i the level of the attribute that varies over the (c, d) range).

Expectation Concerning Utility of Attribute i ^(b)	Example	Appropriate Mathematical Function over the (c, d) range ^(a)	Constraint on the parameters (within the c,d) range)	Graphical Representation
1. <u>Ideal Point</u>	Sugar Content (over a wide range)	Quadratic	$b_i < 0$	
2. <u>Monotone Increasing</u>	Miles per Gallon	(2a) Linear	$a_i > 0$	
		(2b) Quadratic	$a_i + 2b_i X_i > 0$	
3. <u>Monotone Decreasing</u>	Price	(3a) Linear	$a_i < 0$	
		(3b) Quadratic	$a_i + 2b_i X_i$	
4. <u>Ideal Point or Monotone</u> (decreasing or increasing)	Sugar Content	(4a) Linear	(no constraint)	
		(4b) Quadratic	$b_i < 0$ at $a_i + 2b_i X_i = 0$ if $a_i + 2b_i X_i = 0$ within (c,d)	

^aThe part worth function is not shown, but can be used in all cases.

^bThe four expectations included in this Figure, and their appropriate mathematical representation do not include multiple peaks. In this case, not only can the part worth function be used, but also a cubic or higher order function. However, as argued in the paper, such cases do not seem frequent, at least at the individual level.

TABLE 1

R-square and Predictive Validity Obtained For Each Respondent
With Three Different Models

Attribute	Model Number					
	1 (Fully Quadratic)	2	3 (Fully Linear)			
1 (Gas Consumption)	quadratic or partworth ^a	linear	linear			
2 (Price)	quadratic or partworth ^a	linear	linear			
3 (Maximum Speed)	quadratic or partworth ^a	linear	linear			
4 (Number of Seats)	partworth or quadratic ^a	partworth or quadratic ^a	linear			
Number of Parameters in the Model (p)	8	5	4			
Respondent #	R-square and Predictive Validity					
	R ²	$\hat{\rho}_c^2$ b	R ²	$\hat{\rho}_c^2$ b	R ²	$\hat{\rho}_c^2$ b
1	.746*	.388	.686*	.475	.673	.512**
2	.921	.796**	.842	.730	.836	.752
3	.766*	.439	.766	.604	.766	.647**
4	.762*	.423	.675*	.473	.675	.514**
5	.896	.734**	.771	.612	.664	.498
6	.782*	.466	.768	.608	.754	.629**
7	.878	.691	.858	.757	.855	.781**
8	.914	.780	.867	.772	.867	.798**
9	.927	.813	.926	.873	.926	.888**
10	.939	.843	.935	.888**	.855	.780
11	.927	.811**	.819	.691	.817	.723
Average	.860	.653	.810	.680	.790	.684**

^aThe quadratic and part-worth functions produce the same R² and the same predictive validity because with three attribute levels they estimate the same number of parameters.

^b $\hat{\rho}_c^2$ was obtained using (1). It estimates the predictive validity.

*Denotes an R² not significant at the 1% level. (All are significant at the 5% level).

**Denotes the model with the highest predictive validity out of the three.

TABLE 2

Predictive Validity Obtained by Letting Quadratic Terms That Increase Predictive Validity Enter the Fully Linear Model (on a stepwise basis starting with the highest F-value in the fully quadratic model)

Respondent No.	F-value in fully quadratic model	F-value to enter	Attribute whose quadratic term enters in model	Number of parameters in resulting model (excluding intercept)	$\hat{\rho}_c^2$ in resulting model ^a
1	1.848	2.282	Price	5	.538
2	5.927	5.635	Gas	5	.809
5	9.260	5.630	Consumption	5	.612
	7.894	7.463	Number of Seats	6	.736
	1.996	2.046	Price	7	.749
8	3.419	3.881	Gas	5	.827
			Consumption		
10	11.867	14.793	Number of Seats	5	.888
11	11.405	12.405	Gas	5	.845
			Consumption		

^a $\hat{\rho}_c^2$ was estimated using (1)

TABLE 3

Inconsistencies Found on the Gas Consumption and Price Utility Functions for the Models Obtained in Table 2 (The utility function for both gas consumption and price is expected to be monotone and decreasing over the relevant range of attribute levels)^a

Respondent No.	Inconsistency
1	The quadratic price utility function has a maximum for 20,000 Francs
2	The quadratic gas consumption utility function has a maximum for 6.333 liter/100 km
5	The quadratic price utility function has a minimum for 22,500 Francs (The slope of the linear utility function is exactly zero)
10	The linear gas consumption utility function has a positive slope (F = .284 is not significant)
11	The quadratic gas consumption utility function has a maximum for 6.5 liter/100 km and The linear price utility function has a positive slope (F = .336 is not significant)

^aThe relevant range is assumed to be defined by the two extreme levels of each attribute (i.e. 6 and 12 liter/100 km for gas consumption, and 15000 and 30000 Francs for price). The second derivative of the quadratic function indicates whether it has a maximum (if it is negative) or a minimum (if it is positive). Equating the first derivative to zero leads to the attribute level corresponding to the maximum or minimum.

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A SOCIALIZATION MODEL OF RETAIL PATRONAGE

Danny N. Bellenger, Texas Tech University
George P. Moschis, Georgia State University

Abstract

Research on retail patronage has been difficult to assimilate and thus difficult to translate into meaningful retail strategies and directions for future research. This is partly due to lack of a unifying theory or model that can be used to relate the various aspects of patronage behavior that have been studied. This paper presents a model of patronage behavior based on theory and research and summarizes findings, which suggest that most work in the area can be viewed within the context of the proposed model.

Several dozen studies have been reported over the past thirty years that relate to the topic of retail patronage. Research findings in this area are difficult to summarize, however, and generalizations have been slow to emerge due to the fragmented nature of the studies. There is a lack of a unifying theory or model that can be used to relate the various aspects of patronage behavior which have been studied. As Rosenbloom and Schiffman (1981) recently stated, "...this extensive body of theory and research has yet to be synthesized into general or even middle-range theories of consumer shopping behavior in the retail setting" (p. 175). A need exists for a general model or models of retail patronage such as those used in brand choice research. The lack of such a general framework has made the research and resulting knowledge in the field difficult to assimilate and thus difficult to translate into meaningful retail strategies or directions for additional study.

Numerous avenues can be taken in attempting to develop such a model. Previous approaches to the study of retail patronage behavior have relied either on intrapersonal or interpersonal theories. Intrapersonal theories have emphasized the individual's internal (usually psychological) characteristic(s) as the main explanation of patronage behavior. Such theories include personality, motivation, and attitudinal. Several researchers, for example, have investigated the relationship between consumer personality variables and store loyalty (Lessing and Tollefsoy 1973, Massey et al. 1968). Similarly, a number of studies have investigated patronage motives related to store selection (Blankertz 1947, Woodside 1973). Finally, attitudinal theories have been used extensively to explain retail patronage behavior using concepts such as store image and consumer attitudes toward stores (Hansen and Bollard 1971, Mackay 1973).

Interpersonal theories, on the other hand, rely heavily on the assumption that the individual's behavior is heavily conditioned by others in his environment; they rely upon sociological rather than psychological perspectives. Under such theories used to explain retail patronage behavior, one could include social class, reference groups and family. For example, researchers have related social class to consumer preference for types of stores (eg., Kelly 1967).

In spite of the merits of these approaches, they all seem to fall short from adequately explaining retail patronage behavior. The existing knowledge in the field suggests that consumers do not behave according to any particular model. Rather, findings of studies using the different approaches suggest that at least some variance in various aspects of retail patronage behavior can be explained by each model. Thus, several theories may better explain consumer behavior, and that the application of a multi-theoretical perspective would seem to be more fruitful for

for future research (Robertson and Feldman 1975).

One approach to the study of consumer behavior that appears to hold particular promise from a theoretical perspective and from the point of view of encompassing existing research is the general conceptual framework of socialization. Socialization refers to "the process by which persons acquire the knowledge, skills, and dispositions that make them more or less able members of their society (Brim and Wheeler 1966). The socialization approach uses multi-theoretical perspectives rather than one particular theory and the assumption made is that behavior is acquired and modified over the person's life cycle rather than determined by, for example, situation specific factors. Thus, the proposition made here is that cognitive and behavioral patterns regarding retail patronage are continuously learned and change over the person's life cycle, and that such orientations may be logically viewed from a socialization perspective. This appears to be a reasonable assumption for several reasons: first, recent research indicates that at least some store-related cognitions and behaviors may be acquired through socialization in the person's early life (Olshavsky and Granbois 1979). Since the socialization model can explain changes in human behavior over the person's life cycle (Riley et al. 1969), it may also account for changes in retail patronage behavior occurring over time that have been reported in several studies (Olshavsky and Granbois 1979). Finally, the socialization model unifies intrapersonal and interpersonal theories into a more cohesive and, therefore, more powerful model, making the use of such an approach to the study of patronage behavior fairly attractive. Although previous research has approached retail patronage from a socialization perspective (Darden et al. 1980), little empirical research on retail patronage has been presented to substantiate the approach.

Socialization Perspectives

Research into the acquisition of cognitive and behavioral patterns that constitute consumer behavior is based mainly on two models of human learning, the cognitive development model and the social learning model. Cognitive development theories suggest that learning is related to qualitative changes in cognitive organization that occurs as a person matures, as well as during a person's life cycle (Brim and Wheeler 1966). There is little doubt that developmental and experience variables such as age and life cycle position can influence learning and should be included in a learning-based behavioral model of consumer behavior (McLeod and O'Keefe 1972).

The social learning approach stresses sources of influence--"socialization agents"--which transmit cognitive and behavioral patterns to the learner (Brim and Wheeler 1966). In this case consumer socialization takes place in the course of the person's interaction with these agents in various social settings. Socialization agents may include any person, organization or information source that comes into contact with the consumer.

The learner may acquire cognitions and behaviors from the agents through the processes of modeling, reinforcement, and social interaction. Modeling involves imitation of the agent's behavior. Reinforcement involves either reward or punishment mechanisms used by the agent. The social setting within which learning takes place can be defined in terms of social structural variables such as social class, sex and family size. Social structural variables can influence learning through their impact on the

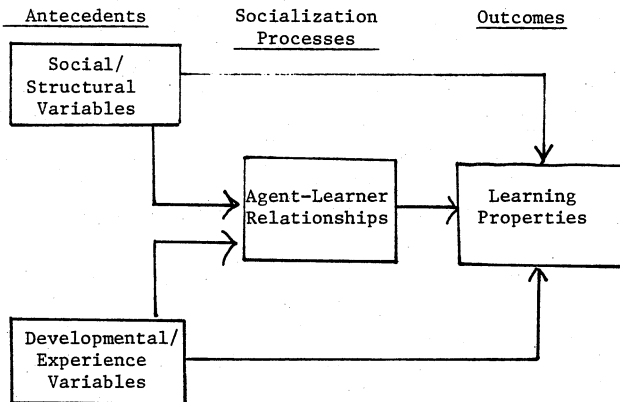
agent-learner relationship or they may, in some cases, have a direct relationship.

Theoretical and conceptual notions of socialization can be used to form a learning perspective of consumer behavior. Consumer learning involves not only a cognitive-psychological process of adjustment to one's environment, but also a social process. Figure 1 provides the outline of a general conceptual model of consumer socialization (Moschis and Churchill 1978). The main elements of the model are classified into antecedent variables, socialization processes, and outcome. Whereas the socialization model has thus far been applied to the consumer behavior of the youth, previous theory and research suggest that the model may be applicable to adult consumer behavior (Kohlberg 1969).

Retail Patronage in a Socialization Context

Now let us consider patronage in the context of socialization. The outcomes of interest include two interrelated sets--behavioral outcomes and cognitive (mental) outcomes¹. Behavioral outcomes include the consumer's general store patronage patterns (behaviors such as store

Figure 1
A General Consumer Socialization Model



loyal vs. nonstore loyal), institutional patronage patterns (behaviors such as frequent use of discount stores vs. department stores), and store choice (the selection of Store A vs. Store B). The behaviors are believed to be the manifestation of various mental outcomes which can be called cognitive orientations are applicable--cognitive orientations toward shopping and cognitive orientations toward stores (both specific and general types of stores). Shopping orientations are mental states that result in various general shopping patterns. A housewife with a strong desire for convenience may exhibit a pattern of shopping at stores close to her home. This pattern can, in turn, affect the institutional shopping patterns and individual store choice decision. Cognitive orientations toward stores (store images) have a more direct impact on institutional shopping patterns and store choice. These store-related mental states include the relative importance attached by shoppers to various store features and the perceptions of these specific stores in terms of these features. The socialization perspective assumes that both the cognitive orientations toward shopping and toward stores are learned by the consumer.

¹The outcomes of consumer socialization are generally defined in terms of consumption-related attitudes, values, skills and behaviors. See for example, Moschis and Churchill (1978).

As noted earlier, the socialization process incorporates both the socialization agent and the type of learning actually operating. Various communication and interaction variables can act as socialization agents in learning patronage oriented mental states. Advertising media, such as radio and television, store personnel, family, friend and other sources of information and influence that the consumers comes in contact with, can act as socialization agents in this regard.

To complete the model, various antecedent variables must be considered. Social structural variables may relate directly to the learned outcomes or they may indirectly affect outcomes by impacting on the socialization processes. Likewise, developmental/experience variables can have both direct and indirect effects. As a shopper gains more experience in a given market, store choice may become habitual, thus bypassing communication/interaction in subsequent store choice decisions.

The resulting socialization model of retail patronage is shown in Figure 2. Such a framework can be used to organize existing research on retail patronage in a systematic fashion. If this approach can successfully encompass current work, then it should have value in providing direction for future research aimed at extending this area of study.

Retail Patronage Literature and the Socialization Model

Let us turn now to the task of linking current retail patronage research to the socialization model. Studies can be categorized in the context of the model according to the variable sets with which they deal and/or according to the linkages explored between variable sets.

For purposes of discussion, the following categories will be used:

- . Effects of Social/Structural Variables
- . Effects of Developmental/Experience Variables
- . Effects of Socialization Processes on Outcomes
- . Effects of Mental Outcomes on Behavioral Outcomes

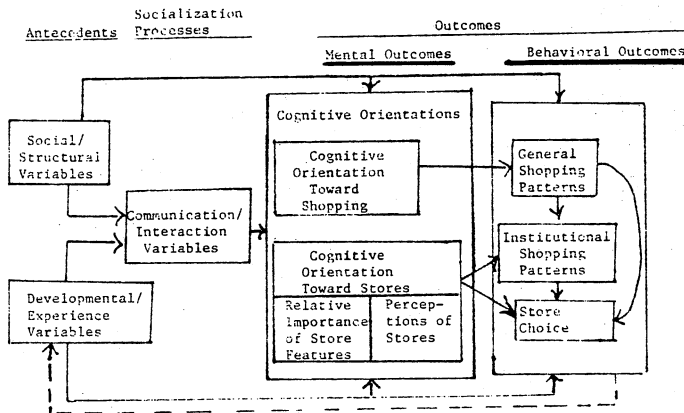
Some caveats are in order before turning to a review of research related to socialization perspective of retail patronage. The studies cited to support various linkages in the model are not uniform in nature. The quality of the measurement, operationalization of variables, types of samples and methods of analysis vary. Thus, existing research simply fits the framework; it does not verify the specifics of the model. The exact variables and their relative significance must be left for further study. It should be noted that correlations found in various studies do not prove causation in any sense. Also, because socialization involves continual adjustment between the individual and the situation changes in the environment, such as institutional changes, are likely to result in changes in the individual's orientations toward his environment. In such cases, the individual is expected to relearn specific patterns of behavior, and the process is commonly known as "re-socialization," with antecedent variables and socialization processes playing again an important role (Riesman and Roseborough 1955). Thus, the direction of influences should also be explored to complete the specifics of the model. In addition, the selected studies are each of a limited scope. Thus, a complete picture with various possible interactions has never been explored.

Effects of Social/Structural Variables

Social structural variables may have direct effects on cognitive and behavioral outcomes that comprise store patronage. A number of studies have found certain socioeconomic variables that fall in this category to be associated with store selection. Tate (1961) reports an

FIGURE 2

A Socialization Model of Retail Patronage



inverse relationship between education and loyalty toward grocery stores. Enis and Paul (1970) also found education to be inversely related to customer loyalty to grocery stores. Similarly, in a study of female shoppers, Bellenger, Hirschman and Robertson (1976-1977) found education to be strongly related to the actual store selected to purchase specific categories of merchandise. In another study of the image of the store-loyal customer, education was again inversely related to store loyalty (Reynolds et al. 1974).

Occupation and income also appear to be strong predictors of store choice. They have been associated mainly with grocery store patronage (Enis and Paul 1970, Tate 1971). Family income was found to be negatively related to store loyalty (Reynolds et al. 1974). Income was also found to be related to cognitive orientations toward shopping (Cuztand Dominguez 1977-1978). Working status per se is also likely to affect a person's shopping behavior (McCall 1977).

Myers and Mount (1973) suggest that income is superior to social class in the consumer store choice for a wide variety of home furnishings, appliances, and ready-to-wear product categories as well as some services. Hirschman and Peters (1972) also found income superior to social class in explaining store choice behavior. Thus, the relative importance of income and social class as a predictor variable seems to vary depending upon the type of store patronage under investigation.

Sex may also be an important antecedent of store patronage, but its effects have not been fully examined. There is some evidence indicating that loyalty to banks may be higher among males than females (Fry and Shaw 1974).

Ethnicity is another factor which is likely to affect cognitive and behavioral orientations toward stores. One study found significant differences among Mexican-Americans and Anglo-Americans with respect to selected shopping orientations (Boone et al. 1974). Similarly, Feldman and Star (1968) found racial differences in shopping behavior of Chicago shoppers.

Similar social structural variables have been found to be

related to vendor or institutional-type loyalty. For example, consumers who are loyal to department stores have the following characteristics: they are white-collar workers, have higher incomes, and high education (Rich and Jain 1968). Similarly, shoppers who tend to patronize discount stores are normally blue-collar workers, younger with children living at home (Cox 1971).

Finally, social structural variables are likely to affect the respondent's general store shopping patterns. For example, the extent to which a person is loyal to stores in general is affected by his educational background, level of income, occupation, and number of children living at home (Peters and Ford 1972). In addition to their relationship to behavioral outcomes, social/structural variables have been shown to relate to cognitive outcomes such as shopping orientation. Bellenger, Robertson, and Greenberg (1977) found that various demographic variables such as income and occupation related to women's shopping orientation with respect to shopping centers.

Social structural variables are also likely to have an indirect effect on outcomes by impacting on socialization processes. For example, socioeconomic characteristics are likely to affect the person's frequency of interaction with the various socialization agents which may in turn have differential impact upon the patronage behavior. Studies of media use behavior, for example, found that television is a medium consumed heavily by individuals who tend to be of lower socioeconomic status, have lower education and tend to be of minority background (Schramm et al. 1961, Moschis 1981). On the other hand, newspaper reading is most likely to take place among upper class and more educated consumers (Schramm et al. 1961, Moschis 1981). Similarly, a study of female shoppers found significant differences among working and nonworking women with respect to their frequency of interaction with various socialization agents, including personal and commercial sources of information (McCall 1977). A host of other antecedent variables are likely to be associated with different socialization processes. For example, marital status, education, urbanity (i.e., extent of shopping opportunities), income and ethnicity are likely to be related to different preferences for mass media and other sources of consumer information (Allen and Clark 1980, Engel et al. 1978, Urban 1980).

Effects of Developmental/Experience Variables

Developmental variables are likely to have some effect on selected aspects of consumer patronage behavior directly as well as indirectly. First, with respect to the direct effect of such variables, previous research suggests that experience is an important factor in store selection (Steilen 1972). Another study by Bellenger, Hirschman, and Robertson (1976-1977) found age to have a strong relationship with store selection process of new residents tended to be experimental may affect institutional store patronage.

Age and life cycle have also been found to have some effect on cognitive orientations toward shopping (Lazer and Wyckham 1969). Finally, age has been shown to be positively related to store loyalty suggesting that maturation or experience may affect the development of loyalty to stores (Reynolds et al. 1974).

Developmental variables are also likely to influence store patronage behavior indirectly by affecting the person's frequency of interaction with various sources of consumer information. For example, as people age, they tend to interact more frequently with the mass media and less frequently with peers (Bernhardt and Kinnear 1976, Phyllips and Sternthel 1977). These agents are in turn likely to have differential impact upon the person's cognitions and behaviors regarding store patronage.

Effects of Socialization Processes on Outcomes

The findings of several studies support the relationship between socialization processes and patronage outcomes, although in many cases this is not the major focus of the work. One study that does center on information use and shopping orientations was reported by Moschis (1976). This study related various shopping orientations (store-loyal shopper, special-shopper, problem-solving shopper, and the like) to selected communication variables (such as sources of information used for new products and source credibility) for cosmetics shoppers. The findings showed that shoppers possessing different orientations exhibit different communication behaviors; they have different information needs and preferences for sources of communication. A rather clear link was established between communication patterns and cognitive orientations toward shopping.

An earlier study by Kelly (1967) also examined the role of information in the patronage decision. The manner in which both formal and informal information flows among prospective customer groups was found to have a profound influence on the patronage decision process associated with new retail outlets. This exploratory research suggested that there is a hierarchy of influence in the determination of patronage decision outcomes: in-store experiences was found to be most influential, followed by personal influences, while newspaper advertising had less impact than might have been supposed. Another study reported by Woodside (1973) investigated the linkage of store patronage and promotion. Again, direct experience and personal contacts were found to have the greatest impact.

Hisrich, Bornoff and Kernan (1972) have suggested that the relationship between information seeking and store selection is moderated by perceived risk. As the perceived risk increases, the extent of information seeking about alternative stores increases up to a point. Their study examined the interrelationship of antecedents (perceived risk and self-confidence), communication variables (information seeking) and behavioral outcomes (store selection).

Bearden, Teel and Durand (1978) reported a study of the differences in demographics, psychographics and media usage of patrons versus nonpatrons of four different types of retail institutions (convenience stores, department stores, discount stores and fast food outlets). Several significant differences were found in the media usage patterns between patrons and nonpatrons of the four different types of retail institutions.

Another study by Darden, Lennon and Darden (1978) showed that outshoppers have different media behavior than in-shoppers. Different types of outshoppers also used significantly different information sources. This points to a relationship between general shopping patterns and communication/interacting variables.

A number of other studies have found that advertising and other sources of consumer information can have a powerful impact on consumers' perceptions of a store as well as on their patronage behavior (Enzel et al. 1978). In general, research supports a linkage between socialization processes as measured by communication/interaction variables and retail patronage outcomes. The linkage with both mental and behavioral outcomes has been explored and significant relationships found in both cases. It should be noted that many variables in both sets have not yet been explored but findings to date tend to support this linkage in the socialization model.

Effects of Mental Outcomes on Behavioral Outcomes

As with other linkages, several studies can be cited that

support the relationship between various mental patronage outcomes and behavioral patronage outcomes. To illustrate this, let us first consider the linkage of cognitive orientation toward shopping and general shopping patterns.

A study of supermarket shoppers by Darden and Ashton (1974-1975) found a relationship between supermarket attribute preference and consumer shopping orientations. For example, a significant percentage of those shoppers who prefer supermarkets offering stamps have a high score on the "special shopper" shopping orientation scale. Thus, a relationship is suggested between the general shopping pattern of selecting supermarkets that offer stamps and a favorable cognitive orientation toward shopping for specials. Looking at another type of general shopping pattern, Goldman (1977-1978) examined the relationship between store loyalty and the consumer's shopping style (cognitive orientation toward shopping). In general, it was concluded that store loyalty "appears to be part of a low search, a low knowledge, and a low utilization level shopping style."

Research has also shown a relationship between a shopper's cognitive orientation toward stores and the behavioral outcome of institutional shopping patterns. A study by Schiffman, Dash and Dillion (1977) showed a relationship between the relative importance of various store features and shopping at different types of retail institutions for the same merchandise. Their findings indicated "that for audio equipment specialty store patrons, the expertise of the retail salesmen and the assortment of brands and models were critically important; the department store customer, on the other hand, was primarily concerned with convenience of store location and guarantee/warranty policies."

Finally, numerous studies have established linkages between the cognitive orientation toward stores (store images) and specific store choice. Doyle and Fenwick (1974-1975), for example, examined how store image affects the selection of a grocery store. The assumption of relationships between attitudes and subsequent behaviors is basic to the general area of attitude research.

Example of General Expectations And Predictions of the Model

While examples of specific hypotheses between each possible pair of variables would seem to be beyond the scope of this paper, some examples of general expectations and predictions of the model would seem to be useful in illustrating its value and suggesting directions for future research. First, with respect to the effects of social structural variables, social class, for example, may be a useful predictor of retail store patronage. Previous socialization theory and research suggest that minority groups in general tend to interact more frequently with television (Schramm et al. 1961). Frequency of interaction with television (thus, exposure to advertisements) may in turn lead to the development of cognitive and affective (shopping) orientations toward brands and stores as posited by mere exposure theory (Zajonc 1958).

With respect to developmental variables, previous theory and research suggest changes in cognitive and behavioral orientations as people approach middle and later years, accumulating experience and becoming more committed to norms, people and ways of doing things (Phillips and Sternthal 1977). The positive relationship found between store loyalty and age may be a reflection of such changes. In addition, age is likely to affect the individual's frequency of interaction with various socialization agents, which in turn are likely to impact on the development and changes in the consumer's cognitive and behavioral orientations toward stores. For example, television viewing is heaviest during early and later years, while inter-

actions with significant others are most frequent during the person's early adult years. Interactions with these agents, in turn, are likely to impact upon the person's patronage behavior. For example, research shows that store loyal consumers show moderate to heavy socialization with their neighbors (Reisman and Roseborough 1955).

Finally, the effects of communication and interaction variables on cognitive and behavioral orientations are suggested by communication theory and research. For example, diffusion models suggest that interactions with the mass media and significant others are likely to have an impact upon both cognitive and behavioral outcomes. Cognitive orientations would be expected to lead to behavioral responses, as suggested by hierarchy of effects models of consumer behavior.

Discussion and Implications

The paper has presented a model of patronage behavior based upon the notion that shopping behavior is a learning phenomenon which is developed and reinforced over time. Research findings were presented to support the linkages of the model. It should be noted that most of the work in retail patronage can be viewed in the framework provided by such a model. This supports the value of socialization as a general framework and a unifying theory for studying and understanding this specific area of consumer behavior.

The socialization model provides numerous directions for further research on retail patronage:

- . The key variables that related to socialization in a patronage context must be clearly established.
- . The best way in which to measure key variables need to be studied so that some uniformity can be obtained in patronage research.
- . Linkages between variables must be established.
- . The importance of variables at different stages of the consumer's life cycle should be explored.
- . The importance of different variables to the learning of patronage behaviors for different segments of the population (teens and new residents, for example) should be investigated.

The adoptions of a socialization model of retail patronage opens the possibility of a much more systematic examination of the variables that relate to store choice.

The outcome of this avenue of study can be very useful to retail managers. An improved ability to segment markets along life cycle lines could be possible. A better understanding of how new residents and teens formulate patronage behaviors should lead to improved strategies to attract these groups. The decisions related to market segmentation should be enhanced in general by a more orderly study of the learning of retail patronage by various subgroups within the population. The retailer's ability to select media that will most effectively communicate with various target markets should also be enhanced as more attention is given to the socialization process. The socialization model of retail patronage offers a framework that incorporates outcomes, antecedents and the socialization processes which link the two. As the specifics of such a model are developed, the ways in which retailers can employ strategies to influence outcomes for specific groups (based on antecedent variables) by impacting on the socialization processes should become clear. The potential for a very useful link between an understanding of consumer learning and retail strategy formulation is offered by the socialization model.

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INDIVIDUAL SEARCH STRATEGIES IN NEW AUTOMOBILE PURCHASES

David H. Furse, Girish N. Punj and David W. Stewart
Owen Graduate School of Management, Vanderbilt University

Abstract

The research identified typologies of external information search strategies employed by purchasers of new automobiles. Cluster analysis was used to isolate five distinct search strategies, which were related to routinized response, limited problem solving, and extensive problem solving decision strategies.

Introduction

The principal focus of this research is to identify characteristic information search strategies employed in purchasing a new automobile. Previous research has focused on how much total time is spent in information search and processing to isolate decision strategies (e.g., routinized response, limited problem solving, and extensive problem solving), while the more relevant focus would appear to be how an individual goes about information search. Knowing what an individual actually does (e.g., how much time they spend in different search activities) is more useful than knowing the aggregate amount of time spent in search. The decision strategy which eventually emerges is more likely to be a function of the types of information sources used than of an aggregate measure of search time.

In fact the decision strategy employed by consumers in making choices is as likely to be influenced by the information sources available to and chosen by the consumer as are sources of information sought to be influenced by decision heuristics. Although information processing patterns can be identified, these patterns change frequently. For example, Bettman and Zins (1977) have suggested the importance of constructive decision making processes in which subjects may change their processing strategy as they gather data during the task.

It is likely too that information search strategies and decision strategies are interdependent. Decision rules may influence search but search activity may alter decision rules. Thus the notion that search strategies are predetermined by a decision strategy may not hold. Research on the characteristics of particular choice situations and individual differences is crucial, then, to an understanding of how decision strategies develop. Brucks and Mitchell (1980) have suggested that the goal of future research in consumer decision making should center on predicting what decision strategy an individual will use in a particular situation, and that the achievement of this goal will require the identification of the critical elements of the situation and the individual which cause the selection of a particular decision strategy. A first step in this direction would be the determination of an empirical typology of search strategies employed by consumers. This research employs cluster analysis to identify typologies of information search strategies of new automobile purchasers. Other methods have been employed to isolate consumer choice strategies - for example, judgmental methods using consumer protocols (e.g., Payne 1976, Bettman and Zins 1977), eye movements (e.g., Russo and Rosen 1976), and information monitoring techniques (e.g. Bettman and Kakkar 1977). Each of these methods requires careful and cumbersome content analysis of the decision process sequence of consumers. While these are useful techniques they do not provide the efficiency of clustering methods for large sample research.

It should be noted that cluster analytic methods do not identify search strategies in the sense of some overall search plan or heuristic. Rather, it identifies groups of individual consumers who are similar to one another in the amount of time spent in various information seeking activities. Strategies of search are inferred from these groupings of consumers. Rather than following a relatively few consumers through the search process and explicitly asking for the search strategy employed, clustering methodology seeks to provide a means for identifying common behavioral patterns which may represent common underlying strategies.

Previous work in consumer research has noted that consumers employ search strategies which can be distinguished based on amount of external search effort and decision time (Robinson, Faris, and Wind 1967, Howard and Sheth 1969, Hansen 1972). For example, Howard and Sheth distinguish routinized response behavior, limited problem solving, and extensive problem solving. These strategies have also been characterized as stages which consumers pass through as they evolve toward routinized response. Bettman and Zins (1977) have developed similar notions in their distinction between preprocessed choice, analytic implementation processes, and constructive processes. The expectation in the current research is that the specific search patterns identified among new car buyers would roughly correspond to these general search strategies. The current research employs factor analysis and cluster analysis of time spent in various search activities ranging from talking to friends and relatives to visiting dealer showrooms and test driving cars. Comparisons are then made among the clusters of search patterns on a variety of exogenous variables which might influence or be influenced by search activities.

This research is distinguishable from prior research on external search processes for consumer durables in that it emphasizes a multidimensional profile of search activities rather than studying any single aspect of search behavior or some aggregate measure. For example, Newman and Staelin (1972) looked at an aggregate measure of total information seeking and Katona and Mueller (1955) described buyers based on a single deliberation score by summing across search measures. Claxton, Fry, and Portis (1974) used an approach similar to the current study, employing numerical taxonomic analysis to summarize ways in which shoppers gather information in purchasing furniture and appliances, and relating these to potential causes for search pattern differences. Kiel and Layton (1981) have also reported a study similar to the present one using an Australian sample.

There are several features which distinguish this research from the research conducted by Claxton, Fry and Portis. First, factor analysis was employed to reduce the problem of multiple measures of similar constructs and to provide more stable measures for clustering. Second, the clustering solutions obtained were submitted to a more elaborate cross-validation procedure than was used by Claxton, Fry, and Portis to assure that the identified clusters were not artifacts of the research. Third, the sample size in the current research is over twice as large, yielding more reliable results. Finally, the current research extends the findings of Claxton, Fry, and Portis to a new automobile purchase situation.

Although both studies used a similar research design, there are also several differences between the present study and that reported by Kiel and Layton. The sampling frame is different from that which Kiel and Layton used on the Australian sample. The present study used a sample of automobile buyers in the United States. A second difference in the two studies is in the nature of the information seeking variables employed. Kiel and Layton obtained measures of search behavior by requiring respondents to recall the number of times a behavior was undertaken between the time the purchase was first contemplated and the purchase was actually completed. A global measure of total search time in weeks was also obtained. The present study sought estimates of the total amount of time actually spent on each of the information search tasks regardless of the frequency the behavior occurred or the length of time from initiation of search to purchase completion. The Kiel and Layton study was restricted to an examination of information search behavior of the principal purchaser while the present study sought to identify search behavior of both the principal purchaser and others who may have assisted in the purchase process. Only 194 consumers were involved in the Kiel and Layton study while the present study employed more than three times that number. Thus, the cluster analysis result was cross-validated in the present study but not in the Kiel and Layton information search study. Finally, the behaviors examined in the present study differed somewhat from those used in the Kiel and Layton study. Table 1 compares the two sets of variables.

TABLE 1
Relationships between Search Activities Examined by Kiel and Layton and Search Activities Examined in the Present Study

Kiel and Layton	Present Study
Total Introspection Time (weeks)	- - -
Total Search Time (weeks)	- - -
Number of phone calls made	- - -
Number of trips made	Time spent driving to dealers (hours)
Number of retailers visited	
Time spent at retailers	Time spent walking around dealer showrooms (hours)
Number of Owners contacted	Time spent talking to others (hours)
Number of Opinion leaders contacted	
Number of Ads recalled	Time spent looking at ads (hours)
Number of items of written information used	Time spent reading books and magazines (hours)
	Time spent reading manufacturer's pamphlets (hours)
	Time spent reading about car ratings (hours)
Number of makes considered	- - -
Number of other dealers considered	- - -
- - -	Time spent talking to Salespersons (hours)
- - -	Time spent test driving cars (hours)

Identifying consumer information search strategies can be of practical value to marketing managers and consumers. For managers it can be an important characteristic in specifying target markets requiring different marketing strategies, and it can be useful in helping the manager decide how to influence the search process. Knowledge of consumer search strategies can also provide a basis on which to develop consumer education programs and public policy.

Finally, it should be noted that consumer information search is undoubtedly characterized by both external and internal search of past experience in memory (Bettman 1979, 116). Although a comprehensive set of measures of both internal and external search are desirable in completely specifying routinized response, limited problem solving, and extensive problem solving decision processes, it is typically impractical for the manager to evaluate internal search in large sample market analysis. External search activities currently provide the most accessible and appropriate measurement for managers to use in identifying consumer search strategies. This is likely to remain so until some future date when more reliable, valid, and efficient measures of internal search processes are available.

Subjects/Data Collection

Data for the study were generated by consumers who had purchased a new automobile during the period of September to November, 1978, in the cities of Buffalo, Milwaukee, and Phoenix. All respondents were contacted by telephone and asked to participate in the study. Respondents received a questionnaire by mail. Questionnaires were received by respondents from 2 weeks to 4 months after the purchase of the new automobile. The average elapsed time from purchase to receipt of the questionnaire was two months. The questionnaire solicited information on variables associated with their automobile purchase. These variables were related to the decision process employed by consumers in making the selection of their new automobile. The questionnaire requested such information as the number of dealer visits, activities at each dealership visited, information search behavior (e.g., talking to friends, reading magazines, etc.), number and types of previous cars owned, satisfaction with car purchased, etc. Information was also requested concerning the automobile purchased, the dealership from which it was purchased, and the price paid for the automobile. Demographic information concerning age, gender, education, income, etc. was also solicited. The variables of primary interest in the present study were eighteen items concerned with the amount of time the purchaser or someone else in the household spent on a variety of information search activities ranging from reading advertisements in the newspaper to test driving automobiles. These items used a six point scale to obtain the time spent on each activity: 1) No time; 2) Up to 1/2 hour; 3) More than 1/2 hour but less than 2 hours; 4) More than 2 hours but less than 5 hours; 5) More than 5 hours but less than 10 hours; and 6) More than 10 hours.

Analysis and Findings

As a prelude to cluster analysis an initial factor analysis was carried out on eighteen items related to time spent in various search activities. This initial factor analysis was designed to reduce the problem of multiple measures of similar constructs being more heavily weighted than constructs measured by fewer items. Only the 602 subjects responding to all eighteen items were included in the analysis. A principal components analysis was carried out and a three-factor solution was indicated by both the eigenroots >1 criterion and a plot of the roots. These three factors were submitted to both varimax and oblique rotations. Although the oblique rotation (direct oblimax, delta = .4)

did not appreciably change the hyperplane count obtained with the VARIMAX rotation it did serve to reduce moderate factor loadings and increase those loadings already high. For this reason the oblique rotation was retained as the final solution. The factor pattern matrix is given in Table 2 and the factor structure matrix is provided in Table 3.

The factor analysis identified three significant search activities factors (Table 2). Factor 1 is essentially characterized by others in the household than the actual purchaser engaging in all the search activities. Factor 2 is an out-of-store search factor and is principally characterized by high loadings for time spent by the purchaser talking to friends and relatives, reading articles, advertisements, brochures, etc. It is not characterized by time spent visiting dealerships, talking to salespeople, or test driving cars. Factor 3 is an in-store search factor with the highest loadings (negative) on time spent by the purchaser and others in the household visiting dealer showrooms, talking to salespeople, and test driving cars.

Factor scores for each of the 602 subjects were computed. These factor scores provided the basis for a clustering procedure. A modification of a clustering procedure suggested by Hartigan (1975) was followed. Ward's hierarchical clustering method was used with half of the respondents to obtain an initial description of potential clusters within the data. This initial analysis suggested five to seven clusters. A k-means clustering procedure was then used to develop five, six, and seven cluster solutions based on seed points suggested by the earlier hierarchical clustering. These solutions were developed for two independent subsets of the data.

The several clustering solutions were cross-validated by using group centroids obtained from one subset of the data to classify cases in the other subset and vice-versa. Coefficients of agreement (Kappa) were then computed. The five cluster solution produced a Kappa coefficient of .91. Coefficients obtained for the six and seven cluster solutions were smaller and were particularly poor for the sixth and seventh cluster. On the basis of these findings the five cluster solution was accepted. A final five cluster solution based on all 602 cases was then developed.

Table 4 provides cluster means for each of the original eighteen variables from which the factors were derived.

Five distinct search patterns were identified based on the cluster analysis of respondents' factor scores (See Table 4). Cluster 1 purchasers were the most extensively involved in all search activities. They were the most likely to have others in the household as active participants in the search process (Factor 1) in addition to extensively engaging themselves in both out-of-store (Factor 2) and in-store (Factor 3)¹ search activities. Thus, Cluster 1 has been labeled the "constructive shopper" after Bettman's notion of constructive information search (Bettman 1979). Cluster 2 is more likely than all other clusters except the first to have other household members involved in the search process while their own involvement in both in-store and out-of-store search is about average. Consequently, Cluster 2 has been labeled the "surrogate shopper" pattern. Cluster 3 purchasers are more likely than any other except Cluster 1 to engage in out-of-store search activities. They are also less likely to use other household members in the search process, but this is undoubtedly due to the fact that these respondents are predominantly single. Cluster 3 has been labeled the "preparatory shopper" due to the greater likelihood to engage in out-of-store information search. Cluster 4 is characterized by below average amount of time spent in out-of-store search activities. This is probably due to the fact, which will be developed later, that purchasers in Cluster 4 were more likely than those in other clusters to

TABLE 2
Factor Pattern Matrix

	Factor 1	Factor 2	Factor 3
1a. Time you spent talking to friends/relatives about new cars or dealers.	.11	.59	-.09
1b. Time others in your household spent talking to friends/relatives about new cars or dealers.	.84	.05	.02
2a. Time you spent reading books and magazine articles about cars.	.00	.85	-.01
2b. Time others in your household spent reading books and magazines articles.	.92	.11	.16
3a. Time you spent reading advertisements in newspapers and magazines.	.05	.77	-.02
3b. Time others in your household spent reading advertisements in newspapers and magazines.	.93	.12	.17
4a. Time you spent reading about car ratings in magazines.	.09	.84	.14
4b. Time others in your household spent reading about car ratings in magazines.	.96	.15	.24
5a. Time you spent reading automobile manufacturer brochures and pamphlets.	.13	.65	-.09
5b. Time others in your household spent reading automobile manufacturer brochures and pamphlets.	.92	.09	.11
6a. Time you spent driving to and from dealerships.	-.20	.11	-.80
6b. Time others in your household spent driving to and from dealerships.	.52	-.32	-.59
7a. Time you spent looking around dealer showrooms.	-.15	.20	-.78
7b. Time others in your household spent looking around dealer showrooms.	.51	-.27	-.60
8a. Time you spent talking to salespersons.	-.26	.07	-.88
8b. Time others in your household spent talking to salespersons.	.58	-.36	-.54
9a. Time you spent test driving cars.	-.11	.09	-.73
9b. Time others in your household spent test driving cars.	.51	-.25	-.51

TABLE 3
Factor Structure Matrix

	Factor 1	Factor 2	Factor 3
1a. Time you spent talking to friends/relatives about new cars or dealers.	.27	.66	-.45
1b. Time others in your household spent talking to friends/relatives about new cars or dealers.	.84	.19	-.43
2a. Time you spent reading books and magazine articles about cars.	.17	.85	-.45
2b. Time others in your household spent reading books and magazine articles about cars.	.86	.20	-.36
3a. Time you spent reading advertisements in newspapers and magazines.	.21	.79	-.44
3b. Time others in your household spent reading advertisements in newspapers and magazines.	.87	.21	-.36
4a. Time you spent reading about car ratings in magazines.	.18	.79	-.34
4b. Time others in your household spent reading about car ratings in magazines.	.87	.21	-.32
5a. Time you spent reading automobile manufacturer brochures and pamphlets.	.29	.72	-.49
5b. Time others in your household spent reading automobile manufacturer brochures and pamphlets.	.88	.21	-.41
6a. Time you spent driving to and from dealerships.	.23	.48	-.76
6b. Time others in your household spent driving to and from dealerships.	.76	.09	-.69
7a. Time you spent looking around dealer showrooms.	.28	.57	-.81
7b. Time others in your household spent looking around dealer showrooms.	.77	.14	-.72
8a. Time you spent talking to salespersons.	.20	.48	-.79
8b. Time others in your household spent talking to salespersons.	.78	.03	-.65
9a. Time you spent test driving cars.	.27	.44	-.72
9b. Time others in your household spent test driving cars.	.72	.11	-.64

TABLE 4
Cluster Means for Original Search Variables

	CLUSTER					Total
	1	2	3	4	5	
1a. Time you spent talking to friends/relatives about new cars and dealers*	4.72**	3.52	3.68	2.43	1.92	3.04
1b. Time others spent talking to friends/relatives about new cars and dealers*	4.13	3.56	.41	2.09	.79	2.19
2a. Time you spent reading books and magazine articles*	4.25	2.84	3.67	1.55	1.48	2.47
2b. Time others spent reading books and magazine articles*	3.46	3.01	.33	1.41	.57	1.72
3a. Time you spent reading advertisements in newspapers and magazines*	4.20	2.41	3.26	1.64	1.40	2.30
3b. Time others spent reading advertisements in newspapers and magazines*	3.63	2.88	.29	1.48	.57	1.72
4a. Time you spent reading about car ratings in magazines*	3.72	2.54	2.99	1.40	1.40	2.17
4b. Time others spent reading about car ratings in magazines*	3.34	2.97	.29	1.23	.58	1.64
5a. Time you spent reading automobile manufacturer brochures and pamphlets*	3.90	2.64	2.93	1.97	1.63	2.42
5b. Time others spent reading automobile manufacturer brochures and pamphlets*	3.54	3.00	.32	1.69	.63	1.82
6a. Time you spent driving to and from dealerships*	5.00	3.90	3.96	3.40	2.24	3.55
6b. Time others spent driving to and from dealerships*	4.69	3.62	.42	3.03	.72	2.52
7a. Time you spent looking around dealer showrooms*	5.24	3.61	3.65	3.12	2.12	3.35
7b. Time others spent looking around dealer showrooms*	4.76	3.41	.53	2.83	.72	2.44
8a. Time you spent talking to salespersons*	4.82	3.68	3.87	3.40	2.36	3.48
8b. Time others spent talking to salespersons*	4.18	3.46	.39	3.02	.71	2.42
9a. Time you spent test driving cars*	3.70	2.44	2.41	2.09	1.53	2.29
9b. Time others spent test driving cars*	3.09	2.29	.32	1.86	.57	1.62

*p < .05
**One is no time spent; 6 is 10 hours or more

know in advance the manufacturer from whom they intended to purchase. Therefore, this cluster was labeled the "brand loyal shopper" pattern.

Purchasers in Cluster 5 are distinguished by below average involvement in all search activities. This shopping pattern appears to exhibit what Bettman (Bettman and Zins 1977) has described as pre-processed choice. As will be discussed later, Cluster 5 purchasers are more likely to have prespecified both the manufacturer of the car that they will buy and the dealer from whom they will buy it. Cluster 5 has been labeled the "routinized response shopper" pattern.

Comparisons among the clusters on a variety of exogenous variables were carried out. Table 5 provides a summary of means and/or percentages of response for each of the clusters on these exogenous variables.

The "constructive shopper" (Cluster 1) is more likely to spend a large number of hours searching for information relating to their new car purchase - 66 total hours compared to 24 hours for the sample as a whole - and they are more likely to make a large number of dealer visits (Table 5). They are more likely to have a larger number of household members involved in the purchase decision - most notably the wife.²

1. Note that Factor 3 is a negative factor. Below average scores are indicative of greater time spent in search activities at automobile dealerships.
2. The negative relationship with husband involvement is an artifact, since Cluster 1 is predominantly male.

TABLE 5
Cluster Means or Percentages for Exogenous Variables

	CLUSTER					Total
	1	2	3	4	5	
Number of Decision Makers* Husband Involved as Decision Maker* (n=91)	2.15	2.12	1.18	2.06	1.44	1.83
Wife Involved as Decision Maker* (n=278)	8%	24%	1%	21%	7%	15%
Total Hours Spent by Purchaser in Information Search*	69%	53%	11%	61%	29%	46%
Total Hours Spent by Others in Information Search*	46.0	18.5	24.9	10.4	5.5	17.6
Total Visits to Dealers* No. of Visits to Dealers:	20.9	9.1	.6	5.1	.9	6.4
1 Only*	12.0	6.3	5.8	4.9	2.7	5.7
2 Visits Only*	2%	1%	9%	7%	38%	12%
3-5 Visits*	<1%	5%	7%	14%	25%	11%
6 or more Visits*	16%	43%	42%	46%	21%	36%
Initial Confidence in Ability to Judge Cars (a)	84%	51%	42%	33%	16%	41%
Initial Certainty You Could Get a Good Buy Without Additional Information (b)	3.70	3.59	3.56	3.56	3.72	3.62
Post-purchase Certainty You Had Gotten a Good Buy (c)	4.49	4.69	4.91	5.04	5.40	4.94
Initial Price Range:	6.01	5.90	5.81	5.79	5.84	5.86
Minimum Price*	4,804	4,603	4,918	5,112	5,722	5,035
Maximum Price*	6,231	5,930	6,124	6,331	7,180	6,352
Car Value Received Versus Expectations (d)	4.58	4.55	4.39	4.28	4.64	4.47
Performance Received Versus Expectations (e)	4.59	4.67	4.57	4.42	4.49	4.49
Satisfaction with Purchase (f)	5.57	5.59	5.27	5.46	5.57	5.50
Bought Car Off Lot	90%	79%	84%	90%	79%	84%
Knew Manufacturer Wished to Purchase From Prior to Visiting Dealers* (g)	57%	64%	61%	76%	84%	70%
Knew Dealer Wished to Purchase From Prior to Visiting Any Dealers*	18%	19%	22%	31%	58%	31%
Replacing Previous Car	80%	81%	91%	84%	85%	84%
Satisfaction with Previous Car* (g)	4.27	4.45	4.68	4.89	4.98	4.69
Number of Cars Previously Owned	4.8	3.9	4.0	4.5	4.6	4.3
Readership of Consumer-oriented Publications such as Consumer Reports*	63%	44%	54%	28%	27%	39%
You or Someone Else in Household Knows a Lot About Cars*	48%	34%	33%	28%	23%	31%
Number of Adults in Household*	2.34	2.29	1.85	2.34	2.01	2.19
Number of Children in Household*	1.09	.91	.41	1.05	.68	.86
Marital Status:						
Married*	80%	81%	36%	83%	57%	70%
Age:						
24 or under	26%	17%	10%	16%	7%	14%
25 to 35	36%	39%	48*	31%	20%	34%
35 to 44	15%	14%	18%	24%	20%	19%
45 to 54	11%	19%	13%	15%	18%	16%
55 and over*	12%	12%	12%	15%	39%	17%
Education:						
Less than High School	2%	3%	4%	4%	9%	4%
High School Degree	22%	25%	24%	34%	30%	28%
1-3 Years College	43%	31%	21%	30%	34%	31%
College Degree	15%	18%	25%	14%	9%	16%
Post-Graduate Education	18%	23%	26%	19%	18%	21%
Income:						
12,500 or Less	8%	9%	18%	8%	20%	12%
12,501 - 19,999	25%	21%	32%	21%	20%	22%
20,000 - 24,999	20%	20%	22%	28%	11%	21%
25,000 - 29,999	22%	20%	10%	14%	16%	16%
30,000 and over	26%	29%	18%	30%	34%	29%

*p < .05

- (a) Responses were coded 1 for no confidence, 2 for a little confidence, 3 for moderate amount of confidence, 4 for a lot of confidence, and 5 for total confidence.
- (b,c) Coded 1 (the worst buy), 2 (a bad buy), 3 (a somewhat bad buy), 4 (not so good, not so bad), 5 (a somewhat good buy), 6 (the best buy).
- (d,e) Coded 1 (very much worse than expected), 2 (worse than expected), 3 (slightly worse than expected), 4 (about the same as expected), 5 (slightly better than expected), 6 (better than expected), 7 (very much better than expected).
- (f,g) Coded 1 (totally dissatisfied), 2 (very dissatisfied), 3 (more dissatisfied than satisfied), 4 (about equally dissatisfied and satisfied), 5 (more satisfied than dissatisfied), 6 (very satisfied), 7 (totally satisfied).

Also, the relationship of the number of decision makers involved is a direct function of marital status and number of adults and children in the household. So this is less likely to indicate an individual difference in search strategy than to be merely the result of a situational effect (e.g., larger households have more decision makers).

They were less likely than other clusters to be confident that they would have made a good purchase initially without going through the information search process (see Initial Certainty, Table 5), and were less likely to know in advance the manufacturer or the dealer from whom they wanted to buy. They were also less satisfied than other shoppers with their previous car. They are more likely to read consumer-oriented magazines and to have someone in the household who is knowledgeable about cars. Demographically, they are more likely to be married and to have children in the household. Differences across all five of the clusters for education and income are nonsignificant.

The "surrogate shopper" (Cluster 2) is like the "constructive shopper" in that (1) they are likely to be from households with more than three members and consequently have more decision makers involved, (2) their prior expectations of what they would pay for a new car were lower than for other clusters, (3) they were less satisfied with their previous car purchase and (4) they are less likely to know in advance the manufacturer or dealer from whom they wanted to purchase. They differ from the "constructive shopper" in that they spend less total hours engaged in external search activities (although still above average for all shoppers) and most of these hours are spent by others in the household. They are also less likely to read consumer-oriented magazines or to have someone in the household who is knowledgeable about cars, but they are about average on these characteristics for the sample as a whole.

The "preparatory shopper" (Cluster 3) is less likely to be married or to have children and is more likely to spend time personally in the search process. Like the "constructive" and "surrogate" shopper patterns, the "preparatory shopper" is less likely to know in advance the manufacturer or dealer from whom they wish to purchase, but they are somewhat more likely to be satisfied with their previous car. They are more likely than other shopper patterns to read consumer-oriented magazines and newspaper columns. The "brand loyal shopper" (Cluster 4) is more likely than all other clusters, except the "routinized response shopper" (Cluster 5), to be satisfied with their previous car and to know in advance the manufacturer of the car that they want to purchase. Like the "constructive" and "surrogate" shoppers they are more likely to be married and to have other members of the household involved in the purchase decision, but they are less likely to be personally involved in search activities. They are also less likely to read consumer-oriented magazines, such as *Consumer Reports*. To the extent that these consumers shop, they are shopping for a dealer rather than a make.

The "routinized response shoppers" (Cluster 5) have already made up their minds. They know in advance both the manufacturer and dealer from whom they intend to purchase, and they are more likely to have been satisfied with their previous car purchase. They spend less time engaged in information search activities than any other group - just over six hours compared to 24 hours for the total sample. "Routinized response shoppers" are also more likely than any other cluster to expect to pay a higher price for their new car. They are more likely to be older and in a single person household.

Discussion

The five search patterns identified in this research generally correspond to the search strategies identified in previous consumer behavior research. Kiel and Layton (1981) identified a high search group, a low search group, and three clusters they collectively labelled selective information seekers. Cluster 5, the "routinized

response shopper" pattern, fits the profile for the decision making strategies of routinized response behavior (Howard and Sheth 1969) and preprocessed choice (Bettman and Zins 1977). They expend a minimum of effort in information search activities, presumably because the cost/benefits of new information is high since they have already made up their minds about the manufacturer and dealer from whom they want to buy. Cluster 5 purchasers' lack of information search may also be explained by their greater satisfaction with their previous purchase. Newman and Staelin (1971) show that satisfied users take less time to make a decision and in a later study (Newman and Staelin 1972) that buying the same brand as before is associated with less external search. Bennett and Mandell (1969), Westbrook (1977), and Sheth and Venkatesan (1968) report similar findings. Bettman (1979, p.118) argues that satisfaction with previous purchases is an important determinant of the suitability of previously stored information for the current decision. The greater the amount of suitable information that is available in memory, presumably the less external information search that is necessary.

At the other extreme, Cluster 1, the "constructive shopper" is active in pursuing both out-of-store and in-store information sources. He makes a large number of visits to dealer showrooms and reads consumer-oriented publications, such as *Consumer Reports*. He is also the least likely to be satisfied with his previous car purchase. This segment is the smallest of the five search patterns identified - just over 11 percent of the sample. This is consistent with the finding of Claxton, Fry, and Portis (1974) that only five percent of furniture and appliance buyers were "thorough" shoppers. This finding is also consistent with findings in earlier studies citing the general lack of external search in consumer durable purchasing (Katona and Mueller 1955, Newman and Staelin 1972). Alternative explanations to a conclusion that consumers are irrational or lazy may be that reported search substantially understates true search activities (Newman and Lockeman 1975), that internal search of memory is compensatory with external search (Bettman 1979, p.129), or that the cost/benefit relationship for additional information is higher for experienced buyers (Hansen 1972).

Clusters 2, 3, and 4 all appear to exhibit characteristics of limited problem solving. Cluster 4, the "brand loyal shoppers", have already made up their minds about the manufacturer, so they need to process less information in making a choice. Clusters 2 and 3, the "surrogate" and "preparatory" shoppers appear to be closer to the "constructive shopper" (Cluster 1), although both report substantially fewer hours spent in search activities and differ in their specific search patterns. For the "surrogate shopper" the ratio of self to other total search hours (Table 5) is very close to that of the "constructive shopper", but they are somewhat less dissatisfied with their previous purchase.

"Preparatory shoppers" are second only to the "constructive shopper" in total personal hours devoted to search, but they are less likely to be dissatisfied with their previous automobile purchase and are somewhat more likely to know in advance the manufacturer and dealer from whom they want to purchase. Furthermore, fewer others in the household may tend to simplify the choice decision.

Finally, one additional finding should be noted because it differs from the findings of prior research. More educated and affluent customers are thought to have superior information processing ability and thus to engage in more information search (Thoreli, Becker, and Engeldow 1975, Miller and Zikmund 1975, Claxton, Fry, and Portis 1974, Katona and Mueller 1955). The results of this research do not support this conclusion. Although the analysis did not address this question directly, there

were no significant differences in education or income among the five information search clusters. The reasons for this could be due to differences in the information search measures and analysis employed in this research and to differences in the product purchased. It may also be that education and income have an influence at a different level of behavior than was examined in the present study. An analysis of the effects of education and income within clusters might reveal the influence of the two variables.

The present results have identified five types of information search. However, these types may not be discrete. Rather, they may represent stages in a developmental, or learning, process. The present results do not resolve this important issue. Future research might address the development of search strategies in a longitudinal design.

The present research may well suggest to marketing managers the need to segment consumers on the basis of the information search strategy employed. Given the importance of prior satisfaction for determining the amount of search activity, a marketing strategy designed to increase dissatisfaction with competitors' models and to increase satisfaction with the marketers on brand may be necessary. Other marketing strategies will be specific to the particular segments. The surrogate shopper seems to place a great deal of emphasis on the opinion of significant others. Selling to surrogate shoppers probably means directing marketing and sales efforts at these significant others rather than the actual purchasers. Preparatory shoppers engage in a significant amount of out-of-store shopping and spend little time with dealers. Advertising and other forms of information such as Consumer Reports would probably be most effective in reaching these consumers. Indeed, advertising seems most likely to have an impact on the constructive and preparatory shoppers. Brand loyalty and dealer loyalty appear separate phenomena with some consumers being brand loyal but not dealer loyal. Dealers may need to build on the reputation of the brands they carry and offer unique services to develop a loyal group of customers. This approach to segmenting consumers is unlike typical segmentation studies which place emphasis on subjective values of product features. The emphasis here is on segmentation on the basis of shopping behavior and the development of marketing strategies to match particular consumer search strategies.

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THE IMPACT OF CREDIT DECISIONS ON SHOPPING BEHAVIOR

James W. Gentry, Oklahoma State University¹

Abstract

This study investigates the relationship between patronage decisions made by consumers and credit decisions made by retailers. Part of the rationale behind the decision by retailers to maintain house accounts is that store loyalty is increased through the use of the store's or chain's own card. A survey of consumers' reactions to credit decisions yielded estimates of (1) the loss in patronage from current levels due to a rejection and (2) the opportunity loss in the increase in patronage that would have occurred had the application been accepted. The shifts in patronage were statistically significant, indicating that credit decisions do affect patronage.

Marketers have long realized that credit can be a promotional tool as well as a financial tool (Kaplan, 1967). Commonly stated reasons for the existence of a liberal retail credit policy include (1) customers could not afford to purchase many goods without credit; (2) consumers desire the convenience that credit cards offer; (3) credit tends to make shoppers less frugal and more impulsive; and (4) credit creates patronage loyalty (Cooper, 1977). In general, these reasons have been supported. For example, Hendrickson (1972, p. 49) summarizes a discussion with the President of Montgomery Ward, who estimated that sales of appliances, furniture, tires, and other items would drop 35 percent to 50 percent if credit were suddenly discontinued. The convenience aspect of credit cards is well documented (Cole, 1972, p. 70). While it has been found that credit customers make more purchases than cash customers (Bonk, 1975; Dunkelberg, 1974; Hendrickson, 1972; Stephenson and Willet, 1969), Bonk (1975) pointed out that credit sales may be merely former cash sales as credit is issued to higher income customers who are more likely to purchase anyway. Hirschman (1979) studied purchase volume by consumers of a department store chain, controlling for different levels of demographics. In several of the demographic control conditions, consumers that made at least one purchase using a bank card or a store-issued charge card did have a higher total dollar volume than strictly cash customers.

Store loyalty has been found to result from the availability of a charge account or an in-house credit card (Stephenson and Willet, 1969; Wong, 1969). The belief that store loyalty is fostered by a house account has been widely held by many department stores as evidenced by their refusal to accept bank cards. Hirschman, in an interview in *Business Week* (1979, p. 132), stated that "a store charge builds a link to a consumer with a credit line that can be used there." On the other hand, Pessemier (1980, p. 39) points out that "legal restrictions and the ease with which competitors can match new credit services normally tend to limit the suitability of credit as a patronage-generating competitive weapon." He further added that credit is frequently overlooked as a patronage tool by merchandising personnel since it is not

controlled by the merchandising function. Furthermore, Hirschman (*Business Week*, p. 132) noted that customers are more mobile and less store loyal than previously. In order to attract these mobile shoppers, the retailer has to give them the method of payment that they prefer. Consequently, Penney's started to change their long-held policy and started accepting Visa cards in 1979. Several other department store chains are contemplating similar changes. However, the chains are keeping their own credit cards and they are still actively pushing the use of the house cards. For example, the H. H. Holmes Co. in New Orleans pays sales clerks \$2 for every bank card user whom they can convert to a Holmes charge customer (*Business Week*, 1979).

All things considered, marketers are generally supportive of a liberal credit policy. As such, they would like a credit extension process that does not foreclude potentially good customers. The most commonly used credit scoring approach is discriminant analysis, which yields the maximum amount of separation between "good" and "bad" credit risks. In typical usage, the cutoff score (the score that will be compared to a new credit applicant's score when his/her characteristics are put in the discriminant function) has been the mid-point between the two groups' centroids. The decision theoretic approach to discriminant analysis proposed by Wald (1944) adjusts the cutoff point by considering (1) the cost of misclassifying a bad risk as a good risk, (2) the cost of misclassifying a good risk as a bad risk, and (3) the relative prior probabilities of membership in the two groups. Those associated with the finance function have emphasized the first consideration, as bad debts are a very tangible cost consideration in the tradeoff between the costs of the credit operation and the finance charges generated. Further, the number of bad debts occurring serves as a basis for evaluating a credit manager. On the other hand, since there is rarely a follow-up made on rejected candidates, errors made in misclassifying a "good risk" are much more difficult to uncover.

Marketers emphasize the last two considerations. The relative prior probabilities of being a good as opposed to a bad risk favor a more liberal credit policy, as some researchers have suggested that this ratio may be as high as 30:1 or 40:1 (Myers, 1962). While marketers are strongly opposed to the denying of credit to good risks, the determination of this misclassification cost is a very complex task. Models have been proposed (Caldwell, Gentry, and Miller, 1980; Greer, 1967, 1968; Long, 1975; Metha, 1968, 1970) to estimate this cost. Critical inputs in these models are (1) the increase in patronage that occurs after accepting the good risk and (2) the decrease in patronage that occurs after rejecting the good risk. If there are no shifts in total dollar expenditures due to the credit decision, then the misclassification cost may well be negative (i.e., the firm is better off by rejecting all credit applicants), as Dunkelberg (1974) reported figures which indicate that credit extension costs may exceed the revenue obtained from finance charges.

Thus tools exist to help marketers operationalize their inputs into the credit scoring process. Whether credit scoring models should incorporate the means for determining misclassification errors depends on a more basic question: how significant are the effects of credit decisions on patronage behavior. This study will investigate the nature of patronage shifts due to credit decisions. More specifically, the hypotheses to be tested are as follows:

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- H₁: It is expected that there will be an increase in relative patronage at a retail outlet when an individual's credit application is accepted.
- H₂: It is expected that there will be a decrease in relative patronage at a retail outlet when an individual's credit application is rejected.

Research Methodology

The research took the form of a questionnaire covering the respondent's credit history.

Population Sampled

The questionnaire was distributed in married student housing at a state university in a midwestern state, and 213 households completed the eleven-page instrument. A second smaller sample was taken of 94 households spread throughout the college town of 30,000; the purpose of this smaller sample was to provide a basis of comparison with the primary sample. There are several reasons for the choice of married students as the primary sample. They are easily accessible and are willing participants for the most part. Most important, though, is that this stage of the family life cycle, young married couples, is frequently the stage in which individuals first encounter the need for credit. Thus, they are more likely to be able to recall their experiences with acceptances and rejections and to recall their shopping behaviors. Further, they pose a challenging task for credit managers since the decision to extend credit to them has to be made on the basis of the credit application alone due to the fact that, for the most part, they do not have a credit record that can be obtained from a credit bureau. Also, in one sense they are "risky" due to their currently limited financial capacity while, at the same time, they are potentially very good customers if long run commitments develop due to their appreciation for the availability of credit early.

The choice of young married couples as opposed to non-college couples may limit the ability to generalize the results of this study since they are underprivileged members of a higher social class who, in the near future, are going to have a substantially increased income. It may be that their reaction to a credit rejection would be more severe than the general population's. The sample of townspeople was acquired with the intention of exploring this source of bias.

Sampling Plan

Every apartment in married housing was contacted at least once, but there was a fairly high level of non-response due to the residents not being at home. A second attempt was made to reach each household that was not successfully contacted in the first wave of sampling. Non-response due to refusals was limited to two households; the respondents were paid a dollar for their participation.

The smaller survey of townspeople consisted of randomly selecting certain blocks within each of the city's census tracts. The quota for that tract was determined by the proportion of townspeople living in that tract. A verbal commitment to complete the questionnaire was obtained and it was left with the respondent. The interviewer returned to pick up the completed questionnaire an hour or so later.

Questionnaire Content

The questionnaire contained a variety of questions, many of which are not pertinent to the study at hand. For example, the respondents were asked about their reasons for seeking credit (or their reasons for not seeking

credit if they had never applied), and whether they used various types of credit (oil companies, retail, bank cards) as convenience or installment users. The questions of prime importance to this study dealt with their history of acceptances or rejections, and their recall of their patronage at the stores before and after the credit decision was made. An example of the question format is shown in Figure 1. Questions dealt with their first, second, most recent, and most frequently used credit cards (or accounts) for retail outlet and oil company acceptances, and with their first, second, and most recent rejections. Obviously, many of the questions were not applicable to all respondents.

FIGURE 1

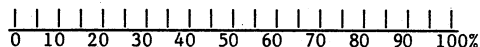
Example Question Relating Patronage with Credit Acceptance

Have you ever obtained credit from a retail store or retail chain?

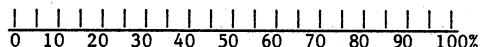
Yes _____
 No _____ (If "No," please skip to the next question)

a. Please list the first store (or chain) to give you credit:

What percentage of your purchases of goods in this store's range of merchandise (for example, consider all discount store purchases if this store is a discount store) were made from the store before you obtained credit? Please indicate by circling the most appropriate level.



What percentage of your purchases of goods in this store's range of merchandise do you make from the store now (or, if not applicable, did you make soon after receiving the credit)?



Results

The percentage of goods purchased at a particular outlet or chain before and after credit acceptances are shown in Table 1. Table 2 reports similar percentages before and after credit rejections. As might be expected, the sample of married students had less experience with credit than had the sample of townspeople: only 30 percent of the married students had at least one credit card compared to 44 percent of the townspeople while 37 percent of the students had successfully obtained retail credit at least once compared to 59 percent of the town sample. In terms of rejections though, the student sample had at least as much experience: 21 percent of the student sample had experienced at least one retail rejection and 12 percent had been rejected by at least one oil company compared to 20 percent and 1 percent, respectively, for the town sample. The lower percentage of (recalled) rejections for the town sample may be due to (1) problems in recalling events that occurred many years ago (the acceptances, on the other hand frequently involve tangible reminders in the form of credit cards) and/or (2) the fact that the initial credit applications were made at later stages in life due to the avoidance of credit by these people initially or to the fact that many forms of credit (bank cards, for example) did not become popular until recently.

As indicated in Table 1, Hypothesis 1 is supported as retail patronage does increase significantly ($p < .05$)

after credit acceptances. For example, the aggregate results for retail acceptance indicate that about one-third of the respondent's purchases in a store's range of merchandise were made in the store or chain issuing credit after the acceptance as opposed to about one-fourth of the purchases prior to the credit application. In terms of oil company patronage, the approximate aggregate increase was from 35 percent to 45 percent. The mean percentage levels before and after a retail acceptance are fairly constant across the order of application, whereas the before and after patronage levels are much higher for the first gasoline credit card. The retail credit acceptances were more likely to be independent in terms of percentage patronage as there was a greater variety of product lines available (for example, discount store vs. department store vs. small speciality shop).

TABLE 1

Patronage Levels Before and After Credit Acceptance

Particular Acceptance	Sample	Sample Size	Mean Percent- age Before Acceptance ^a	Mean Percent- age After Acceptance
RETAIL CREDIT				
First	Student	78	.26	.37 ^c
	Townpeople	55	.27	.32
Second	Student	39	.20	.30 ^c
	Townpeople	31	.20	.31 ^c
Most Recent	Student	19	.16	.26
	Townpeople	14	.28	.35
Aggregate ^b	Student	140	.23	.34 ^c
	Townpeople	101	.25	.33 ^c
GASOLINE CREDIT CARDS				
First	Student	63	.44	.60 ^c
	Townpeople	41	.35	.53 ^c
Second	Student	45	.24	.34 ^c
	Townpeople	19	.18	.31 ^c
Most Recent	Student	21	.21	.31 ^c
	Townpeople	12	.19	.26 ^c
Aggregate ^b	Student	135	.32	.45 ^c
	Townpeople	77	.26	.42 ^c

^aMore completely, "percentage of purchases in this store's range of merchandise which were made at this store" for retail outlets and "percentage of gasoline and service purchases made with this company" for gasoline credit cards.

^bAlso includes the card most frequently used (if not the first, second, or most recent card).

^cIncrease in patronage is significant at the .05 level, using a paired t-test.

Table 2 indicates that a significant decrease in patronage takes place after a credit rejection, thus supporting Hypothesis 2. The reported patronage levels prior to the rejected credit applications are very close to the reported patronage levels prior to the accepted credit applications, as one would expect. The aggregate results indicate a decrease in retail patronage from 23 percent to

Table 2 indicates that a significant decrease in patronage takes place after a credit rejection, thus supporting Hypothesis 2. The reported patronage levels prior to the rejected credit applications are very close to the reported patronage levels prior to the accepted credit applications, as one would expect. The aggregate results indicate a decrease in retail patronage from 23 percent to The preceding analysis assumes that the patronage responses represented interval data. Recognizing that this may well be an overly optimistic assumption, the before and after distributions (obtained by aggregating over the responses to all relevant items; for example, all gasoline credit card acceptances) were compared using the Kolmogorov-Smirnov test. The responses were grouped into the following categories: 0-5 percent, 6-10 percent, 21-40 percent, 41-80 percent and 81-100 percent. The changes in the student samples patronage patterns were not significant after a gasoline credit card acceptance but they were significantly ($p < .001$) changed by a retail or oil company rejection as well as a retail acceptance. The town sample's patterns were significantly different after a gasoline credit card and retail acceptance and after a retail rejection. Consequently, the non-parametric analysis generally supported the findings generated by comparing the mean patronage levels.

TABLE 2

Patronage Levels Before and After Credit Rejection

Particular Acceptance	Sample	Sample Size	Mean Percent- age Before Rejection ^a	Mean Percent- age After Rejection
RETAIL CREDIT				
First	Student	44	.24	.14 ^b
	Townpeople	19	.26	.15
Aggregate ^c	Student	54	.23	.14 ^b
	Townpeople	24	.23	.16
GASOLINE CREDIT				
First	Student	25	.36	.17 ^b
	Townpeople	1	NA	NA
Aggregate ^c	Student	27	.35	.17 ^b
	Townpeople	1	NA	NA

^aMore completely, "percentage of purchases in this store's range of merchandise which were made at this store" for retail outlets and "percentage of gasoline and service purchases made with this company" for gasoline credit cards.

^bDecrease in patronage is significant at the .05 level, using a paired t-test.

^cAlso includes the second and most recent rejections.

Summary and Implications

This study provides empirical support for a relationship between consumer patronage and credit decisions. Individuals rejected for credit indicated a significant decrease in patronage while those accepted for credit indicated a significant increase. These results certainly are not unpredictable. They do support the commonly held belief that credit decisions do affect store loyalty. As pointed out by one of the reviewers, store patronage is affected by a variety of factors, of which the availability of credit is only one. The retailer's credit policy

is somewhat independent of other marketing variables, as it is less directly observable.

To the extent that the results (that respondents' recall of behavior indicated significant patronage shifts) of this study are generalizable, it would seem that credit availability does have a significant effect on patronage. The results indicate that a retail rejection may mean a patronage decrement from 34 percent of the individual's purchases (had he/she been accepted) to 15 percent and that an oil company rejection may mean a patronage decrement from 45 percent to 17 percent. The small sample size and the nature of the sample clearly limit the meaningfulness of these estimates, even though the results from the married student sample were very similar to those of the town sample.

These estimates fall well short of estimating the dollar amount associated with a credit rejection or acceptance, as no attempt was made to collect data on the respondents' level of spending at the different stores. In the study undertaken, this attempt would have had little or no value as the study dealt with the respondents' overall credit history with a variety of retail outlets. The sample size for any one outlet is not sufficient to provide a meaningful estimate.

An alternative approach would be to use panel data to measure shifts in patronage and to measure the dollar amounts spent at the various stores. One problem with the use of panel data, though, is that credit acceptances and especially credit rejections are not common occurrences for most households. Consequently, a large, in-place panel would not be a rich source of data on reactions to credit acceptance or rejections. A panel would need to be designed such that the members are at the stage of the family life cycle in which they are most likely to seek credit.

However, the approach used in this study could be modified by a retail store or chain in a large sample study of its own credit applicants to obtain estimates of the opportunity cost of rejecting a good risk. The amount of spending for that type of outlet would need to be obtained and could be combined with the knowledge of the shifts in patronage (the difference between the proportion that would have been purchased had the application been accepted and the proportion purchased after a rejection) and with the store percentage contribution margin to yield the estimate.

The cross-sectional nature of this study limited the evaluation of the respondents' "credit riskiness." The problem of determining whether rejected applicants are really bad risks needs much more attention in further research and will require a longitudinal study to investigate the credit riskiness of the rejected applicants. The results of this study, showing marked shifts in patronage after the credit decision, provide incentive for further efforts to better measure the relationship between patronage decisions made by consumers and credit decisions made by retailers.

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CONSUMERS' INFORMATION EXPOSURE AND PATRONAGE BEHAVIOR: THREE STUDIES

Donald H. Granbois, Indiana University

Abstract

The exposure phase of consumers' external information seeking is best studied in natural settings, in contrast with the usual laboratory emphasis of much consumer information processing research. The three studies discussed make some empirical and/or conceptual contributions to our further understanding of the exposure process and suggest several fruitful directions for further development and study.

Introduction

It seems quite evident that the dominant emphasis in recent consumer information processing research has centered on the attention → reception → response sequence. Conceptualization and model building have been concentrated on observable, internal processes. Research studies have tended to be experimental, using messages carefully prepared or selected by the researcher and presented in controlled settings. As useful as this approach may be, it is important to remember that in the real world consumers' purchase and consumption behavior is influenced by their processing of actual messages from interpersonal and impersonal sources selected by consumers themselves. In particular, information processing must begin with exposure, a phenomenon largely outside the control of the communicator or the researcher whose objective it is to study the communication process. Whether or not exposure to a persuasive message occurs, the timing and circumstances under which exposure occurs (for example, whether an advertisement is read while casually leafing through the newspaper or actively sought out just prior to a shopping trip), and the number of times exposure occurs are all aspects of the information processing sequence which strongly influence subsequent steps. While some of the characteristics of natural exposure may be more or less simulated in controlled settings, such as the waiting room technique used in some advertising research and elsewhere, for the most part our understanding of actual exposure processes must come from studies of real consumers' actions--observed, recorded or recalled--taken in real settings.

The three papers presented in this session represent attempts to further our understanding of the exposure process. These papers are part of what may turn out to be a modest revival of interest in field studies of consumers' external search processes in which the exposure phase is given some well-deserved emphasis.

Furse, Punj and Stewart have presented a large-scale and carefully designed and executed survey of pre-purchase information seeking by new automobile purchasers. Bellenger and Moschis bring a socialization perspective to the study of the patronage process, an important part of consumers' external information seeking in those frequent instances where information exposure and processing occur at least in part in the store itself. Gentry's study of the effects of credit decisions on store patronage is not as closely related to the information exposure theme, but insofar as credit does influence store visits it can be considered a study of one indirect determinant of exposure to in-store information sources.

Search Strategies in New Automobile Purchases

This relatively ambitious study used what appears to be a very carefully designed self-administered questionnaire. However, at least two methodological questions arise in considering the authors' use of the retrospective survey method.

(1) How completely and accurately can respondents recall their own past behavior? Here questionnaires were received two weeks to four months after purchase (average elapsed time from purchase to receipt of questionnaire was two months), a period short enough to suggest the behavior should be reasonably fresh in respondents' minds. However, the search behavior to be recalled may have occurred some time before purchase; indeed, periods of several weeks of search and deliberation not infrequently precede new car purchases. There is an opportunity for investigation of the retrospective technique here, perhaps involving diaries or repeated surveys on information seeking among consumers actively involved in the search process for a car.

(2) Have respondents had the opportunity to adequately observe or experience all the behavior called for by the questionnaire? This question is relevant whenever more than one household member engages in information search, which is undoubtedly the case in many auto purchases as the present study suggests. The questionnaire anticipates this by asking separate questions about the respondents' behavior and that of others in the household. Validity of responses to the latter set of questions obviously rests upon the ability of the respondent (presumably the principle decision maker in each case) to accurately and fully report the behavior of others. We don't know much about this potential problem, but most people can probably think of occasions when their own behavior could not be accurately reported by another family member. The results of diary studies in which all family members keep track of information seeking during a major purchase decision could be compared with the reporting method used by the present researchers to help estimate reporting error when one respondent is used. Here again, further methodological research could help assess the degree to which the conventional retrospective reporting technique used in this and virtually all other studies of external search is a satisfactory approach.

There are, additionally, two significant substantive aspects of the study design which deserve comment. One of these is the apparent discrepancy between the concept of "search strategies" promised in the title and abstract of the article and the reality of what was measured. "Search strategy" seems to imply a sequence of behaviors, an overall plan or heuristic which could be represented as a branching structure in which each step is contingent upon what is found at the preceding step and with one or more stopping rules present. The study's measures, however, were limited to the extent to which each information source was consulted. While this is not a serious problem in the present study, we are reminded of the lack of attention by researchers generally to the strategic or heuristic elements consumers undoubtedly develop for guiding this search process. Surely this is an important direction for future research.

The second issue is more basic and gets at the underlying theoretical basis of the study. The design seems to rest implicitly on a cost-benefit model of information search

where both the value of new information and its cost guide the process. The basic dependent variable, the "weights" used to indicate the relative importance of information sources, is clearly a measure of information cost. Respondents estimated the number of hours spent with each source, using a six-category scale ranging from "no time" to "over ten hours." However, no direct measures of the perceived value of new information were included. Thus it is not possible to test explicitly the notion that the wide variations in time respondents invested in pre-purchase search (ranging from an average of 6.4 hours by shoppers in Cluster 5 to 66.9 hours by shoppers in Cluster 1) is at least in part explained by differences among shoppers in the perceived value of new information, although the authors bring cost/benefit notions into their concluding discussion. One indirect measure of new information's value, satisfaction with previous car, does vary consistently in the predicted way with total hours spent in search in that the lower the satisfaction with the previous car, the more hours spent in search. The relatively small variation in satisfaction--from a low mean of 4.27 to a high mean of 4.98 on a seven-point scale--seems unlikely to account totally for the wide variations in hours spent, however. A second indirect indicator of the perceived value of new information--number of cars previously owned--shows no relationship with total hours invested in information search. Thus the study provides very little evidence useful in testing the predictions of the cost/benefit model.

An additional element of the cost/benefit approach is the expectation that consumers will vary in their subjective evaluation of the cost of spending time in information search. Everyone has the same stock of time resources to allocate among all activities, yet the number of activities competing for these time allocations is likely to vary considerably from one household to another. Therefore, in very busy households, all other things equal, less time would be expected to be devoted to pre-purchase search. Again, the study design apparently doesn't include measures of time pressure and so doesn't permit testing this expected relationship.

Despite these concerns with method and scope, the study reported by Furse, Punj and Stewart appears to be an excellent contribution. Methodological refinements in future studies of this sort would seem to depend on the results of the kinds of methodological studies briefly suggested earlier. Substantive improvements center on the development of specific hypotheses aimed at explaining the intriguing very large differences in the total hours spent and the variations in the mixes of information sources consulted by consumers in the five clusters. Whether cost/benefit (this observer's choice) or some other theoretical approach is selected for testing, the finding of such large unexplained variation in search processes seems to provide strong encouragement for seeking explanation.

Socialization Approaches to Patronage

Bellenger and Moschis are, understandably, unable to fully achieve in the short paper they have prepared the objective set out in their introduction. What is promised is a socialization model of retail patronage and the integration of published research with the proposed model. However, the task they describe and only incompletely pursue is important and potentially useful. While a work of at least monograph length would be needed to fully report the successful achievement of such model development and research integration, the authors should be encouraged to continue along the lines sketched out in their paper. Here are several suggestions.

(1) Explore much more fully the implications of a true socialization approach to modeling patronage behavior and provide a convincing demonstration of the unique contribution the framework provides. From the discussion in the

authors' paper, one is unable to fully appreciate how the addition of cognitive development processes and the notions of socialization agents, modeling, reinforcement and social interaction can add to our understanding, ability to predict and/or influence patronage behavior.

(2) Further refine and elaborate on the model. In particular, the Behavioral Outcomes categories of General Shopping Patterns, Institutional Shopping Patterns and Store Choice seem interesting and useful. These are the prime dependent variables of interest and deserve much further development. To the extent that General Shopping Patterns encompass search strategies and heuristics, further development of this set of variables would fill a gap in the current information search literature. In fact, a real contribution could be made if interactions between patronage and search processes could be explicitly shown.

(3) Previously-reported research studies on patronage behavior need to be more thoroughly reviewed. A more comprehensive search for such studies is needed, and more careful and complete summaries of the methods and findings of these studies is needed. Statements such as "Tate (1961) reports an inverse relationship between education and loyalty toward grocery stores" and "Similarly, Feldman and Star (1968) found racial differences in shopping behavior of Chicago shoppers" are without much value in conveying the meaning, significance and limitations of the studies quoted. Although the number of studies presented in the authors' paper is necessarily limited, it is surprising to find no evidence that they referred to literature reviews by others. It is more perplexing to find missing any reference to the few studies which have taken a socialization approach to the study of the patronage learning process of children and of "strategic populations" such as new community residents (MacNeal, 1969; Wells, 1966; Kleimenhagen and Stampfl, 1968; Bell, 1970; Atkin, 1962).

(4) Since the approach being suggested is new to most researchers in the patronage field, some rather specific examples of suggested research hypotheses and possible methods and research designs for testing them are needed.

Credit Decisions and Shopping Behavior

Although Gentry doesn't emphasize the point in his discussion, the married students selected as subjects for his study constitute a "strategic population"--consumers experiencing changing circumstances requiring new learning and the development of new learning patterns (Glock and Nicosia, 1963). Being granted or denied credit is surely a significant event contributing to the development of shopping patterns in recently-formed households. Thus, Gentry's study could have been an example of the kind of research the socialization model of Bellenger and Moschis can help structure. Since only a part of Gentry's study is reported in the current paper, it can't be determined whether or not other influences or further measures of developmental changes in purchasing patterns were studied.

Whether or not the study qualifies as the sort of research a socialization approach would encourage, there are some methodological aspects of his study which deserve mention. Besides the usual limitations of the college town sample to which most of us in academic research are limited, the study used a questioning procedure which resulted in responses of somewhat uncertain meaning. The weak conceptualization of the concept of "patronage" in the literature is reflected in Gentry's measure, which is operationalized as the "percentage of your purchases of goods in this store's range of merchandise." Respondents were asked to recall and estimate percentages both before and after the credit decision. Whether respondents had in mind dollars, items purchased or store visits and how accurately they categorize stores by store type remains unknown. The

chances seem good that serious reporting errors, as well as differences in interpretation of the concept across respondents, have affected response. Even though the changes in patronage percentages reported tend to be in the expected direction, it could be argued that it would be remarkable if they had not been, since the patronage change measures probably better reflect attitude change than precise measures of change in actual behavior. This is not to say that the behavior did not change in the expected way; it is to say that Gentry's percentage change measures probably didn't capture these changes with much precision. Since the context in which the paper is presented is managerial, the sorts of refinements in measurement Gentry suggests deserve serious consideration in designing the larger-scale study which should follow Gentry's pilot study. Precise estimates of changes in dollar spending seem to be called for, since the goal seems to be to assess the profit implications of credit decisions.

The study could have considerably more theoretical significance had the nature of the decision process resulting in patronage of one store rather than another been considered. Does credit rejection or the unavailability of credit result in the elimination of a store from one's evoked set through some sort of conjunctive screening process? Or does it tip the balance against a store through a compensatory process? What other store choice criteria interact with credit? Clearly the store evaluation process (if indeed one occurs) should be of at least as much interest to students of consumer behavior as the brand evaluation process.

Somewhat broader implications of the credit decision which deserve study include the possible effects on the allocation of purchasing power across expenditure categories and its effects on the timing of purchases. These effects are, in a broader sense, determinants of patronage behavior too, and a comprehensive study of credit and patronage perhaps should include them.

Conclusions

Although there has been something to criticize in each of these studies, each has made some useful contribution and each represents a fruitful direction for continuing study. Papers presented at ACR conferences are often reports of work in progress or represent parts of larger projects. Audience reactions (and, hopefully, those of discussants) sometimes contribute to improvements in conceptualization and analysis as these projects progress, and audience members and proceedings readers are sometimes stimulated by the papers and others' reactions to them to modify or redirect their own research efforts.

Two concluding comments can be made in response to the three papers. Two of the papers revealed the authors to be less than completely familiar with the relevant literature, especially in the versions of the papers screened by the initial reviewers. Consumer research is a diverse and rapidly-growing field, and both the number of articles and the variety of sources in which they appear seems to increase each year. Professional associations such as ACR and the editors of our journals should be encouraged to find new ways of stimulating comprehensive literature reviews by persons willing and competent to undertake them. Researchers, in turn, should make good use of these reviews.

Secondly, the Gentry paper is typical of many others in proceedings volumes and journals in that its quality and impact could have been greatly improved had the study on which it was based been adequately funded. Consumer research, like much behavioral research, is often done on a shoestring budget by people who are capable of doing much more significant things. There is certainly no easy answer to the problem, but it seems appropriate to recognize

it. Professional associations such as ACR may need to explore ways of developing mechanisms for bringing capable researchers and possible sponsors together. The academic profession may need to adjust incentive, evaluation and reward systems so that researchers in university positions are encouraged to do fewer but better funded studies.

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SEGMENTATION OF COMPLEX MARKETS: IDENTIFICATION OF PERCEPTUAL POINTS OF VIEW

Jonathan Gutman, University of Southern California
Thomas J. Reynolds, University of Texas, Dallas
Scott D. Alden, University of Southern California

Abstract

This study demonstrates the use of sorting tasks in studying complex market structures. More importantly, a method for segmenting respondents into homogeneous subsets based upon their sorting data is shown. Group product spaces for respondents who used two and three categories to sort cereals were created. After segmenting respondents, product spaces were created for each subset of respondents at each level. Differences between the overall spaces and the segmented spaces are discussed.

Introduction

Research investigations to determine the structure of markets where a great many products exist are limited by respondents' knowledge of the vast array of products as well as their ability to cope with extremely lengthy judgment tasks (Rao and Katz, 1971); e.g., rating many products with respect to preference and other relevant dimensions. Prime examples of this type of saturated market include cigarettes and cereals.

Market structure has been conceptualized as a multi-level hierarchical partitioning of items or brands (Rao and Sabavala, 1980). It is hierarchical because more broadly defined partitions at the top of the structure subsume more narrowly defined partitions at the bottom of the hierarchy. In the studies of market structure, various researchers have defined product markets ranging from interbrand competition (Butler and Butler, 1970, 1971) to competition among widely divergent alternatives (Moran, 1973).

Knowledge of market structure can be developed from two perspectives: product based or demand based. Manufacturers, perhaps by tradition, often use obvious product-based physical characteristics to create categories of products within a product class. In the case of cigarettes, a few critical physical dimensions come to mind--length, filter vs. non-filter, amount of toxins, menthol vs. regular--which permit the product category to be broken into relatively few combinations. It is posited that consumers' preferences, indeed even broad switching behavior, can then be positioned with respect to this manufacturer-oriented classification system.

For a market like cereals, though, the problem of a manufacturer developing a physical classification system could become much more involved given the great number of physical characteristics upon which products differ; e.g., types of grains or the possible combination of grains, sugar content, fiber content, hot vs. cold, nutritional value, or artificial vs. natural nutrition. Thus, attaining a total perspective of the cereal marketplace would involve constructing a tremendous number of categories reflecting the possible combinations of physical characteristics which might then be used as the template for studying market structure.

Comparing preferences or behavioral measures to these physical classifications may serve to help the marketer deal more effectively with the conceptual framework

within each of the segments in the marketplace. The most desirable alternative, though, would be to go beyond these physical classifications to develop a perceptual framework corresponding to the way in which consumers tend to organize brands; i.e., permitting the segmentation to include benefits or even higher order value orientations. Essentially what is desired is the identification of key grouping variables with respect to overall common perceptions. The ways in which consumers group and classify products need not be limited to physical characteristics and, indeed, most likely go beyond them. Thus, such an interpretation yields the structured demand-related components of the market from which a segmentation may then be developed. Rao and Sabavala (1980) have provided a partial listing of demand-based methods for market structure analysis; Day, Shocker, and Srivastava (1979) have provided a discussion of several of these approaches (see also, Gutman, 1981).

Perceptual segmentation typically involves a methodology from which distances between products can be derived either directly or by inference. These distances are then the input for multidimensional scaling or cluster programs or a combination of the two. Obviously, the construction of direct distances is forestalled in the case of markets that have a great number of products or brands. In markets that also have a tremendous number of basic classifications, obtaining the relation among possible categories becomes virtually impossible--particularly if benefits are included. Thus, to gain insight into the perceptual nature of a complex market, a data gathering methodology is required that effectively deals with the practical limitation imposed by large stimulus sets as well as one that permits quantitative analysis that leads to direct interpretations.

Purpose

The purpose of this study is to demonstrate the efficacy of single sorting methods for studying product markets. Their ease of use, quickness, and the relation between the demands of the task and the abilities of respondents to structure stimuli make sorting tasks potentially viable methods for studying large data sets.

Other researchers (most notably Rao and Katz, 1971; and Bourgeois, Haines, and Summers, 1980) have used sorting tasks to study large numbers of brands to determine how markets are structured and how different analytical techniques recover those structures. The present study replicates some aspects of the Bourgeois, Haines, and Summers study in that it employs a sorting task. It differs, though, in two respects: (1) it uses a different measure of item similarity (to be discussed in the methodology section); and (2) it develops a measure of person similarity from the sorting task that can be used to segment respondents, thus giving a clearer picture of market structure than would be otherwise obtained.

Due to the complexity of the market, cereals were chosen for experimental study. To investigate the

performance of the task, comparisons of the group spaces before and after segmenting respondents for the similarity of their sorts was made. It was expected that the resulting product space for the subgroups would yield information that could not be derived from the aggregate spaces, thereby leading to a more informative perceptual segmentation of the product category.

Methodology

As part of a larger experiment (Gutman, 1980), respondents were given 18 breakfast cereals to sort (each one on a slip of paper) into as many categories as they felt they needed. They were instructed to place cereals into groups such that cereals in the same groups were similar and thus, different from cereals in other groups. The respondents recorded the code letters of the cereals by group on their questionnaires.

Subjects were students in introductory psychology classes at the University of Southern California. All respondents spoke English as their native language, thereby reducing language as a source of bias and increasing the likelihood of familiarity with all the cereals. They participated in the experiment as part of their course requirements. The sorting task was administered to two hundred respondents in five groups. After omitting respondents who were not familiar with all the cereals, 170 respondents remained.

Results

Number of Categories Used In Sorting Cereals

A summary of the number of categories used in sorting the cereals is shown in Table 1. As can be seen in the table, most respondents used between two and six categories. Since the primary purpose of this study is to demonstrate the feasibility and ultimate value of segmenting respondents based upon their sorts, only the two- and three-group respondent's data will be subjected to analysis.

TABLE 1
Number of Categories Used in Sorting Cereals

Number of Categories Used*	Percentage of Respondents (n=170)
2	11.8%
3	17.1
4	18.2
5	19.4
6	21.2
7	4.7
8	5.9
9	1.2
10	0.6
MEAN	4.68
MEDIAN	4.65

*Subjects were instructed to use a minimum of two categories and a maximum of 18.

Intercereal Distances

Table 2 shows the data for the twenty respondents who used two groups to sort the cereals. The 1's and 2's are merely nominal labels given to the groups and imply no ordering. Following Rosenberg and Kim (1975), a cereal-by-cereal matrix of product distances was formed by calculating a disagreement score (s_{ij}) for each pair of cereals by counting the number of respondents in a group who put the two cereals (i and j) into two different categories. A distance measure, (σ_{ij}), was defined as follows:

$$\sigma_{ij} = \sum_{k=1}^K (S_{ik} - S_{jk})^2, \text{ where } K \text{ is the number of cereals.}$$

"The σ_{ij} -measure is essentially the s-measure squared plus a measure of the degree to which two terms do not co-occur indirectly. An indirect co-occurrence for two terms i and j refers to an instance in which i and k co-occur in one respondent's sorting, j and k occur in

TABLE 2
Cereal Sorting Data for Respondents Using Two Categories

RESP#	CF	RK	SFF	SK	P19	100%	GN	WC	W	CH	CNC	SC	T	RB	SW	O	COW	GR
1	1	1	2	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1
2	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
3	1	1	2	1	1	1	1	1	1	1	2	2	1	2	1	1	1	1
4	1	1	2	1	1	1	1	1	1	1	2	2	1	2	1	1	1	1
5	1	1	2	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1
6	1	1	1	2	2	2	2	2	1	1	1	2	1	2	2	2	2	2
7	1	1	1	1	2	2	2	2	1	1	1	1	2	2	2	2	2	2
8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2
9	1	1	1	2	2	2	2	2	2	1	1	2	1	2	2	2	2	2
10	1	2	2	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1
11	2	2	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
12	1	1	1	2	2	2	2	2	1	1	1	1	2	2	2	2	2	2
13	1	1	1	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2
14	1	1	2	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1
15	1	1	2	1	1	2	1	1	1	1	2	2	1	2	1	1	1	2
16	1	2	2	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1
17	1	1	1	2	2	2	2	2	1	1	1	1	2	1	2	1	2	2
18	1	1	1	2	2	2	2	2	2	1	1	1	2	1	2	2	2	2
19	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	1
20	2	2	2	1	1	1	2	2	2	1	1	2	1	2	2	2	2	2

CF	Corn Flakes	GN	Grapenuts	T	Total
RK	Rice Krispies	WC	Wheat Chex	RB	Raisin Bran
SFF	Sugar Frosted Flakes	W	Wheaties	SW	Shredded Wheat
SK	Special K	CH	Cheerios	O	Oatmeal
P19	Product 19	CNC	Cap'n Crunch	COW	Cream of Wheat
100%	100% Natural	SC	Sugar Crisp	GR	Granola

another respondent's sorting, but i and j do not co-occur in either sorting" (Rosenberg and Kim, p. 492).

Rosenberg, Nelson, and Vivekanathan (1968) use an analogy to explain an indirect co-occurrence. "Consider a social distance measure between two persons which is inversely related to how often they interact directly with each other and how often they interact with the same other individuals, whether or not they do so on the same occasions" (p. 285). Therefore, two people are more similar to each other if they have the same friends than if they don't. And, two products are more similar to each other if they are judged to be similar to the same products than if they are not.

This calculation of indirect co-occurrences has the potential to create a continuum of scores with many more separate data points than the number of respondents. The distance measure suggested by Rosenberg, Nelson, and Vivekanathan seems to have much potential in deriving distance measures from free-sorting data. As yet, it has not had much use in marketing research studies.

Market Structure For Cereals

The cereal distance data so derived were submitted to a multidimensional scaling program (Young, 1972) and to a hierarchical clustering program (UCLA Health Sciences Computing Facility, 1977). The resulting two-dimensional maps with cereal clusters overlaid upon them are shown for the two- and three-category respondents in Figures 1 and 2 (the low Kruskal stress values of .03 and .05 suggest that two dimensions are adequate to represent the task). In looking at the two figures, it can readily be seen that the two-category map yielded a "kids" cereal cluster in the upper right and what appears to be a "health" cereal cluster in the lower left, with the remainder of the cereals in between. The three-category respondent map seems to break the "health" cereals as shown in the two-category map into another segment termed "natural."

Since each map has one more group in it than respondents used in their sorts, it is obvious that different types of sorts are being combined in the aggregate distance measure. Therefore, it appears advisable to segment the respondents into homogeneous groups to reflect the true nature of their sorts.

Segmentation of Respondents

To segment the respondents, one must translate the concept of categorical membership derived from sorting to operational terms. Stated most simply, a category is formed whenever two objects are grouped together (Mervis and Rosch, 1981). This concept can be directly converted into a distance measure by counting the number of times any two respondents put the same two cereals in the same category. If all 153 pairs (18 x 17/2) of the 18 cereals were arrayed in a vector, each respondent could receive a "1" for each pair of cereals that they placed in the same category and a "0" if they were not categorized together. Two respondents' vectors of scores on these pairs could be cross-multiplied to yield a measure of "strong matches" (1,1's). These could then be summed to yield a similarity index across respondents.

However, a respondent with a large number of cereals in one group and a small number in the other(s) would be similar to most other respondents. Therefore, it becomes necessary to divide this sum by the number of 1's in each person's vector and to take the smallest fraction as the index of interperson similarity.

For example, Persons 1 and 2 in Table 2 have 63 1,1's--instances where they have put two cereals in the same categories. However, Person 1 has more potential for matches with any random sort as he has put 15 cereals in one category and 3 in the other category (15 x 14/2 + 3 x 2/2 = 111). The calculation for Person 2 is (13 x 12/2 + 5 x 4/2 = 88). Since 63/111 = .567 and 63/88 = .716, the number used to represent the similarity of Person 1 and 2's sorts should be .567 as shown for cell 2,1 in Table 3. (Table 3 contains the lowest of each set of respondent's fractional indexes).

Market Structure by Respondent Segment

The interpersonal similarity data were submitted to the hierarchical clustering program. The score of 100 for respondents 1 and 14, 3 and 4, and 9 and 18 indicates those respondents had identical sorts.

Nine respondents (1, 14, 11, 5, 3, 4, 10, 16, and 13) and six respondents (6, 17, 9, 18, 7, and 12) were

FIGURE 1
Two-Dimensional Cereal Space For Respondents Using Two
Sorting Categories (With Cluster Analysis Grouping Overlaid)

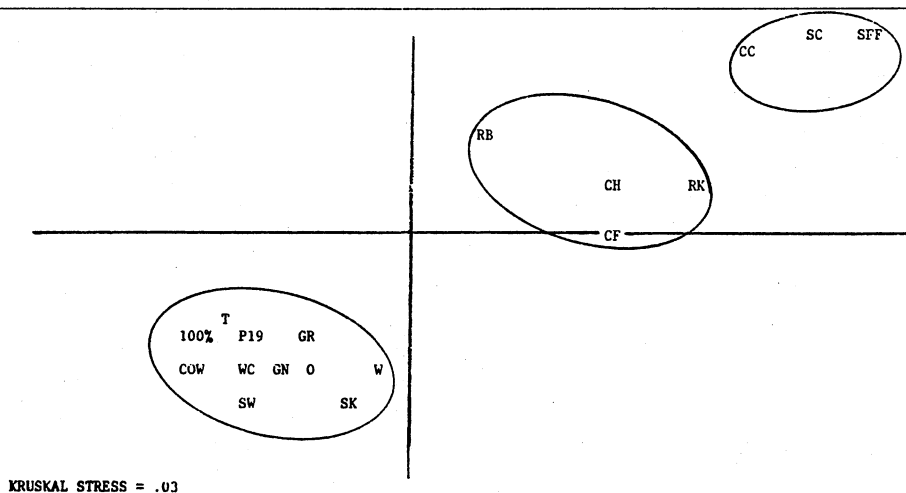
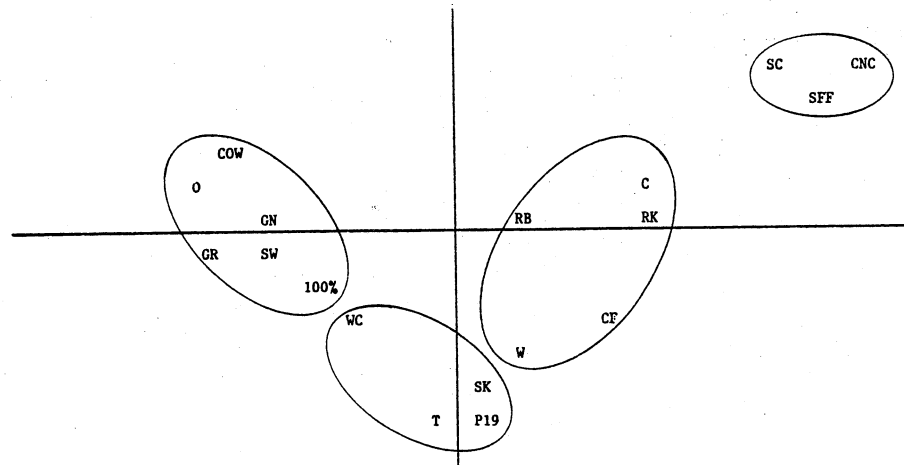


FIGURE 2
Two-Dimensional Cereal Space For Respondents Using
Three Sorting Categories (With Cluster Analysis Overlaid)



KRUSKAL STRESS = .05

TABLE 3
Interpersonal Distances For Respondents Using Two Sorting Categories

RESP.#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1																				
2	57*																			
3	87	56																		
4	87	56	100																	
5	87	56	84	84																
6	54	48	59	59	51															
7	54	55	51	51	51	78														
8	68	55	60	60	60	47	47													
9	59	52	66	66	56	87	68	48												
10	76	59	72	72	72	66	66	55	75											
11	88	60	77	77	77	50	50	77	55	68										
12	59	52	56	56	56	87	87	48	79	75	55									
13	76	68	72	72	73	66	66	55	75	82	68	75								
14	100	57	87	87	87	54	54	68	59	76	88	59	76							
15	67	50	75	75	63	51	46	50	57	59	60	49	59	67						
16	74	62	71	71	71	59	59	60	66	87	77	66	72	74	55					
17	50	46	54	54	47	88	68	46	76	59	48	76	59	50	47	54				
18	59	52	66	66	56	87	68	48	100	75	55	79	75	59	57	66	76			
19	44	49	45	45	49	47	42	43	50	43	45	43	49	44	46	45	44	50		
20	52	52	51	51	55	46	46	50	47	52	50	47	50	52	51	51	47	47	49	

* All numbers have been rounded to two places and multiplied by 100 to clear the decimal.

defined as the two major respondent segments. Respondents 15, 8, 2, 19, and 20 were omitted from either segment. The same process for generating interstimuli distances as was used with the aggregate data was used for each segment. The resulting cereal maps are shown in Figure 3 for the two-category respondents and in Figure 4 for the three-category respondent segments.

As can be seen, the basic difference between the two maps for the two-category respondents is in the latitude of the "kids" cereal group. The map shown in Part

A of Figure 3 shows a narrowly defined group with only the "clearly" defined children's cereals as members (Cap'n Crunch, Sugar Frosted Flakes, and Sugar Crisp). The map on the right (Part B) adds Corn Flakes, Rice Krispies, Cheerios, and to a much lesser extent, Raisin Bran and Wheaties to this set.

For the three-category respondents, the "kids" cereal group is virtually identical to those for each of the segments for the two-category respondents, however, the adult group is divided differently. For the subgroup

FIGURE 3
Two-Dimensional Cereal Space For Segments Of
Respondents Using Two Sorting Categories

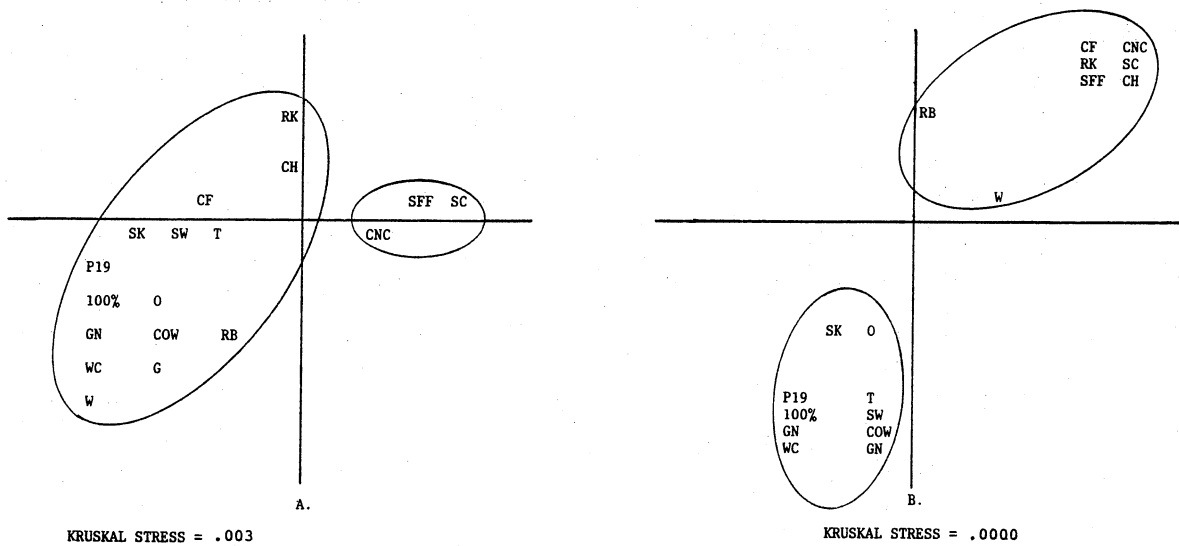
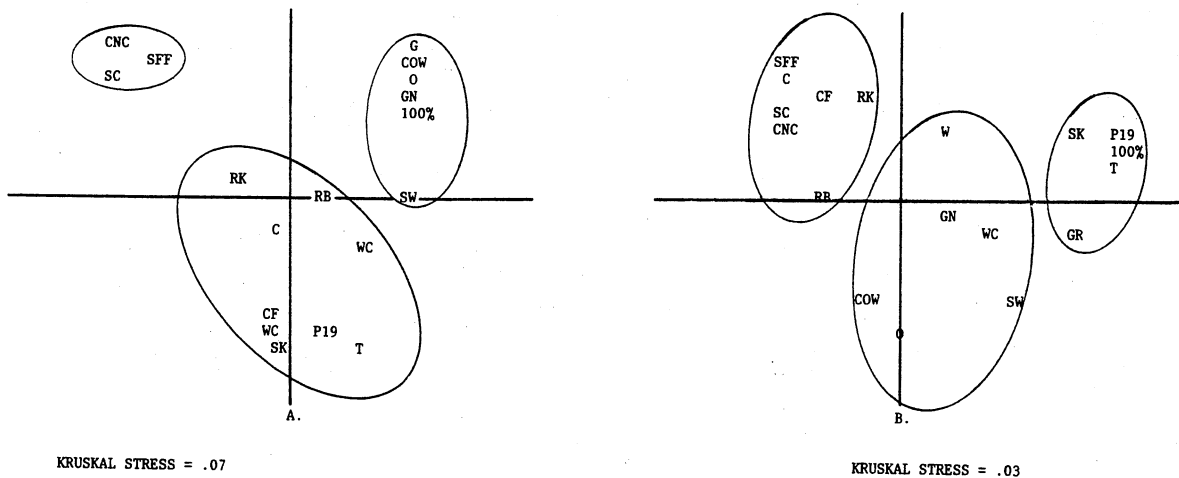


FIGURE 4
Two-Dimensional Cereal Space For Segments
Of Respondents Using Three Sorting Categories



with the narrowly defined "kids" cereal category (n=9), the adult group is divided into "regular adult" vs. "natural" cereals (see Part A of Figure 4). For the subset with the broadly defined "kids" cereals (n=7), the adult cereals are divided into "natural" and "health" categories (see Part B of Figure 4).

Conclusion

This study has demonstrated the usefulness of sorting tasks and how data gathered using this methodology can be converted to distance data. While this in itself may not be new, it is hoped that the possibilities for the segmentation of complex markets will increase the use of these techniques.

Creating homogeneous subsets of respondents clearly demonstrates the difference in the ways in which consumers structure the large number of entries that comprise many product classes. Furthermore, the sorting task shown allows respondents to determine the number of categories they feel are needed to encompass the relevant differences in the market. Additionally, the relations between consumers using different number of categories can be ascertained.

In this study, the key distinction was the size of the "kids" cereal category. Respondents made varying distinctions among the remaining cereals with those respondents using more categories dividing the "adult" cereals into finer groupings.

To marketers, critical distinctions relate to usage rate or circumstances related to consumption. The nature of consumers categorical systems reveals to marketers the basis upon which they make judgments about items in the product class. If consumers have a highly inclusive definition of "kids" cereals, and this is a "don't use" category, this information is critical to marketers. Similarly, if the "adult" cereal category has many sub-categories based on many narrow distinctions, a much tighter product-positioning is called for than if the adult category was divided into few subcategories.

Lastly, the hierarchical nature of market structure suggests that demand-based systems using consumer-supplied categories can tell marketers how narrow distinctions at the bottom of the hierarchy are related to broad distinctions at the top of the hierarchy. These connections can tell marketers more than either element alone does.

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DIMENSIONAL VALIDITY, CONSISTENCY OF PREFERENCE AND PRODUCT FAMILIARITY:
AN EXPLORATORY INVESTIGATION OF WINE TASTING

J. Wesley Hutchinson, University of Florida
Brady Farrand, IBM

Abstract

This exploratory study tests the psychological validity of the dimensions uncovered by INDSCAL analysis of judgments about the similarity of the tastes and smells of ten white wines. Products, like wines, that can be blended into mixtures afford the opportunity for an "intrinsic" test of dimensional validity. Specifically, the coordinates of a binary mixture should, for each valid dimension, fall between the coordinates of its components. The results of this study demonstrate the logic and the utility of this approach. In addition, the results suggest that, even for experienced wine tasters, consistency of preference is attained at the expense of richness of psychological structure.

Which aspects of wines are salient to people? How do these aspects combine to form an overall impression of a wine relative to other wines? These are important questions in the sensory evaluation of wines, in marketing research, and in the psychology and neurophysiology of taste and smell in general. Most approaches to these problems assume the validity of certain traits and dimensions (e.g., sweetness, acidity, etc.) and investigate human sensitivities to them or human abilities to rate them accurately. The techniques of similarity scaling avoid such assumptions and are one way to "uncover" traits and dimensions in a relatively unbiased manner. This study is designed to determine the feasibility of such techniques in the domain of wine perception. These initial efforts have been quite encouraging.

The main purpose of similarity scaling is to "fit" well-specified mathematical models to psychological data. Typically, measures of pair-wise similarity (e.g., confusions or direct ratings of similarity) are modeled as distances in a multidimensional space, or, alternatively, in a hierarchical tree. The dimensions of the spaces and the structures of the trees are determined directly by the data. Neither the method of data collection, nor the methods of analysis, impose any prior constraints on the resulting structures (other than that they be spaces or trees). That is, these methods "uncover" the traits and dimensions which best characterize the data (in a statistical sense). The trouble with these methods is that they will fit everything in the data, including random error. However, wines permit the construction of stimuli which have built-in checks for "real" vs. "random" structure--under certain circumstances.

It is fairly reasonable to assume that wines may be characterized by some set of physical variables, even though most of them are still unknown (Lichine, 1981). If it is assumed that psychological dimensions are simple monotonic functions¹ of these physical variables, then a mixture of two wines should have values on each dimension that are between the values of its constituent wines. Note that this betweenness condition applies intra-dimensionally and does not imply that a mixture will have coordinates that fall on the line segments connecting the constituents in the multidimensional psychological space. INDSCAL analysis

¹In particular, the simple monotonic function should result in an n-component conjoint additive structure in which each component corresponds to a physical variable (see Krantz, Luce, Suppes and Tversky, 1971).

of proximity data, in principle, yields rotationally unique dimensions (see below). Thus, the betweenness condition for mixtures provides a qualitative test of the validity of those dimensions given the assumptions.

In this study, the application of similarity scaling techniques to wine perception, in addition to its obvious significance for marketing (cf. Green and Carmone, 1972), has also shown great promise for addressing important general issues in the theory of psychological similarity. The simple device of using wines and mixtures of wines as stimuli in the same experiment proved to be a powerful tool for testing the psychological validity of dimensions uncovered by the INDSCAL procedure. Unexpectedly, the results also suggested some interesting interactions between product familiarity and consistency of preference.

Method

Stimuli

Five white wines and five binary (50%-50%) mixtures of these original wines were used as stimuli. They were served from liter carafes which were randomly assigned numbers for the first evening and letters for the second evening. The wines were served in glassware which was similarly numbered on the first evening and lettered on the second evening. Each subject had 10 glasses containing approximately one ounce each of the 10 wines. Glasses were refilled as necessary, although this was infrequent. Paul Masson Vineyards donated all wines. They were: Chablis, Chardonnay, Chenin Blanc, Johannisberg Riesling and Rhine Castle. The mixtures were: Chablis/Chardonnay, Chardonnay/Johannisberg Riesling, Johannisberg Riesling/Chenin Blanc, Chenin Blanc/Rhine Castle, and Rhine Castle/Chablis.

Subjects

Subjects were 12 unpaid volunteers from the Stanford community, varying in wine tasting experience from complete novices to serious hobbyists. The small sample size was a result of the exploratory nature of the study and the time consuming nature of the task.

Procedure

At the beginning of the first evening, all subjects were given a brief questionnaire which was designed to determine approximately their level of experience with wine evaluation (i.e., product familiarity). When all questionnaires had been completed, score sheets and rating scale instructions were handed out and explained. The score sheets listed all 45 unordered pairs of the numbers (letters on the second evening) which corresponded to all unordered pairs of the ten wines. Next to each pair were three columns. The first was for rating the similarity of smell, the second was for rating the similarity of taste, and the third was for rating the degree to which they preferred one of the two wines (which they were to circle) over the other. The order of presentation of wine pairs was randomized individually for each subject.

Subjects were instructed to first smell each of the ten wines, and then to taste each of the ten wines. Expec-

toration after each sip was encouraged, but not required, and an empty cup was provided for that purpose. Water and bread were also provided for cleansing the palate. After this initial acquaintance with the wines, subjects were instructed to begin the pair-wise similarity ratings according to the ordering on their score sheets. They were to complete only the first 23 pairs. When the pair-wise comparisons were completed, subjects were instructed to list the numbers of the wines in the order of their overall preference.

At the beginning of the second evening the instructions were repeated in a brief version. Subjects smelled and tasted each wine and then began the last 22 pair-wise comparisons on their score sheets. These sheets contained pairs of letters, rather than numbers, and the correspondence to the previous evening's wines was unknown to the subjects. Upon completion of the similarity and preference judgments, subjects listed the letters of the wines according to their overall preferences.

Results

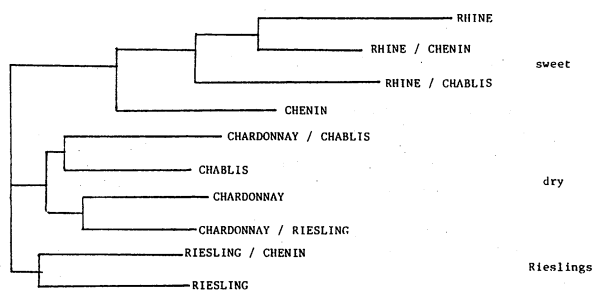
Subjects were ranked according to the level of experience evident in their questionnaires and according to the level of consistency evidenced by the correlation of their final preference order on the first evening with that on the second evening (i.e., test-retest reliability). It turned out that median splits of these two rankings of subjects allowed for division of the subjects into four groups of three:

- 1) HH -- High consistency, high experience
- 2) HL -- High consistency, low experience
- 3) LH -- Low consistency, high experience
- 4) LL -- Low consistency, low experience

Similarity of taste data

ADDTREE analysis. ADDTREE (Sattath and Tversky, 1977) is a computer program which fits an additive (hierarchical) tree to proximity data. Small distances between items in the tree correspond to high degrees of similarity between the items. Conversely, large distances correspond to low similarity (or high dissimilarity). In the figures presented here, distances are represented in the horizontal branches only. The vertical branches reflect the structure of the tree--which items are groups with each other. As the tree proceeds from left to right, increasingly smaller subgroups are defined until the terminal nodes, representing single items, are reached. The ADDTREE analysis of the mean data from all 12 subjects is presented in Figure 1.

FIGURE 1
ADDTREE solution for similarity of taste data ($r=.954$)



The correlation between the similarity and distances in

the tree is .954.

The tree divides the wines into three basic groups: (1) the sweet wines, (2) the dry, or perhaps "sharp", wines, and (3) the Rieslings. The sweet group forms a "comb" which is indicative of a tree solution to data which has a strong unidimensional component--in this case, sweetness. Proceeding down the "comb" are Rhine, Rhine/Chenin, Rhine/Chablis, and Chenin Blanc. This is exactly the order of percent residual sugar in the wines.

It is beyond the scope of this report to extensively discuss the ADDTREE solution for the four subgroups; however, it should be pointed out that the mixtures are generally grouped with at least one of their components for all except the LL group.

INDSCAL analysis. INDSCAL (Carroll and Wish, 1974) is a computer program which fits similarity data to distances in a multidimensional Euclidean space. Items are assumed to be points in a space. Similarity data from several groups are fit to the same coordinates; however, each group is assumed to weight the dimensions differently. That is, if one dimension is particularly important to a given group then the data should require that a large weight be given to that dimension for that group. One can think of this as a common group stimulus space whose dimensions are expanded and contracted in order to best describe each individual group. This model allows for a rotationally unique determination of dimensions. (Generally, Euclidean distances are invariant under rotation of the axes.)

Since the ADDTREE solution for the LL group revealed a lack of structure, only the HH, HL, and LH groups were submitted for INDSCAL analysis. A 6-dimensional solution was obtained; however, only two dimensions satisfied the betweenness conditions described above, so a new, 3-dimensional, solution was obtained. (The purpose of the third dimension was to "absorb" random error.)

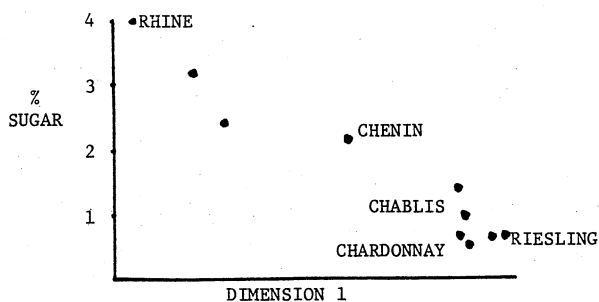
TABLE 1
INDSCAL dimensional weights for taste data

Dimension	Weights			LAV
	HH	HL	LH	
1	.878	.830	.747	.691
2	.206	.230	.451	.102
3	.130	.257	-.144	.036
LAV	.848	.828	.813	
r	.921	.910	.902	

LAV = linearly accounted variance

The first dimension was obviously sweetness. The plot of these coordinates vs. percent sugar is given in Figure 2

FIGURE 2
Plot of dimension 1 vs. % sugar



($r = -.964$). This dimension accounted for most of the variance and was given the highest weight for all subgroups. However, the high consistency groups received higher weights for this dimension than the low consistency group. This suggests that consistency was achieved by attending to the "easy" dimension.

The second dimension, although satisfying the betweenness condition quite well, did not correspond to any readily available physical parameters (i.e., either acidity or alcohol content). Since the betweenness condition is a rather strong test of dimensionality, some confidence in the psychological validity of the second dimension is in order. This dimension contrasts the Chablis and Chardonnay on the one hand with the Chenin Blanc on the other. Perhaps the term "sharpness" captures this distinction. The INDSICAL solution had correlations of .92, .90, and .91 for the HH, LH, and HL data, respectively. Figure 3 depicts the INDSICAL solution for HH weights.

FIGURE 3
INDSCAL solution for taste data (HH)

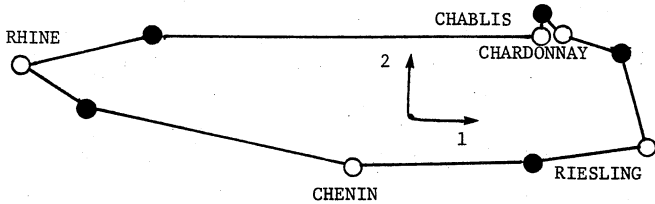
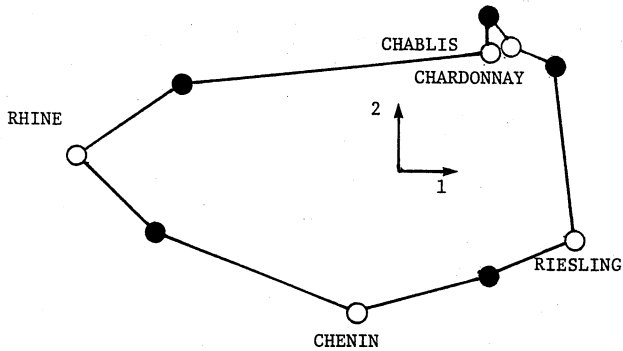


Figure 4 depicts the INDSICAL solution for LH weights.

FIGURE 4
INDSCAL solution for taste data (LH)



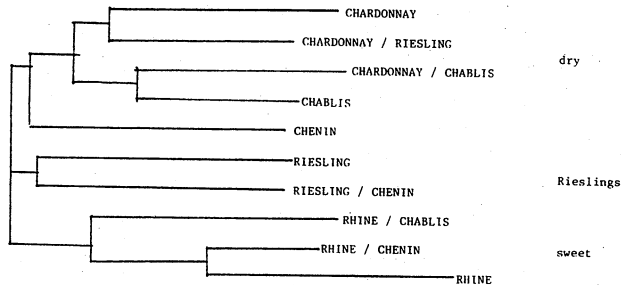
Notice how the "sweetness" dimension is contracted and the "sharpness" dimension is expanded relative to the HH solution. HL weights were similar to HH weights, differing slightly in the direction of the LH. One plausible interpretation of these results is that members of the LH group were experienced enough to differentiate a second dimension; however, attending to two dimensions made the preference judgments more variable from night to night. Evidently, both high consistency groups were attending mainly to the "sweetness" dimension. The conditions under which there will be such a trade-off between the richness of perceptual representation and the consistency of preferences, and the psychological processes that mediate the trade-off

are interesting problems for future research. Also, it remains to develop a unitary theory of product familiarity that accounts for other reported effects (e.g., Johnson and Russo, 1981) as well as those reported here.

Similarity of smell data

The results of the smell data were very similar to those for the taste data in terms of the conclusions that they suggested. The ADDTREE solution is shown in Figure 5. Note the structure is the same as for the taste data, except that Chenin Blanc is now grouped with the dry wines.

FIGURE 5
ADDTREE solution for similarity of smell data ($r = .860$)



Again, group by group ADDTREE analysis revealed a lack of consistent structure for the LL group, so data from that group was omitted from INDSICAL analysis. Table 2 lists dimensional weights for the HH, HL and LH groups.

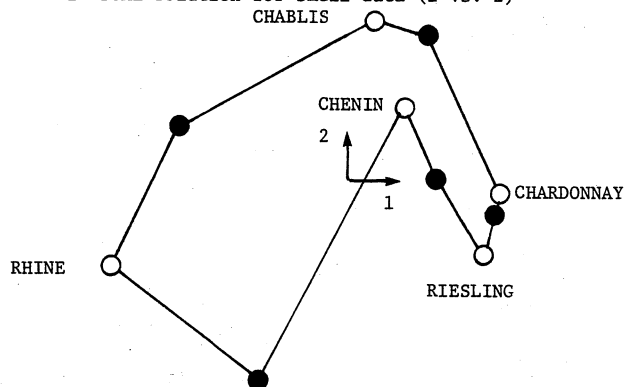
TABLE 2
INDSCAL dimensional weights for smell data

Dimension	Weights			LAV
	HH	HL	LH	
1	.720	.595	.420	.369
2	.442	.096	.582	.191
3	.213	.433	.351	.125
LAV	.806	.569	.682	
r	.898	.754	.826	

LAV = linearly accounted variables

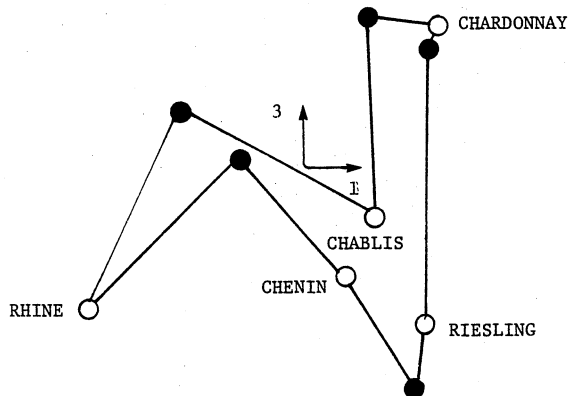
The unweighted group stimulus space is presented in Figures 6 and 7.

FIGURE 6
INDSCAL solution for smell data (1 vs. 2)



Again, Dimension 1 satisfies the betweenness condition, is essentially "sweetness", and was most heavily weighted by the HH and HL groups. Dimension 2 was most heavily weighted by the LH group and is similar to the "sharpness" taste dimension; however, Chenin Blanc has switched poles and there is one (rather large) violation of the betweenness condition.

FIGURE 7
INDSCAL solution for smell data (1 vs. 3)



Dimension 3 was most heavily weighted by the HL group, and, although it accounts for over 12% of the total variance, it fails the betweenness condition. Dimension 3 might best be considered a pseudo-dimension. The smell data, therefore, generally support the conclusions drawn from the taste data.

Summary and Conclusions

Overall, these results provide good evidence that the betweenness condition afforded by mixable products is a useful test of the psychological validity of dimensional representations. For these particular wines, sweetness was the dominant attribute, although experienced subjects were clearly sensitive to a few others. This could be partially due to the fact that these wines did not differ greatly on physical dimensions other than sweetness. INDSCAL analysis revealed an interesting interaction between product familiarity and consistency of preference. Specifically, it seems that sophisticated wine tasters become inconsistent in their preferences when, through applying their knowledge, they base their preferences on a two-dimensional rather than a unidimensional attribute structure.

Mainly, and in keeping with the exploratory nature of the experiment, these results suggest that further research in these areas will be rewarding.

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IMPACT OF INFORMATION ON PREFERENCE AND PERCEPTION

Jim McCullough, University of Arizona
Doug MacLachlan, University of Washington
Reza Moïnpour, University of Washington

Abstract

Information about stimuli is provided to subjects in an attempt to alter perception and preference. Perceptual and hedonic structures appear to be resistant to change-inducing information even when perceptions of individual brands are altered. The results support previous findings of stability in perceptual structure and suggest that emphasis on attributes known to be salient to consumers may be a more effective promotional approach than attempting to alter the importance consumers attach to different product characteristics.

Introduction

Promotional activity in marketing is undertaken to influence consumer behavior in the marketplace. A common objective of these actions is change of consumer preference for particular products through alteration of consumer perception and preference structures. This objective can be accomplished through provision of information about specific products or through discussion of the important characteristics of the specific product class. In order to determine which of these approaches allows the consumer to use information provided in promotional campaigns most effectively, it is necessary to understand how preferences are related to perceptions and how information is used to effect change in preference and perception.

Previous studies have suggested that information can be used by consumers to produce change in a variety of ways (MacLachlan *et al.*, 1977); in addition they have indicated the potential of longitudinal analysis of preference and perception for measuring the effects of marketing activity (Moïnpour *et al.*, 1976, McCullough *et al.*, 1979, 1981). This study continues the investigation of the effect of persuasive communication on perception and preference using longitudinal analysis. In this context, it also examines the effect of variation in information format on perception and preference.

Changes in Perception and Preference

Persuasive communication as it is most commonly used in marketing is directed at changing attitudes about specific brands in a product class, usually with the objective of generating a more favorable attitude toward a particular product. The changes that might be induced through this type of communication can be characterized as either spatial, those changes influencing specific brands and their interrelationships within a consistent perceptual or hedonic framework, or structural, those changes resulting from a change in the underlying framework. The mixed results reported by Moïnpour, *et al.* (1976) and MacLachlan *et al.* (1977) indicated that spatial change might be easier to effect than structural change but this has not been conclusively demonstrated.

Spatial changes occur when the perception of one product changes relative to another product within a perceptual space. When perceptual position changes relative to an ideal point, a change in preference occurs. Spatial change is usually effected by providing information about individual stimuli, or brands, in terms of product charac-

teristics previously identified. This type of change is typically measured by attribute scores in the basic multi-attribute attitude model. Multidimensional scaling techniques can also provide means of measuring changes relative to the positions of the stimuli within a perceptual space when the underlying dimensions of the space remain unaltered.

Structural change is conceptually more complex. A change in the perceptual structure occurs when the subject either changes the dimensions of the perceptual space (i.e., uses different attributes to discriminate between stimuli), or changes the importance assigned to the underlying dimensions. This type of change is recorded in multiattribute attitude models when the subject selects new attributes or alters the weights assigned to previously used attributes. Individual differences scaling (INDSCAL) can also be used to identify the change in dimension weights of a perceptual space when the individuals share the same perceptual framework.

Preference and perception are closely linked in these situations. That is, the dimensions used to discriminate between products generally are the same ones used to determine preference. In most studies of perception and preference, importance of perceptual dimension is termed salience while the corresponding hedonic importance (weight) is termed utility.

Experimental Method

Five groups of approximately 20 subjects (students at a southwestern university) participated in two data collection sessions one week apart during which they were told that they were testing the usefulness of new marketing research techniques. At each session, subjects were asked to rate all possible pairs of 10 toothpaste brands on nine-point dissimilarity scales and to rank the brands in order of preference.

Four groups served as experimental groups and one group was held as a control. During the second testing session the four experimental groups were given information concerning the brands prior to completing the dissimilarity and preference judgments. To insure that the messages provided had been observed, each subject was asked to record the most favorably rated brand based on the information received.

Previous work had shown the objective characteristics of abrasiveness and fluoride content to be closely related to the perceived attributes of whitening and decay prevention--the two underlying dimensions of the perceptual space for toothpaste. As a consequence, two groups received information concerning abrasiveness (see Table 1) and the other two groups received information concerning fluoride content (see Table 2). Within each of these pairs of groups one group received only objective, unprocessed information, while the other additionally received text material highlighting the dimension and the position of Gleem II. The latter message was not based in fact and was presented to have maximum impact on Gleem II. Thus, in a two by two design, groups of subjects in two experimental conditions received objective information concerning abrasiveness and fluoride content; subgroups in each condition were then presented either objective (general) or highlighted

(emphasizing importance of the dimension and the high rating of Gleem II) text messages.

It was expected that subjects receiving the objective messages (abrasiveness or fluoride content) would change the structure of the perceptual hedonic spaces by shifting the salience or utility for related dimensions and that the highlighted message would result in a spatial change in the position of Gleem II.¹

TABLE 1
Abrasiveness Message Information
Basic Information*

Brand	Abrasiveness/Whitening Index**
Pepsodent	26
Colgate	51
Ultra Brite	64
Aqua Fresh	67
MacLeans	70
Close Up	87
Ipana	90
Aim	93
Crest	95
Gleem II	106

* Source: Journal of the American Dental Association, (November 1978)

**Higher index values indicate higher levels of abrasiveness/whitening.

Objective Text

The Council on Dental Therapeutics of the American Dental Association has released the following results of a study of the abrasiveness/whitening of the leading brands of toothpaste.

Highlighted Text

Recent American Dental Association studies have revealed that slightly abrasive toothpastes do not cause serious damage to teeth but greatly increase whitening power. The table below reports the results of a study by the Council on Dental Therapeutics of the Abrasiveness/Whitening of the leading brands of toothpaste.

Gleem II has the highest whitening power and whitens teeth better than any other toothpaste currently on the market.

TABLE 2
Fluoride Content Message Information
Basic Information*

Brand	mg. of Fluoride/gm**
Ultra Brite	3
MacLeans	7
Close Up	8
Pepsodent	13
Ipana	17
Aqua Fresh	18
Colgate	23
Aim	31
Crest	37
Gleem	42

* Source: Journal of the American Dental Association, (November 1978)

** as sodium fluoride

¹Although previous studies have shown abrasiveness/whitening and fluoride content/decay prevention to be salient, it has also been indicated that the factual information is not readily available or at least not

Objective Text

The Council on Dental Therapeutics of the American Dental Association has released the following results of a study of the fluoride contents of the leading brands of toothpaste.

Highlighted Text

Recent American Dental Association studies have revealed that the amount of fluoride in a toothpaste influences the brand's effectiveness in preventing tooth decay. The Table below reports the results of a study by the Council on Dental Therapeutics of the fluoride contents of the leading brands of toothpaste.

Gleem II has the highest level of fluoride and is more effective in preventing tooth decay than any other toothpaste currently on the market.

Analysis

Pairwise dissimilarities were analyzed using the INDSICAL algorithm which produces group stimulus space coordinates and individual dimension saliences. The group stimulus space coordinates and preference rankings for each individual were analyzed using the LINMAP mixed mode option to produce individual dimensional weights or utilities.

The INDSICAL Model

The INDSICAL model assumes all subjects utilize the same attributes to discriminate between products but allows individual subjects to modify that space by applying different dimensional saliences. The group space coordinates Y_{jt} for brand j and dimension t are transformed into individual coordinates Y_{ijt} for individual i by the application of subject's dimension weights (saliences) W_{it} . The algorithm developed by Carroll and Chang (1970) simultaneously derives X_{jt} , and W_{it} values from matrices of brand dissimilarities for all individuals using the model:

$$Y_{ijt} = W_{it}^{1/2} X_{jt} \quad (1)$$

The LINMAP Model

The LINMAP model is one of many "utility" generating algorithms. It has the advantage of modeling decreasing marginal utility and ideal points for some attributes and constant marginal utility (vector model) for other attributes. It posits the following functional form for utility of brand k at time t :

$$U_{kt}(X_t) = \sum_{j \in j_1} v_j (X_{jk} - I_j)^2 + \sum_{j \in j_2} v_j X_{jk} \quad (2)$$

where j_1 is the set of all attributes having finite points and j_2 is the set of all attributes with infinite ideal points; v_j is the attribute "importance" (i.e., the value of the attribute in determining preference); X_{jk} is the value of brand k on dimension j ; and I_j is the subject's ideal point on the j th dimension (Srinivasan and Shocker, 1973).

equally processed with regard to these dimensions. In fact, the average subject appears to be more knowledgeable about the characteristic fluoride content than abrasiveness and consequently more capable in attempting to map fluoride content into decay prevention than abrasiveness into whitening dimension. Therefore, any cue providing basic, factual information should be expected to result in a change in the perceptual structure.

Results

The magnitudes of the changes in salience and utility resulting from the treatments are shown in Tables 3 and 4. Although there were changes in individual saliences, no significant changes occurred in any group mean values for either salience or utility as a result of the treatments. The treatment group results were not significantly different from the results for the control group previously reported by McCullough *et al.* (1981). Changes in preference are reported in Table 5. Some changes in mean preference scores did occur in the experimental groups, particularly regarding Gleem II, the brand receiving the most extreme information, and Ipana, a brand generally unfamiliar and negatively viewed by the subjects and a brand for which perceptions are not well developed.

The displacement of stimuli in perceptual spaces is shown in Table 6. Although these movements are more difficult to interpret than shifts in salience and utility, they appear to correspond to the degree of discrepancy between the initial perception and the information provided.

TABLE 3
Mean Dimension Saliences*

Treatment	Before Message		After Message	
	Dim I	Dim II	Dim I	Dim II
Abrasiveness				
information only	.50 (.15)	.34 (.26)	.42 (.23)	.31 (.31)
highlighted	.45 (.27)	.37 (.23)	.45 (.25)	.34 (.25)
Fluoride Content				
information only	.47 (.24)	.30 (.24)	.41 (.17)	.47 (.23)
highlighted	.47 (.20)	.34 (.18)	.50 (.26)	.33 (.22)
Control**	.31	N/A	.33	N/A

* Numbers in parentheses are standard deviations.

** Source: McCullough *et al.* (1981).

TABLE 4
Mean Dimension Utilities*

Treatment	Before Message		After Message	
	Dim I	Dim II	Dim I	Dim II
Abrasiveness				
information only	.58 (.27)	.42 (.27)	.43 (.25)	.57 (.25)
highlighted	.43 (.25)	.57 (.25)	.48 (.27)	.52 (.27)
Fluoride Content				
information only	.63 (.19)	.37 (.19)	.54 (.30)	.46 (.30)
highlighted	.49 (.24)	.51 (.24)	.60 (.24)	.40 (.24)
Control**	.41	.59	.48	.52

* Numbers in parentheses are standard deviations.

** Source: McCullough *et al.* (1981).

TABLE 5
Changes in Mean Preference Rankings*

Brand	Abrasiveness		Fluoride	
	Infor- mation Only	High- lighted	Infor- mation Only	High- lighted
Ipana	1.4**	.0	2.9**	2.7**
Aim	.4	.2	.7	.5
Close Up	.4	.6**	.4	-.6
MacLeans	-.5	.9**	-.6	-.1
Crest	.1	.0	.2	.3
Aqua Fresh	.3	.7**	-.5	.7
Pepsodent	.3	-.8	.7**	-.5
Gleem II	.6**	.5	-.6**	1.4**
Colgate	-.5	-.3	-.6**	-.2
Ultra Brite	-.3	-.1	1.3	-.2

* Negative numbers indicate decreased preference.

** Change significant at .05 level. No significant changes were observed in the control group.

TABLE 6
Information-Induced Shifts in Brand Positions*

Brand	Information-Induced Shifts		Information-Induced Shifts	
	Infor- mation Only	High- lighted	Infor- mation Only	High- lighted
Ipana	.27	.07	.49	.73
Aim	.33	.15	.28	.53
Close Up	.40	.07	.73	.20
MacLeans	.18	.12	.11	.21
Crest	.67	.33	.65	.13
Aqua Fresh	.62	.05	.53	.47
Pepsodent	.23	.06	.21	.13
Gleem II	.70	.15	.74	.47
Colgate	.06	.01	.55	.25
Ultra Brite	.32	.28	.25	.15
X	.38	.12	.45	.33
S	.22	.08	.23	.21

$$\text{Shift} = [(\text{Dim I}_{\text{before}} - \text{Dim I}_{\text{after}})^2 + (\text{Dim II}_{\text{before}} - \text{Dim II}_{\text{after}})^2]^{1/2}$$

Study Limitations and Suggestions for Further Research

As part of a continuing investigation, one objective of this study was to examine the effect of variation in information format on perceptual structure. In this attempt, two possible limitations of the study may have contributed to the apparent ambiguity in results:

a) Given that the abrasiveness and fluoride content of toothpaste have been shown to be highly salient dimensions in previous studies, perhaps it is not surprising that attempts to make them more salient failed.

b) Additionally, since the message on abrasiveness may have presented information contrary to generally accepted position, the study may have inadvertently confounded the measurement of salience and perceptual positions on this dimension.

Future studies should work with other product classes or manipulate less salient dimensions of the toothpaste product such as taste or texture.

Conclusions

Information about brands in a product class provided to consumers with the intention of altering their preference and perception appear to affect perceptions of individual brands within the perceptual space without changing the underlying structure of the space. Similarly, changes in preference seem to be brand specific rather than reflecting changes in the utility structure. These results are consistent with the previous studies indicating that perceptual spaces are very resistant to perturbation either through direct manipulation or through provision of additional information to subjects.

Although stronger messages, long term promotional campaigns, and environmental change might eventually impact the structure of the perceptual and hedonic spaces, these results indicate that promotion aimed at changing how the consumer views the world may be less effective than material aimed at altering the perception of an individual brand within an established framework. It appears that concentrating on product attributes with high salience or utility should be more effective than attempts to alter the importance assigned to the underlying dimensions of the product space.

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A DISCUSSION OF PAPERS IN THE "CURRENT ISSUES IN MULTIDIMENSIONAL SCALING" SESSION

Vithala R. Rao, Cornell University

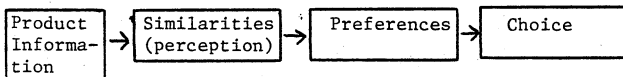
ABSTRACT

This note summarizes the discussion of the three papers presented in the session on "Current Issues in Multidimensional Scaling."

In addition to presenting a comment on the papers, this note raises several technical issues and possibilities for future research.

OVERVIEW

The three papers in this session implicitly dealt with the question of how product information is linked to the various stages of the choice process. One paradigm that could help synthesize these papers is described below.



Under this view, the focus of each paper may be restated as follows:

<u>Paper By</u>	<u>Focus</u>
Gutman et al.	Study of similarities at one point in time with the purpose of describing a method of data collection for deriving the market structure of a large number of stimuli.
Hutchinson and Farrand	Study of criterion-specific similarities and preferences obtained in repeat tasks with no intervening stimulus with the purpose of examining the psychological validity.
McCullough et al.	Study of similarities and preferences using data collected at two points in time with messages (manipulated according to a 2x2 factorial design) as experimental variables with the purpose of looking at stability.

It would be useful to summarize the information on the sample sizes and substantive context of the studies reported.

<u>Paper By</u>	<u># Subjects</u>	<u>Product</u>	<u># Stimuli</u>
Gutman et al.	170	Cereals	18
Hutchinson & Farrand	12	Wines	10
McCullough et al.	100 (5x20)	Toothpaste	10

The papers have not concerned themselves with the issue of how the stimuli are chosen and how the sample of stimuli employed in the respective studies is representative from the substantive point of view. In this context, the facet theory of Louis Guttman [1971] could be very useful to researchers in consumer behavior. Additionally, these studies were conducted using convenience samples; thus, their conclusions cannot be generalized.

The papers, however, are concerned with some basic issues of validity and stability within the context of their experiments.

The analysis methods utilized in these studies generally represent many of the recently developed multidimensional scaling and related techniques. In particular, the techniques such as POLYCON, INDSICAL, LINMAP and ADTREE were used.

Some detailed comments on each paper are presented in the following sections. This discussion concludes with a brief statement of research possibilities in the general area covered by the papers.

GUTMAN ET AL. PAPER

The problem studied in this paper should be of great interest to consumer researchers engaged in studies of information processing and applied researchers looking at market segmentation issues. The paper presents a novel method of data collection that uses sorting task; the method should be particularly useful when one uses a large number of stimuli.

This discussion will raise three aspects: (i) derivation of market structure; (ii) technical issues on methods employed; and (iii) substantive conclusions drawn.

Derivation of Market Structure: One important issue that needs elaboration in this paper is the relative usefulness of the market structures derived from judgmental data as opposed to behavioral data (as collected in a panel). It could be argued that structures derived from behavioral data are more meaningful for managerial decisions. Some current research is focused on the issue of how to infer market structures and, therefore, consumer choice processes from observed behavior under certain assumptions; see Rao and Sabavala [1981].

Even if judgmental data are employed (as done in this paper), one needs to explicitly state the assumptions made at the individual level and implications of aggregating individual data. This paper does not adequately cover this issue of aggregation. Without a complete statement of the underlying assumptions and tests for validity of the assumptions, one could misinterpret the derived market structures.

Technical Issues: Scaling of the second order distance measure raises a question on the appropriateness of stimulus space derived in the analysis. If the S_{ik} is related to an underlying space of stimuli, $[x_{it}]$ according to a squared Euclidean distance, then the measure, σ_{ij} (derived from S_{ik} values) is a complicated function of the x_{it} values. In this context, the authors should explore the implications of multidimensional scaling of the $[\sigma_{ij}]$ matrix.

The authors could perhaps achieve their objective by scaling some direct measures such as those described in Bishop et al. [1975].

The measure used for describing inter-respondent similarity needs further justification. Further, the paper does not clearly identify the set of methods with which the method proposed is expected to compete.

Some ways of validating the results obtained and conclusions of such validation should be incorporated in the paper.

Substantive Issues: The authors should articulate the conceptual model leading to the judgments obtained. The construct of "familiarity" with stimuli could play a significant role in such conceptualization.

The possibility of degenerate solutions in this analysis and its implications should be addressed in the paper.

HUTCHINSON AND FARRAND PAPER

This paper presents an intriguing idea of using combinations (mixtures) of existing products in the stimulus set in order to examine the psychological validity of perceptual and preference judgments. This idea will be useful in developing methods for assessing the positions of new products in existing product spaces. The implications of this approach are not fully exploited in this paper.

The study is highly exploratory; no substantive conclusions can be drawn. The test employed for assessing "psychological validity" is not clear. Some technical comments may, however, be made. First, the authors could have done some predictive testing by withholding two stimuli and predicting where they should fall in the space or tree. Second, the INDSICAL method could have been employed on all data (both test and retest) which would enable them to study the reliability of judgments. Third, the results from ADTREE require more interpretation. At times, the paper seems to confuse the terms, similarity and preference.

The issue of stability was not explored in depth. The authors need to employ a richer conceptual model and an error theory for changes of stimuli locations to examine this issue.

In summary, the paper presents a useful idea which requires extensive research in order to have an impact on studies of preference and perceptions.

MCCULLOUGH ET AL. PAPER

The problem examined in this paper is highly significant for studies on similarities and preferences. The issues of determining structural changes and predicting what changes would occur require the specification of a model that relates stimulus locations and subject weights to experimental variables. Contrary to this approach, this paper is more descriptive of the changes rather than providing an explanation of the reasons why.

Readers of the paper ought to pay special attention to the definitions of various terms such as salience, weight, utility, characteristic, attribute and dimension. Unfortunately, the terminology employed in this paper is not generally consistent with that employed in the literature.

The particular analysis reported in the paper has some problems. Since the group space (derived from INDSICAL) is used in the estimation of v -coefficients according to LINMAP, the estimated v -coefficients will need to be adjusted for the idiosyncratic saliences as determined in the INDSICAL. This argument would imply use of ratios of weights of LINMAP and INDSICAL saliences in ascertaining the effect of information on preferences.

Some alternative ways of analysis include: (a) comparison of data directly; and (b) a 4-way INDSICAL method for analyzing data from all subjects.

The data in this study could have been used for predictive testing as well.

DIRECTIONS FOR FUTURE RESEARCH

The three papers discussed here are largely descriptive; advanced methods of analyses have been used for describing the data. In order to move this line of research to a higher level of generalization and abstraction, one may find the following directions of research to be worthwhile.

(i) To develop conceptual models for describing changes in perceptual spaces and preference structures and utilize them for analyses of data.

(ii) To develop an appropriate error theory for testing the significance of estimated changes; and

(iii) To perform predictive testing and validate the models.

Further, attention has to be paid to the issues of collecting data from representative samples of subjects and sampling of stimuli. The latter aspect requires more attention if consumer researchers wish to derive a general theory of perceptions and preferences as contrasted to models for describing such data.

Finally, the new techniques of constrained scaling could be valuable in models of change in perceptions and preferences. The method involves estimation of parameters of stimulus space or ideal points subject to constraints that various parameters (of stimulus space or ideal points or weights) are linearly related to prespecified variables; see Carroll et al. (1980).

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EFFECTS OF GIFT-GIVING INVOLVEMENT ON GIFT SELECTION STRATEGIES¹

Russell W. Belk, University of Utah

Abstract

Several previous studies (Gronhaug, 1972; Weigl, Vincent and Zikmund, 1976; Ryans, 1977; Coney and Harmon, 1979; Clarke and Belk, 1979; Heeler, et al., 1979; Warshaw, 1980) have investigated differences in consumer purchase behavior which occur when a purchase selection is to be presented as a gift rather than used by the purchaser. A portion of this research has found that when a product is to be presented as a gift it entails a greater expenditure of time and money than when the same product is to be used by the buyer. While this might suggest that gift-giving is an especially involving purchasing situation, the research to date has not been consistent in its evidence to support this view. One reason for this inconsistency in findings concerning gift-giving involvement may be that different gift-giving situations show considerably different levels of giver involvement. The present study tests this interpretation by varying involvement through different gift-giving scenarios. Results support the expectation that differences in involvement brought about by different gift-giving situations cause different consumer purchase strategies to be invoked.

Introduction

Gift-giving is a unique phenomenon in that it involves a combination of economic, social, and self-expressive motivations. As a result of this peculiar status gift-giving has been researched as a distinct phenomenon in the fields of anthropology (Mauss, 1954; Levi-Strauss, 1965), sociology (Gouldner, 1960; Neisser, 1973), psychology (Jones, 1964; Schwartz, 1967), economics (Belshaw, 1965; Kerton, 1971), and consumer research (Bussey, 1967; Lowes, Turner, and Wills, 1971; Belk, 1976, 1979; Ryans, 1977; Banks, 1979).

Since it has been estimated that nearly 95 percent of the gifts given in the U.S. are purchased products rather than services or products made by the giver (Belk, 1979), we might ask how gift purchases and the gift purchase process differ from personal purchases and their attendant purchase process. One general answer to this question is that gift selection is a more involving activity than making a comparable selection for personal use.

There are at least two types of involvement with which we might be concerned in gift-giving. One is item-specific and the other is purchase situation-specific. The item-specific form of involvement has been called "importance of purchase" (Howard and Sheth, 1969), "issue involvement" (Lastovika, 1976), "enduring involvement" (Rothchild, 1977) and "product involvement" (Clarke and Belk, 1979). The essence of the construct involved in these phrases is that the consumer who is high in purchase item-specific involvement cares more about that item and is more interested in the purchase outcome.

The second type of involvement of concern in gift-giving is task involvement (Belk, 1975; Clarke and Belk, 1979). Rather than attaching to a particular product, this type of involvement arises from the consumer's goals in a particular shopping situation and includes the usage situation envisioned for the product. As Clarke and Belk (1979)

point out, "the task may be highly involving either because it entails important immediate goals (e.g. find a coat which is the least expensive wool coat in town), or because the intended usage situation involves important goals (e.g. find a dress to wear to the prom)."

Normally it may be expected that item-specific involvement and task involvement covary in gift-giving. Assuming that the gift-giving occasion and recipient bring about high task involvement, it should be more likely that the gift-giver will attempt to select a gift item that is high in involvement as well. If it is assumed that gift selection is a more involving task than buying for personal use (product held constant), there is also some evidence of other gift-giving involvement effects on purchase activity.

Gronhaug (1972) found that compared to recent buyers of tableware for personal use, those giving tableware as a gift reported considering more alternative choices, shopping at more dealers, seeking more advice from others, and reading dealers' brochures more thoroughly. Hart (1974) found higher levels of perceived risk in buying for others as a gift rather than for one's self. Shapiro (1975) reported that price is less of a constraint in gift purchase than in purchase for self. And Clarke and Belk (1979) found that subjects reported that they would spend more time and money and visit more stores in selecting the same products as gifts than they would for personal use.

However, there is also conflicting evidence about the relative levels of involvement in gift selection versus self-use selection. Ryans (1977) found that gift buyers of small appliances reported a greater use of high status stores than self-use buyers of the same product, but found that the amount of search time to select an appliance as a gift (at least for someone outside of the giver's household) was shorter than when buying the same type of product for personal use. Heeler et al. (1979) also found less information search effort was expended by subjects in an information display board task when instructed to select a blender as a wedding gift rather than when instructed to select from the same product category for personal use. Weigl (1975) reports that subjects perceived no more perceived risk (except for financial perceived risk) in the purchase of a tennis racquet as a gift than in the purchase of the same product for personal use. And Vincent and Zikmund (1976) found higher levels of social perceived risk lower levels of financial perceived risk, and no difference in performance and physical perceived risks in buying an electric knife for a gift versus for personal use.

One possible reconciliation of these conflicting findings is that while some gift-giving occasions and recipients create a highly involving purchase situation, other occasions and recipients create uninvolved purchase situations. Thus the selection of a first anniversary gift for a spouse may entail considerable effort expenditure, while an obligatory graduation present for a distant relative may result in the automatic selection of a highly traditional present. The present study sought to explore the effects of different levels of gift-giving involvement on the gift selection process in order to resolve the apparent conflicts in prior research findings. The major hypotheses were that gift-giving situations differ in involvement and that these differences in involvement directly influence the amount of effort devoted to the purchase selection process.

There is suggestive support for these hypotheses in the

¹The author wishes to thank Warren Krueger and Hallmark Cards, Inc. for allowing these results to be presented.

fact that the studies cited above as showing greater effort in gift selection as opposed to selection for personal use have involved products considered to be high in involvement (e.g. clothing, beauty products, records) while those studies failing to support this relationship more commonly used lower involvement products such as small appliances. Studies by Hupfer and Gardner (1971) and Lastovika (1976) support these interpretations of relative involvement with these products.

Another advantage of manipulating involvement levels solely within gift-giving situations is more methodological in nature. For those prior studies that have compared purchase processes between those who bought a particular product for personal use and those who bought it as a gift (Ryans, 1977; Gronhaug, 1972), the problem is that the self-selection which this allows may result in two quite different groups of people. This confounds comparisons of the purchase processes for these two groups. For other studies that have asked people to imagine choosing the same product as a gift for others or as a purchase for self (Clarke and Belk, 1979; Weigl, 1974; Heeler, et al., 1979; Hart, 1974), there is a different methodological limitation. In these instances it may be highly artificial to ask someone to imagine giving a particular product such as bubble bath as a gift (Lutz, 1979). This may create an unnatural pairing of high situation-specific involvement and low item-specific involvement. Furthermore, the repeated measures nature of some of these designs may artificially inflate measures of the differences between purchasing strategies for self and for gift recipients. In order to get around these problems the present study utilized an experimental design to randomly assign subjects to gift-giving scenarios differing in involvement and asked for evaluations of the characteristics of appropriate gifts rather than for a specific product.

Method

Following a pretest with 149 females interviewed in shopping mall intercepts, a list of 87 gift characteristics was developed which seemed to represent the array of criteria people employ in evaluating the suitability of potential gifts. This list included several aspects of gift selection strategy which are of interest here as well as a large enough list of other characteristics in which they were imbedded so that the potential for demand characteristics was minimized. The six gift characteristics hypothesized to differ in desirability with the level of involvement created by the gift-giving situation were:

1. Costs less than \$10
2. Is high quality
3. Can be bought quickly and conveniently
4. Costs more than \$20
5. Is a "spur-of-the-moment" purchase
6. Is inexpensive.

It was predicted that less involving gift-giving situations would be reported to warrant less costly gifts (items 1, 4, and 6), more easily purchased gifts (items 3 and 5), and lower quality gifts (item 2).

In order to test these propositions, a completely randomized experimental design was employed with subjects assigned to one of the following four treatment conditions:

1. A birthday gift for a close female friend who is about your age;
 2. A thank-you gift to repay some favor such as watching your home while you were away for a close female friend who is about your age;
 3. A birthday gift for a casual female friend who is older than you.
 4. A wedding gift for a close young female relative.
- Situations one and four were intended to represent high involvement gift-giving situations while situations two and three were intended to be low in involvement.

As Ray (1979) has argued, "...there will be no one best method to measure involvement. The components and effects of involvement will be governed primarily by the consumer decision situations". The manipulations of involvement in the present study were checked by having subjects respond to the question, "Compared to other gifts you give, how special should a gift to this person on this occasion be?", using a five point scale from "not at all special" to "very special". In addition, to add realism to the task of describing how desirable each gift characteristic is in the given situation, subjects were asked to give the first name and age of someone they know who fits the description given by the gift-giving scenario (although they were also asked not to think in terms of a particular prior gift to this person). The age responses were also used to verify the success of the manipulations. The results of the manipulation checks are presented in the following section.

All 87 gift characteristics, including the six of interest here, were measured using the five point scale:

- 1 = Very Undesirable
- 2 = Somewhat Undesirable
- 3 = Does Not Matter
- 4 = Somewhat Desirable
- 5 = Very Desirable

In an effort to reduce the potential for order bias, questionnaires with four different question sequences (randomly chosen) were employed. Coupled with the four different treatment scenarios this resulted in 16 questionnaire versions in all.

To obtain subjects for the experimental design, 150 households were selected from the 1980 telephone directories of each of 12 cities selected by size and geographic region to include a medium and large size city from each of six regions of the United States. The 12 were:

- Northwest: Great Falls, Montana and Sacramento, Calif.
- Southwest: Carson City, Nevada and Phoenix, Arizona
- North Central: Muncie, Indiana and Minneapolis, Minn.
- South Central: Little Rock, Arkansas and Austin, Tex.
- Northeast: Allentown, Pa. and Wilmington, Delaware
- Southeast: Raleigh, North Carolina and Atlanta, Ga.

Questionnaires were addressed to Mrs. (household name) and the instructions asked that an adult female respond to the questionnaire. Each of the 16 questionnaire versions were used in each region. Out of 1500 questionnaires originally sent out, 305 or just over 20 percent were returned. The low response rate may be accounted for by the lengthy questionnaire, an imperfect sampling frame, and the fact that questionnaires arrived shortly after 1980 census forms were received. Nevertheless a comparison of early versus late responses showed no significant differences in respondent age or responses to questionnaire items, and there was no reason to expect any systematic biases differing between treatment levels. Nevertheless the low response rate weakens the generalizability of the findings and increases the desirability of future replications. The number of usable responses ranged from 67 to 78 per treatment condition and totalled 291 across the four treatment levels.

Results

Manipulation Checks

As shown in Table 1, the "wedding" and "birthday gift for a close friend" situations were, as intended, perceived as more involving ("special") than the "thank-you gift" and "birthday gift for a casual friend" situations. The table also shows that the age of the gift recipients envisioned by the respondents while filling-out the questionnaire very closely matches the situational descriptions. Since the mean age of respondents was 38.6, the mean ages for the two situations specifying a recipient "about your age" are quite close to the intended manipulation. Furthermore the

"older recipients" and "young recipients" were also suitably older and young as reflected in the mean recipient ages within these treatment conditions. Thus conditions appear to have been successfully manipulated for effects from involvement to occur if there were to be any.

TABLE 1
RESULTS OF MANIPULATION CHECKS

SITUATION	MEAN RESPONSES			n
	Friend's Age	How Special a Gift?*		
Situation 1 = Birthday/Close/Your Age	40.8 yrs.	1.8		75
Situation 2 = Thank-you/Close/Your Age	38.9	2.2		78
Situation 3 = Birthday/Casual/Older	50.1	2.3		67
Situation 4 = Wedding/Close/Young	22.9	1.4		71
F Statistic	22.3**	48.5***		
Probability	.0001	.0001		

*1 = Very Special... 5 = Not at all Special

** All pairwise comparisons except between situations 1 and 2 are significant via Dunn's (1961) multiple comparison procedure with alpha=.05.

***All pairwise comparisons except between situation 2 and 3 are significant via Dunn's (1961) multiple comparison with alpha=.05.

Effects of Gift-giving Involvement

Table 2 summarizes the results of the six analyses of variance testing whether the desirability of the six key gift characteristics was independent of the treatment condition which the subject received. It may readily be seen that the treatment (gift-giving situation) had an effect on ratings of the desirability of each of the gift characteristics. In order to consider the nature of these effects Table 3 shows the means for each of the four gift-giving situations. In general these results indicate support for the hypotheses, but also suggest a somewhat more complicated outcome than anticipated.

TABLE 2
ANOVA RESULTS ON EACH CRITERION VARIABLE

GIFT CHARACTERISTIC	F Statistic	Probability
Costs Less than \$10	19.19	.0001
Is High Quality	2.88	.0365
Can be bought quickly and conveniently	4.15	.0060
Costs More than \$20	7.11	.0001
Is a "spur-of-the-moment" purchase	6.94	.0002
Is inexpensive	4.55	.0039

While the two high involvement situations resulted in the highest ratings for "is high quality", only two of the three cost items came out exactly as predicted. The two high involvement situations received the highest ratings for the desirability that the gift cost more than \$20 and the lowest ratings for the desirability of being inexpensive, but only one of the two high involvement situations (the wedding) was seen as inappropriate for a gift costing less

TABLE 3
MEAN CHARACTERISTIC RATINGS BY
GIFT-GIVING SITUATION*

GIFT CHARACTERISTIC	SITUATION**				Situation Pairs Showing Non-Significant Contrasts***
	1	2	3	4	
Costs less than \$10	3.4	3.2	3.7	2.5	1-2
Is high quality	3.3	3.1	3.2	3.4	1-3,2-3,1-4
Can be bought quickly and conveniently	3.6	3.3	3.5	3.0	1-3,2-3
Costs more than \$20	2.8	2.6	2.5	3.3	2-3
Is a "spur-of-the-moment" purchase	2.7	2.6	2.5	2.0	1-2,2-3
Is inexpensive	3.2	3.2	3.5	2.9	1-2

* 1 = Very Undesirable ... 5 = Very Desirable

**Situation 1 = Birthday/Close/Your Age (high involvement)
Situation 2 = Thank-you/Close/Your Age (low involvement)
Situation 3 = Birthday/Casual/Older (low involvement)
Situation 4 = Wedding/Close/Young (high involvement)

***Via Dunn's (1961) Multiple Comparison Procedure, using alpha=.05.

than \$10. The same high involvement anomaly occurs for the ease of purchase measures which show that it is undesirable for the wedding gift to be a quick and convenient or a spur-of-the-moment purchase but that these characteristics are not undesirable in a birthday gift for a close friend. More generally it may be seen that responses in the two low involvement situations were most often similar, but responses to the two high involvement situations were seldom similar.

Discussion

The present findings suggest most clearly that there is significant variation in purchase strategies between different gift-giving situations which may confound attempts to generalize about distinctions between purchasing a gift for others versus purchasing a product for one's self. At the same time it does not appear that the concept of involvement is able to account for these differences by itself. While high involvement gift-giving situations tend to be seen as calling for higher quality and more expensive gifts and as justifying spending more time and shopping effort, the high involvement birthday gift was seen to call for less expensive gifts and less time and effort than the high involvement wedding gift. Thus it appears that gift-giving situations do differ in involvement and that this affects the amount of care and money devoted to the purchase, but other factors play a role as well.

A primary candidate for these "other factors" which may modify the effect of gift-giving involvement is the expectations which attach to the specific gift-giving occasion. Belk (1979) found that, ignoring recipient, wedding gifts were judged to require more expensive selections than birthday gifts. While different recipients included in the present scenarios were apparently enough to balance the involvement levels for these two occasions, they may not have been enough to negate the normative expectations about appropriate wedding and birthday gift characteristics across the situations in Table 3. In addition to fairly high similarity in the two columns of ratings, the higher involvement situation (#1) is always either rated differen-

tially higher or lower as predicted by the involvement hypothesis or else is not significantly different from the other birthday situation. Thus the strength of normative guidelines for birthday gifts, where it worked at cross purposes, may have modified the effect of involvement levels so that the high involvement wedding selection and the high involvement birthday selection take on somewhat unique desirable traits.

Future research extending these findings could verify the explanation given for the two present data anomalies by orthogonally manipulating gift-giving involvement and the type of occasion. More generally, future research on gift-giving should avoid generalizing about differences between selecting gifts versus selecting products for personal use. The present study shows that this is overly simplistic in light of the substantial differences which exist within gift-giving situations.

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INVOLVEMENT BEYOND THE PURCHASE PROCESS:
CONCEPTUAL ISSUES AND EMPIRICAL INVESTIGATION

Peter H. Bloch, Portland State University

Abstract

Enduring product involvement is discussed as a potentially useful concept in consumer behavior. This type of involvement is an inner state of the individual that reflects a long term product interest or attachment. Enduring involvement is independent of risk-based purchase demands and can range from near zero to the high levels exemplified by product enthusiasts. An empirical study is presented which explores self-concept expression as a possible motivator of enduring involvement.

Introduction

Considerable progress has recently been made by consumer researchers in understanding the nature of product involvement and in identifying its attitudinal and behavioral correlates. As suggested by Lutz (1980) and Kassarian (1981), however, a great deal more work is needed before the full explanatory potential of involvement can be realized. To date, involvement research has primarily focused upon possible differences between high and low involvement purchase occasions. Generally, researchers have concluded that when a purchase is considered by the consumer to be important, as in the case of high risk products, a high involvement state exists leading to evaluative processing of relevant marketing communications and to relatively complex decision making. On the other hand, involvement researchers commonly warn that low involvement which leads to simple decision making and little or no evaluative processing of purchase-related messages is associated with most consumer purchase decisions.

A review of recent involvement research clearly shows that the scope of interest in involvement has been relatively narrow. Work has tended to concentrate on consumers' involvement in the purchase process rather than on involvement with a product, per se, a phenomenon which is not purchase-dependent. In particular, recent investigations of the construct, couched in terms of the hierarchy of effects (DeBruicker 1979; Ray 1973), prepurchase search (Clarke and Belk 1979), attribute evaluation (Parkinson and Schenk 1980; Rothschild and Houston 1977) and perceived brand differences, (Lastovicka and Gardner 1978) are insufficient to explain product involvement within a non-purchase context.

Theoretical Perspective

For purposes here, product involvement is defined as an unobservable state reflecting the amount of interest, arousal or emotional attachment evoked by the product in a particular individual. This definition represents a combination and synthesis of past formulations provided by Mitchell (1979), Day (1979), and Tyebjee (1978). This definition is purposefully general in nature. However, an examination of potential sources of product involvement should serve to point out that the construct may exist in two different forms. This two form perspective derives from earlier work by Rothschild (1979).

Looking first at what Rothschild has termed situational involvement (SI), consumers may experience a temporary involvement or concern with a product during its purchase when there are high stakes associated with the purchase outcome. The greater the amount at stake, one component of

perceived risk (see Cox 1967), the higher will be the consumer's level of involvement. The involvement and its behavioral correlates such as information search and negative cognitive responses are directed at the purchase act rather than at the product itself and represent energy expended to help insure a favorable purchase outcome. Once the purchase is completed and its immediate outcome resolved, the involvement is no longer required and rapidly wanes. For example, many consumers may be highly involved with the product class of dishwashers during the purchase of one due to the high economic stakes involved. However, once the appliance is obtained, installed and working properly, any interest in the product category is likely to disappear.

Product involvement, however, can also exist on a long term basis. This second involvement form can occur even when a purchase goal is not operative and is based not on risk but on the strength of the product's relationship to individual needs, values, or the self-concept. Houston and Rothschild (1978) terms this involvement variant enduring involvement (EI). High enduring involvement is exemplified by wine connoisseurs, cat fanciers, and car enthusiasts who maintain a strong ongoing, hobby-like interest in a particular product class regardless of purchase exigencies. In addition, EI also may occur as a result of practical, role-related needs. For example, the role demands imposed on a lumberjack may elicit high enduring involvement with chainsaws and related tools. In this case, EI remains purchase-independent, but does not have a recreational flavor.

For consumers as a whole, enduring involvement with most products is low. However, for a particular individual, there may be one or two product classes where EI is high. Using the common vernacular, everyone is "into" something (i.e., some product category), but not necessarily the same thing. It should be noted at this point that when consumer behaviorists talk about high involvement products they are more than likely referring to the tendency for high situational involvement to occur among the preponderance of individuals during the purchase of such projects due to a high degree of associated risk. Furthermore, Kassarian's (1981) high involvement consumer is not the enthusiast, but a person experiencing high SI across many product classes; that is, a careful, information-hungry purchaser. This category of consumer may or may not include the high EI person who is strongly attached to one product class and whose involvement is a persistent part of his lifestyle.

One might consider enduring involvement as a person's baseline involvement level that is built upon with situational involvement during purchase occasions where stakes are high. Therefore, during a purchase, it may be difficult to practically separate the portion of consumer arousal that constitutes SI and that which could be labeled EI. It is conceivable that additions to overall involvement levels attributable to SI also may be smaller for high EI consumers due to the possibility of an involvement ceiling effect.

Research to date has either failed to adequately distinguish between the two involvement types or has been focused on SI. The notion of EI, though mentioned in the consumer behavior literature (e.g., Corey 1971; Houston and Rothschild 1978; Hupfer and Gardner 1971) has received

relatively scant empirical attention. A notable exception is the work on fashion adoption which has highlighted persons with high fashion involvement as playing an important role in the acceptance of new clothing styles (King, Ring and Tigert 1980; Summers 1970). The lack of interest expressed by involvement researchers is surprising since newsstands are filled with dozens of magazines aimed at particular enduring involvements (e.g., *Vogue*, *Car & Driver*, *Stereo Review*). In addition, many consumers rely on high EI individuals as purchase advisors and opinion leaders (Summers 1970). It could even be argued that handgun controls, a topic of considerable recent interest, has been opposed over the years by persons who maintain a high level of enduring involvement with firearms.

Give the apparent value of EI as an explanatory variable in consumer behavior, one might next ask what the possible sources of this form of product involvement are. A perspective that derives from early work on ego-involvement is that product involvement reflects how closely a product is linked to a person's self-concept (e.g., Day 1970; Dolic 1969; Lastovicka and Gardner 1979; Sherif and Cantril 1947). With respect to EI, this perspective would lead to the conclusion that where a product provides self-enhancement on an ongoing basis due to its favorable perceived image, then enduring product involvement might be expected to exist.

A possibility which has not been mentioned, however, is that the involvement itself along with its associated activities may also be perceived as a route to self-expression or enhancement. In this light, EI may exist to the extent that a person believes that high involvement with a product, in contrast to product usage alone, is a vehicle for the positive expression of one's self-image. For example, a man who wishes to see himself as sophisticated and urbane may not attain sufficient attention and self-enhancement through the mere purchase and use of products such as wine or stereo components. To project an appropriate self and personal front (Goffman 1959), he may have to maintain high enduring involvement with those product classes, demonstrating a high level of expertise and interest. Being a wine connoisseur would provide self-enhancement, whereas being merely a wine drinker would not. It is this possible underpinning of enduring involvement with products that provides the focus for the present investigation.

Study Objectives

In an effort to broaden the scope of product involvement research, a study was performed which examined the construct outside the purchase process. Specifically, the present study, derived from the conceptual base presented above, focused on self-concept expression as a possible reason for consumers' enduring involvement with a product.

This research differed from past consumer involvement studies in two ways. First, the emphasis was placed on enduring involvement, a state of the individual which persists over situations and which can range from near zero to the very high levels exhibited by product enthusiasts or connoisseurs. This focus on EI represents a break from the recent research stream that has emphasized situational involvement in the context of purchase decision making.

Secondly, this study used involvement as a dependent variable. The concentration is placed on involvement and its possible origins. Earlier studies have primarily been concerned with behavioral or information processing outcomes of differing consumer involvement levels. These two departures from past perspectives were undertaken to shed light on heretofore neglected aspects of involvement theory.

The self-concept based treatments of product involvement discussed above were distilled to produce the following general research hypothesis:

Hypothesis: The magnitude of enduring involvement is positively related to the extent to which an individual perceives such involvement as a vehicle for self-expression or enhancement.

This hypothesis was tested by a mail survey of adult residents of a medium-sized city on the west coast.

In conducting this research, two product classes were examined in order to add generalizability to the results. The two products, automobiles and clothing, were chosen because consumers typically are very familiar with these products and because it was assumed that respondents would exhibit a relatively wide range of EI levels with respect to these goods. This variance potential offered by cars and clothing contrasts with that of products such as ham radios, home computers, or wine where a low level of EI essentially means non-ownership and unfamiliarity.

Sample

A sample of 800 names was drawn at random from the city directory of a western urbanized area. Since it is probable that this sample would not contain enough subjects at the high end of the EI continuum to provide adequate response variance for either of the two products under study, it was supplemented with names of persons presumed to have high enduring involvement with either automobiles or clothing. Thus, surveys were also mailed to 350 individuals on customer mailing lists provided by both women's and men's clothing fashion boutiques and to 350 members of local sports car clubs. In order to enhance the representativeness of this judgment sample of 700, approximately one-third of the car club subsample consisted of females and one-third of the clothing boutique group consisted of males. Furthermore, the size of this judgment sample was decided upon to account for the tendency for persons with greater interest in the topic of a mail survey to respond (Tull and Hawkins 1980). Although this supplementing hinders the generalizability of subsequent research findings, it should be noted that the focus of the present study is upon greater understanding of a developing theoretical construct rather than on specific predictions for the population.

The interest issue and its effects on response tendencies is of considerable importance in an involvement study. There is potential for low involvement subjects to be seriously underrepresented in survey returns due to their inherent low interest level. Because of this possible source of non-response bias, another benefit of using a two-product paradigm becomes apparent given that EI is a product-specific phenomenon for the two products in question. Where strong interest or involvement motivates a person's response, the returned questionnaire will also contain responses for the other product which may well be indicative of low involvement. The low involvement responses for one product come "piggy-backed" on the return motivated by the high involvement with the other product. Therefore, interest-based response bias should be somewhat mitigated.

To stimulate response to the seven page questionnaire, a follow-up postcard reminder was used. Of the 1,500 surveys mailed out, 455 were returned providing a 30 percent overall response rate. After editing, a usable sample of 438 responses were retained for analysis.

Measures

The survey instrument assessed subjects' enduring product involvement along with a set of self-concept measures, which are discussed below. The instrument also contained additional sections outside the scope of this report and thus are not discussed here.

Two product-specific, multi-item indexes, developed in two pre-tests, were used to assess respondents' enduring involvement. Since EI, as defined, represents an unobservable state of the individual, these indexes centered on the manifestations of enduring involvement. The content of the measures reflected the available literature on involvement and drew most heavily from three sources: (1) the fashion involvement index proposed and tested by Tigert, Ring and King (1976) as part of their work on fashion adoption, (2) the indexes developed by Kinnear and Taylor (1973) and Webster (1976) to assess ecological concern, a concept which reflects an ongoing involvement with ecological issues and practices, and (3) Tyebjee's (1979) multi-item index designed to tap a person's degree of involvement with the product class of beer.

The specific measures described below employed a summated scoring procedure with each item being worth 1-5 points.

Automobile Involvement (Range of points is 8-40)

- *Self-rated knowledge of automobiles
- *Information dissemination about automobiles
- *Interest in the topic of automobiles
- *Automotive magazine readership
- *Frequency of pleasure driving
- *Frequency of attending motor races
- *Frequency of visiting automobile dealers outside of purchase occasions
- *Frequency of automotive maintenance

Clothing Involvement (Range of points 5-25)

- *Self-rated knowledge of clothing fashions
- *Information dissemination about clothing fashions
- *Interest in the topic of clothing fashions
- *Fashion magazine readership
- *Frequency of browsing in clothing stores

The first four items of each index were designed to capture several involvement dimensions mentioned in the consumer literature: (1) knowledge (Barnes 1981; Tigert, Ring and King 1976; Tyebjee 1979), (2) opinion leadership (Corey 1971; Dichter 1966; Tigert, Ring and King 1976), (3) interest (Day 1970; Tyebjee 1979), and (4) information search (Corey 1971; Summers 1970). The indexes also contained items relating to various product-specific activities generated via open-end pretest questions. Alpha reliability coefficients over the entire sample of 438 persons were .88 and .86 for the automobile and clothing instruments, respectively. Given the abbreviated length of these two measures, the alphas were considered to be very satisfactory.

The independent variable in this study is the extent to which enduring involvement is perceived as a vehicle for self-expression. In operationalizing this variable, the distance (or lack of it) between a respondent's self-image and the perceived image of the "typical" high involvement consumer for the given product class was determined. Where the distance is small, it is assumed that the involved state (symbolized by the high involvement other) serves as a means for self-concept expression. Where the distance is large, however, the respondent does not perceive a strong linkage between his self-concept and EI. The distance between the two perceived images, which shrinks as use of the involved state for self-expression increases, is expected to bear a negative relationship with involvement scores.

This measurement perspective is derived from the attitude research of Locander and Spivey (1978) who used a self-concept based distance measure to examine the extent to which a particular activity (e.g. tennis) served a value-expressive function. In the present study, respondents were asked to rate on semantic differential scales the "typical person who is highly interested and involved" in each of the two products. A straight adaptation of the Locander/Spivey approach would have entailed the calculation of differences between each subject's rating of the high involvement other on each of a set of scales and the subject's self-assessment on the same set of scales. It could be argued, however, that such difference scores would be artifactually low particularly for high EI respondents. This would result from the tendency of subjects to project themselves into the profile of the involved others. In order to avoid this possible confound, difference scores were computed using aggregate (mean) ratings of the typical high involvement consumer on each of the relevant scales.

The seven-point scales used in this study were developed in open-end pretests. These pretests elicited a profile of 9 scales for automobiles and 14 for clothing, each scale tapping a possible facet of the self-concept. Another difference from the Locander/Spivey methodology involved the use of absolute differences ($|d_j|$) rather than squared differences (d_j^2) as a way to deal with negativity. As suggested by Cronbach and Gleser (1953), this change was made to avoid magnifying measurement error.

Analyses

According to the research hypothesis, negative relationships were expected between the distance measures and involvement scores. In testing this relationship, both bivariate and multivariate analyses were performed. First, in the bivariate case, product-moment correlations were calculated for each $|d_j|$ score and the relevant involvement index. A summated distance score across all the semantic differentials for a given product ($D = \sum |d_j|$) was also computed and correlated with involvement scores. Because of the presumed inverse relationship discussed above, correlations between distance measures and the indexes were expected to carry a negative sign. Separate analyses were carried out for each of the two products.

To further examine the research hypothesis, multiple regression analyses (one per product) were also performed. In these two analyses, only the individual $|d_j|$ scores were used to predict enduring involvement. A multivariate approach was included in this study to allow an investigation of the extent and valence of the relationship between involvement scores and the self-concept measures considered in concert. In addition, since EI need not involve every aspect of a person's self-concept, a regression approach allows a weighting which should reflect the dimensions of the self affected for most people.

Results and Discussion

Results of the bivariate correlation and multiple regression analyses for the automobile case are shown in Table 1. Seven of the ten correlations were statistically significant with the strongest relationship obtained for the summated D measure which accounted for 10 percent of the variance in involvement scores. Relatively strong relationships were also observed for the materialistic/nonmaterialistic, masculine/feminine, and attention-seeking/quiet scales. These results in part reflect the possible sex typing of involvement and further suggest that car enthusiasts view their involvement as a way to express their reliance on material goods as a source of satisfaction, masculinity, and their need for attention. In the correlation analyses, all demonstrated relationships were in the hypothesized direction.

TABLE 1
Results of Simple Correlation and Multiple Regression
Analyses Using Difference Scores to Predict Involvement:
Automobile Case

Self-Concept Dimension	Correlation with Involvement Index (r)	Beta Weight in Multiple Regression Equation
1. Adventurous/Cautious	-.20***	-.09
2. Secure/Insecure	-.04	.04
3. Masculine/Feminine	-.25***	-.20***
4. Attention-seeking/Quiet	-.21***	-.12*
5. Thrifty/Indulgent	-.08	.02
6. Intelligent/Unintelligent	-.03	.03
7. Materialistic/Non-materialistic	-.27***	-.20***
8. Careless/Precise	-.09*	.00
9. Outgoing/Shy	-.12**	-.02
10. Summated Score (D)	-.31***	

Adjusted R² (variables 1-9) = .14**

*** p < .001
** p < .01
* p < .05

Results of the multiple regression analysis for the automobile case provided limited additional support for the study hypothesis. Adjusting for degrees of freedom, a multiple R of .38 was obtained indicating that the nine distance measures taken together accounted for 14 percent of the variance in the automobile involvement scores. This predictability is close to that provided by the D measure which also looked at the nine semantic differentials together, albeit in a simpler fashion. The beta weights corresponding to the materialism dimension, the masculinity/femininity dimension, and the attention-seeking/quiet dimension were the only ones which were significant. The lack of significant betas for the other scales, despite significant bivariate correlation results is likely due to multicollinearity among the scales. Thus it appears that in the case of enduring involvement with automobiles, the research hypothesis receives at least modest support.

Parallel analysis were conducted for clothing involvement. Bivariate correlation results shown in Table 2 indicate a very strong relationship for the drab/stylish scale. Relatively strong relationships were also observed for the summated D measure, the attention-seeking/quiet scale, the up-to-date/old fashioned scale and the attractiveness scale. These findings indicate clearly, if unsurprisingly, that clothing-involved persons feel more fashionable, attractive and prone to receive attention as a result of their particular enduring involvement.

TABLE 2
Results of Simple Correlation and Multiple Regression
Analyses Using Difference Scores to Predict Involvement:
Clothing Case

Self-Concept Dimension	Correlation with Involvement Index (r)	Beta Weight in Multiple Regression Equation
1. Old/Young	-.16***	-.06
2. Secure/Insecure	.07	.03
3. Rich/Poor	.02	.12**
4. Drab/Stylish	-.50***	-.37**
5. Up-to-date/Old-fashioned	-.28***	-.11*
6. Self-confident/Not self-confident	.07	.03
7. Materialistic/Not materialistic	-.04	.03
8. Thrifty/Indulgent	-.19***	-.11*
9. Conceited/Modest	.08*	.11*
10. Outgoing/Shy	-.02	.06
11. Attractive/Unattractive	-.26***	-.12*
12. Attention-seeking/Quiet	-.23***	.16**
13. Conformist/Non-conformist	-.01	-.04
14. Masculine/Feminine	.07	-.01
15. Summated Score (D)	-.25***	

Adjusted R² (variable 1-14) = .30**

*** p < .001
** p < .01
* p < .05

The companion multiple regression analysis also shown in Table 2 provides additional support for the self-concept underpinnings of clothing involvement. In this case, an adjusted R of .55 was obtained, indicating that the 14 distance measures together accounted for nearly a third of the

variance in the criterion involvement index. Tests of the beta weights for significance provided results which were highly consistent with those of the simple correlations.

The above analyses lend support to the hypothesis that consumers use enduring involvement as a vehicle for self-expression. Being highly involved with a product that carries an appropriate symbolic, meaning provides a way to project and enhance part of one's self-image. For the case of EI with clothing, the hypothesis received much stronger support, however, than was found in the automobile analyses. This could be a result of a greater diversity of stereotypes for the car enthusiast relative to that for the clothing-involved person. The one consistent outcome across both product categories was the usage of EI to express the attention-seeking facet of the self. This consistency may be attributable to the tendency in recent years for people to evaluate and categorize themselves and others on the basis of what they are "into." Further investigations will have to be conducted, however, to determine whether involvement's usage as a means of attracting attention is a general phenomenon or pertinent only to conspicuous, socially-significant products such as clothing fashions and cars.

Conclusions

The conceptualization of enduring involvement presented here frees involvement from its traditional purchase setting confines. In past work, product involvement has only been examined as an influence on purchase effort or information processing. Involvement as it might exist beyond purchase occasions and separate from perceived risk notions has clearly been underresearched.

Furthermore, this work has sought to provide explicit recognition of enthusiast consumer segments and their place in the study of involvement. Within the sphere of consumer research, the recent emphasis has strongly been on low involvement, thus obscuring the importance of those consumers who possess very high levels of ongoing product involvement.

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SUBLIMINAL IMPLANTS IN ADVERTISEMENTS:
AN EXPERIMENT

John-G. Caccavale (student), Duke University
Thomas C. Wanty III (student), Duke University
Julie A. Edell, Duke University

Abstract

In this paper a discussion of the controversies surrounding subliminal perception is presented. In response to the more recent controversy surrounding the use of sexual implants in the pictures of advertisements, an experiment was devised to gain information to address this controversy. In addition to manipulating the sexual implants within the pictures of advertisements, the copy also varied. The hypotheses were (1) that sexual implants would be associated with more positive attitudes and intentions and (2) that sexual implants would be more likely to favorably affect attitudes and purchase intentions when used in conjunction with sexually suggestive copy.

The hypotheses were tested using analysis of variance (ANOVA). The results showed no significant positive effects of the interaction of sexual implants and sexually suggestive copy, thus allowing for the dismissal of hypothesis two. The results were ambiguous for hypothesis one. While there is clearly not enough evidence to accept hypothesis one, further research is needed before it can be soundly rejected.

Introduction

Whether or not people can be influenced to behave in a particular way without their awareness has been a subject of controversy for decades. This question became the subject of much discussion when James Vicary flashed "Drink Coca-Cola" and "Eat Popcorn" on a movie screen for 1/3000 of a second every five seconds and reported a 57.7 percent increase in popcorn sales and an 18.1 percent increase in Coke sales (Bachrach, 1959; Brean, 1957). Vicary's findings have been discounted by researchers due to the methodological errors and lack of control. The Federal Communications Commission attempted to replicate Vicary's findings but could not (Subliminal Ad, 1957). However, research by perceptual psychologists has had mixed results (Berelson and Steiner, 1964; Dixon, 1971; Egelhof, 1979; Silverman, 1976). An excellent review of the early work in subliminal perception is provided by McConnell, Cutler, and McNeil (1958). A study by Hawkins (1970) attempted to replicate aspects of Vicary's original work but with much tighter experimental controls. Hawkins (1970) found that subliminal messages can affect drive level but did not exert a significant influence on brand preference.

More recently Zajonc (1980) has reviewed a number of studies which indicated that affective reactions to stimuli can occur even in the absence of recognition memory. He asserts that one can like something or be afraid of it, without actually knowing what it is. Zajonc proposes that affect may be processed via an entirely different, but interrelated system, from that used to assign meaning and process information.

There are a wide variety of ways of producing subliminal stimuli. They may be recognizable less than 50 percent of the time because of their lack of intensity, duration, size or clarity. Most of the work that has been done by perceptual psychologists in the subliminal area has been subliminal by nature of its limited exposure time.

A second controversy has arisen regarding subliminal per-

ception. This controversy has been precipitated by Key (1972, 1976, 1980). In this context subliminal perception has been defined as, "sensory inputs into the human nervous system that circumvent or are repressed from conscious awareness" (Key, 1978, p. 18). Key contends that advertisers are embedding "messages" in advertisements which are too small or lack clarity to be consciously perceived. These "messages", however, are received by an individual's subconscious and stimulate an emotional response and an identification with the advertised brand. Key contends that the subconscious is particularly receptive to experiences that conflict with long standing cultural taboos and since our culture's taboos deal primarily with sex and death these are the elements of most subliminal implants. Key has spent many years analyzing advertisements' pictorial elements and has identified numerous advertisements containing sexual implants. He is convinced that it is a widespread and commonly occurring phenomenon. He concludes that since the phenomenon of using implants is so widespread, it must be an effective selling device. Otherwise why would profit minded businesses spend extra dollars having their photographic work retouched to include subliminal implants.

Zajonc's (1980) theory concerning separate affective and cognitive systems might explain how the sexual implants impact on brand preference and purchase intentions. Upon exposure to an advertisement containing sexual implants the viewer may have positive feelings aroused in response to these implants without ever being aware they exist. This positive affect may then be transferred to the brand especially over many exposures. This theory does not add any insight into how the use of death elements as subliminal elements might work, unless they too are evaluated positively.

Past Research

Key (1972) reports a study where over 1,000 adults, both male and female, were shown a gin advertisement which contained sexual implants. The subjects were asked to describe their feelings, in writing, as they looked at the ad. Key reported 62 percent of the subjects reported feelings of sexual stimulation or excitement. He fails to make explicit his technique of content analysis or the objectivity of the judge doing the analysis. He gave no basis on which to compare these results, so the reader has no way of knowing if this is more or less than would be occurred had the implants not been present.

Bagley and Dunlap (1980) set out to correct these methodological problems in Key's research. They clipped two copies of a colored advertisement from magazines for four product categories. They assumed these ads were free from sexual implants. They showed the unaltered advertisement to a control group of subjects. The exact nature of the implants added to the other copy of the advertisement was not described. Bagley and Dunlap asked subjects, as Key (1972) had, to express their "personal feelings as to how the advertisement affects you" (p.297). Three naive judges rated the comments by searching for key words indicating sexual excitement. The results indicated a significantly higher percentage of subjects with responses indicating sexual stimulation when the ads contained the implants for 2 of the 4 ads and for the study overall.

The Bagley and Dunlap study is a significant improvement over Key's attempt to establish the effects of sexual implants. It does not, however, attempt to relate subjects' feelings of "warmth" or "romanticism" to brand attitude, purchase intentions, or brand recall. Additionally, by treating stimulation as an all or none variable they fail to be able to analyze the degree of effect the ads had on subjects.

Kelly and Kessler (1978) conducted an experiment to examine the role of sexual implants on brand and illustration recall. They concluded that sexual implants failed to enhance recall of the brand or illustration.

Research Purpose

The first hypothesis of this research is that sexual implants in the brand's advertisements increases the viewer's attitudes and purchase intentions. This is the hypothesis put forth by Key (1972, 1976, 1980) but as yet untested in any soundly methodological manner. There are a number of variables that may impact on the likelihood of the implant affecting the purchase intentions. These included interest in the product class, the number of exposures to the advertisement and the type of copy contained in the advertisement. Only the type of copy contained in the advertisement was included in this experiment. Two types of copy were included in the experiment - copy having sexual connotations and much plainer, more descriptive copy. The sexual copy was based on theories presented by Key (1978, 1980) concerning verbal pronunciation and letter arrangement. He contends that it is not only "taboo four-letter words which are effective in manipulating the response of mass audiences, but other words, with taboo implications have also been shown to possess subliminal power. Words such as 'shot', 'whose', 'cult', 'pints', and 'taste', which differ by only one or two letters from certain taboo or emotional words, can also evoke strong demonstrable emotional reactions." (Key, 1972, p. 28).

Key also contends that the sexual suggestiveness of the consciously perceived elements of an advertisement enhance the effect of the subliminal elements. Key used the slogan, "Does She or Doesn't She," (Key, 1976, p. 57) as an example of explicit content which enhances the subliminal elements.

The second hypothesis to be tested in this research is that the interaction of sexually suggestive copy with the sexual implants is significant and positively related to purchase intentions.

Research Method

Design

The basic design of the study was a 2 x 2 after only design. The manipulations were: a picture containing a sexual implant or the same picture without the implant and copy containing sexual innuendoes or plain copy. This design was replicated for 5 product categories. Each subject was exposed to five advertisements - one from each product category. These advertisements were arranged so that each subject saw one advertisement from each of the 4 picture/copy conditions and saw 2 advertisements from one cell. The cell with 2 advertisements drawn from it, was varied so that each picture/copy combination was selected once. The specific advertisements seen by each group of subjects are given in Figure 1.

Because of the different numbers of subjects in different groups and the differences in the copy and implants used for each product category, a decision was made to analyze the data by product category. Thus, for each product category there are 106 observations. All factors are between subjects within each product.

Figure 1
Experimental Design

	Product Categories				
	Pretzel	Cheese Curl	Cheese	Popcorn	Apples
Group 1 n = 22	PP*	PS	SS	PS	SP
Group 2 n = 23	PS	SS	SP	PP	PS
Group 3 n = 15	SP	SP	PS	SS	PP
Group 4 n = 46	SS	PP	PP	SP	SS

PP* - plain copy, no implant
PS - plain copy, sexual implant
SP - sexual copy, no implant
SS - sexual copy, sexual implant

Subjects

The subjects were 106 MBA students who took part in the experiment during a regularly scheduled class on the same day.

Advertisements and Products

To determine the effects of sexual implants on consumers' purchasing intentions, the study required two sets of advertisements: Those containing the implants and those free of implants. Originally, the intention was to present existing advertisements with implants and without implants to the subjects in much the same way that Bagley and Dunlap (1980) had done. A portfolio of print advertisements was collected. After attempting to divide them into those with implants and those free of implants two major problems were encountered. First, it became obvious that we could not eliminate brand familiarity and preference from interfering with the hypothesized effects. Additionally, it was found that no matter how intensively each apparently implant-free advertisement was examined, one could never be certain that it was truly free of subliminal implants. Consequently, we decided that it was impossible to test our hypothesis using current print advertisements.

The only recourse was to produce a set of advertisements containing sexual implants and an identical set without the implants. Using this technique, the effects of brand familiarity and preference, the differences in the physical construction of the advertisement, and the problem of a suitable control were eliminated. The advertisements were constructed to include both subliminal elements found by Key (1972) and those that had been observed in the portfolio of advertisements. Physical problems with ice and liquids necessitated the substitution of snack foods for the construction of our advertisements.

Five types of snack food were chosen: pretzels, cheese curls, cheese and crackers, popcorn, and apples. The following sexual elements were included in the picture of each of the advertisements.

- pretzel - SEX scratched in the side of one pretzel
- cheese curls - FUCK constructed out of cheese curls themselves
- cheese - SEX written on two crackers and a phallic symbol etched on the cheese
- popcorn - SEX written on two kernels

apples - SEX written on one apple

Photographs were taken of the actual food items with and without the sexual implant. Careful attention was paid to eliminate any other difference from occurring between the sexual version and the plain version of the pictures. The distance of the camera from the stimulus, the lighting and camera settings were held constant.

The 20 advertisements were created by combining the 2 copy conditions with the 2 picture conditions for each of the 5 products. Hypothetical names were used throughout. The copy was constructed using Press-types to insure no deviation in the lettering of the advertisements. Color photographs were used for the pictures. Finally, color slides were taken of the twenty print advertisements to facilitate showing them to groups. Again, strict control of the camera's distance from the advertisements, lighting and camera settings was maintained.

Procedure

Subjects performed the task in groups. All subjects were told that they would be seeing mock-ups of advertisements for snack foods. The advertisements were presented in the same order to all groups. Each advertisement was on the screen for 30 seconds followed by a 5 second interval. After exposure to the 5 advertisements, each subject was given a questionnaire to complete. The questionnaire contained measures of the subject's evaluation of the picture, the copy, the total advertisement, and the likelihood of purchase.

Dependent Variables

Attitude toward the picture, the copy and the total advertisement were measured using the average of four, five-point scales (1 - very interesting to 5 - not very interesting, 1 - good to 5 - bad, 1 - not irritating to 5 - very irritating, and 1 - like to 5 - dislike). The internal consistency of these scales was .89, .87 and .84 respectively. Purchase intention was measured on a ten-point scale anchored by "not likely at all to buy" to "very likely to buy."

Results

Manipulation Checks

In order to assess the appropriateness of the pictures for the purpose of the study, the overall quality of the pictures needed to be good while the implants needed to be subtle enough to eliminate readily conscious observation. Twenty pretest subjects were asked to examine the five pairs of pictures very carefully and to indicate any differences between the two forms. No subject detected the sexual implants. While this results does not indicate that the implants were actually subliminal it does add credibility. Subjects were then shown the sexual implants. After the exposure and an elapsed time of 10 minutes subjects were again shown the pictures. They could immediately point out the sexual implant. This led us to the conclusion that the implants were observable.

This manipulation check is not particularly impressive. However, any test of differences between the two sets of advertisements is basically a test of the effect of the implant. The manipulation check was designed firstly to see if the implants were subliminal - not consciously detectable even under close examination. Secondly, it was designed to see if the implants were observable when the subject knew where to look. The pictures passed on both accounts.

The copy was also varied, being either sexually suggestive or plain. The exact copy used for each ad is given in Appendix A. A second pretest was also conducted on two groups of ten subjects each. In this pretest subjects were

shown one version of the copy portion for each of the five advertisements. Each group saw copy from the sexual copy condition and from the plain copy condition but for different products. There were asked to rate the copy on four 7-point scales. These scales were: (1) informative, (2) sexually suggestive, (3) easy to understand, and (4) believable. They were anchored by 1 - not at all and 7 - very. The mean for the five plain copies together were significantly lower (2.94 vs. 4.08) in sexual suggestiveness than were those of the sexual copies ($t = 5.96, p < .001$). Additionally, the difference between the means for the sexual copy and the plain copy was significant for each of the 5 products analyzed separately. There were no statistically significant differences ($p < .05$) for the other three scales.

Test of the Hypotheses

The two hypotheses that this research was designed to address are (1) that sexual implants in a brand's advertisement significantly increase the intentions to purchase that brand and (2) that the interaction of the implants with sexually suggestive copy is positively related to attitudes and purchase intentions.

To test these hypotheses ANOVA was performed on the data for each product category for the three attitude and the intentions measures. These results are displayed in Tables 1-4.

Table 1 displays the ANOVA results for the attitude about the picture in the advertisement. There are no systematic effects across product categories. The interaction of copy and picture for pretzels was significant but the means indicate the most favorable attitude occurs when the copy is not sexually suggestive and the picture contains no sexual implants. The main effect of picture for cheese is highly significant. This effect may be an anomaly or it may be related to the fact that cheese was the only product category to contain a phallic symbol as well as the word SEX. The mean for the cell with the subliminal implant was 2.93 vs. a mean of 3.50 for the cell without the implant. This is on a scale of 1 to 5 with 1 representing the most favorable attitude.

The ANOVA table for the dependent variable, attitude toward the copy of the advertisement, is given in Table 2. The only significant effect is the effect of copy for the cheese product. The means indicate that plain copy is more favorably evaluated (2.84 vs. 3.31). Since there is no hypothesis regarding a main effect of copy, and this effect is an isolated one, it is best to consider this effect as the result of chance.

The ANOVA table for the overall attitude toward the advertisement is Table 3. Again only one effect is significant and for only one product. The interaction effect of copy and picture is significant for the pretzel category. The means indicate that the most favorable attitude occurred when the copy was without sexual innuendos and the picture was without sexual implants. This effect is the opposite of that hypothesized. Additionally, the attitude toward the advertisement as a whole should have some relationship to the attitude toward its component parts. Thus one would expect that if an effect were reliable, and it had a significant effect on the attitude toward the picture or the copy, that it would also have an effect on the attitude toward the entire ad. None of the effects noted earlier show this trend.

Table 4 gives the analysis for the purchase intentions variable. Again no systematic effects are evident. The main effect of copy is significant for the popcorn category. The purchase intentions are lower (4.28) when the copy is sexually suggestive than when it is plain (5.16). The main effect of picture is significant for the apples product category. The means indicate that the subjects exposed to the subliminal implants had greater purchase intentions

(5.48) than those in the no implant condition (4.41). The interaction of picture and copy was significant for cheese curls and popcorn. The highest purchase intentions were obtained when the copy was sexually suggestive, but the picture was without sexual implant for the cheese curls. For the apples, the cell with the most favorable mean was the one with plain copy and the sexual implant.

Table 1
ANOVA Summaries for Pictorial Attitude
by Product Class

Source	df	Mean Square	F
<u>Pretzels</u>			
Copy	1	.00	.00
Picture	1	.84	1.33
Copy X Picture	1	3.29	5.19*
Error	102	.63	
<u>Cheese Curls</u>			
Copy	1	.75	.90
Picture	1	.16	.19
Copy X Picture	1	.34	.41
Error	102	.83	
<u>Cheese</u>			
Copy	1	1.35	1.91
Picture	1	9.02	12.77***
Copy X Picture	1	.01	.01
Error	102	.71	
<u>Popcorn</u>			
Copy	1	.25	.39
Picture	1	.04	.07
Copy X Picture	1	.00	.00
Error	102	.64	
<u>Apples</u>			
Copy	1	.35	.39
Picture	1	1.57	1.74
Copy X Picture	1	.04	.05
Error	102	.90	

*p < .05
***p < .001

It seems reasonable to assume if the effect of subliminal implants are of any managerial importance it should explain at least 5 percent of the variance in the purchase intentions data. In order to explain 5 percent of the variance in this data, the difference in the means must exceed 1 scale point. Therefore, in calculating the power of the test, the difference between the means that is considered necessary is 1 scale point. With 106 subjects, and $\alpha = .05$ the power of the one-tail t-test is .88.

Discussion and Conclusions

The results presented above allow us to reject hypothesis two without question. In none of the product classes and for none of the dependent measures did we find any evidence to support the hypothesis that sexual implants and sexually suggestive copy work together is a way to increase attitudes or purchase intentions.

The evidence on hypothesis one is less conclusive. There were 2 cases where the subliminal implants had a significant effect in the hypothesized direction. Table 5 shows that of the twenty (4 measures times 5 product categories) dependent measures analyzed, there were 11 cases where the subliminal implant was associated with less favorable attitudes or intentions, and 9 cases where the implant was associated with more favorable attitudes or intentions.

Table 2
ANOVA Summaries for Copy Attitudes
by Product Class

Source	df	Mean Square	F
<u>Pretzels</u>			
Copy	1	.01	.01
Picture	1	.20	.15
Copy X Picture	1	2.67	2.04
Error	102	1.31	
<u>Cheese Curls</u>			
Copy	1	3.61	2.52
Picture	1	.49	.34
Copy X Picture	1	1.38	.97
Error	102	1.43	
<u>Cheese</u>			
Copy	1	7.98	6.28*
Picture	1	3.70	2.91
Copy X Picture	1	1.92	1.51
Error	102	1.27	
<u>Popcorn</u>			
Copy	1	.59	.45
Picture	1	.11	.09
Copy X Picture	1	.94	.73
Error	102	1.29	
<u>Apples</u>			
Copy	1	1.44	1.04
Picture	1	2.06	1.49
Copy X Picture	1	.41	.30
Error	102	1.38	

*p < .05

Table 3
ANOVA Summaries for Advertisement Attitudes
by Product Class

Source	df	Mean Square	F
<u>Pretzels</u>			
Copy	1	.05	.05
Picture	1	1.44	1.40
Copy X Picture	1	4.51	4.36*
Error	102	1.03	
<u>Cheese Curls</u>			
Copy	1	.85	.66
Picture	1	.02	.01
Copy X Picture	1	3.73	2.89
Error	102	1.29	
<u>Cheese</u>			
Copy	1	1.90	1.88
Picture	1	3.11	3.08
Copy X Picture	1	.09	.09
Error	102	1.01	
<u>Popcorn</u>			
Copy	1	1.95	1.83
Picture	1	.18	.17
Copy X Picture	1	.01	.01
Error	102	1.07	
<u>Apples</u>			
Copy	1	2.59	.15
Picture	1	.01	.95
Copy X Picture	1	.03	.88
Error	102	.71	

Table 4
ANOVA Summaries for Purchase Intentions
by Product Class

Source	df	Mean Square	F
<u>Pretzels</u>			
Copy	1	.00	.00
Picture	1	12.37	1.79
Copy X Picture	1	14.92	2.16
Error	102	6.90	
<u>Cheese Curls</u>			
Copy	1	.80	.14
Picture	1	.35	.06
Copy X Picture	1	26.15	4.67*
Error	102	5.60	
<u>Cheese</u>			
Copy	1	.76	.15
Picture	1	10.75	2.14
Copy X Picture	1	1.31	.26
Error	102	5.03	
<u>Popcorn</u>			
Copy	1	24.34	4.28*
Picture	1	5.97	1.05
Copy X Picture	1	38.00	6.68*
Error	102	5.69	
<u>Apples</u>			
Copy	1	1.45	.20
Picture	1	28.49	3.94*
Copy X Picture	1	4.90	.68
Error	102	7.23	

*p < .05

While this evidence does not, in any way, allow for the acceptance of hypothesis one, it does raise some interesting questions.

The cheese product is the only one where a positive systematic effect is seen on all variables. As noted earlier, cheese was the only product to contain a phallic symbol, as well as, the word SEX. This suggests that the nature of the implant may be an important variable in determining the effect of the implant.

Suggestions for future research in this area would include the following. The type of implant used should be carefully varied so that one can determine to what the resultant effects are do. Secondly, before this question can be resolved the exposure conditions need to be more natural. Subjects should view the advertisements as they normally would. This should include having the advertisements embedded in various editorial contents and exposure in a relaxed, non-laboratory environment. A third variable which needs examination is the number of exposures required.

The purpose of this study was to provide an empirical test of a popular hypothesis—that subliminal implants increase sales. The result may be that more questions have been raised than have been resolved.

Table 5
Effects of the Sexual Implants

Products	Attitude toward			Purchase Intentions
	Picture	Copy	Advertisement	
Pretzel	-	-	-	-
Cheese Curls	+	-	-	-
Cheese	++	+	+	+
Popcorn	+	-	+	-
Apples	-	-	+	++

*significant at p < .05

Appendix A

Cheese Curls Sexual Copy

Come taste new Bedda-Chedda. A surefire party sensation. It's cheesy, cheddar taste can stand up to the most discriminate connoisseur. So long, boring party treats! Welcome to the cheesy, cheddar taste of Bedda-Chedda!

Plain Copy

Bedda-Chedda. A revolutionary idea in party snacks. We use real Wisconsin cheddar cheese with absolutely no artificial ingredients. Tired of boring cheese snacks? Try new Bedda-Chedda. Bedda Gedda some Bedda-Chedda.

Cheese Sexual Copy

Big Barn brings you a delicious new, country cheddar taste in cheese. We use only the essential, natural ingredients to produce a cheese that is guaranteed to excite your taste buds. The creamy taste of Big Barn cheddar is a surefire hit at parties, picnics or any type of affair.

Plain Copy

Brentwood Farms brings you a deliciously different Cheddar Cheese. Our cheese contains no artificial ingredients. We use the finest, natural dairy products to produce a cheese that is fast becoming America's favorite! Brentwood Farms cheddar cheese. . . the way it was meant to be.

Pretzel Sexual Copy

New! Mel's Zels. Made from Mel's secret old-fashioned country recipe that has kept people begging for more. Mel's Zels whipped Mr. Salty, Rold Gold, and Wise in a nationwide taste test. Try 'em! They're a taste too good to miss! "I give you my personal guarantee that the salty, crunchy, taste of Mel's Zels will stand up to any comparison," Mel. Mel's Zels. The perfect pretzel, brought to you from a long standing family tradition.

Plain Copy

New! Mel's Zels. A revolutionary new idea in pretzels. Mel's secret recipe has brought a delectably delicious

change to the modern pretzel. "I give you my personal, money-back guarantee that these will be the best pretzels you have ever eaten, "Mel. Mel's Zels. The perfect Pretzel.

Apples
Sexual Copy

Apples from Ohio. Ridiculous you say? But indeed, the most succulent, juicy, mouth-watering apples come from Ohio. You've probably been eating Ohio apples for years, they're the ones with the long stems. You remember Grandma's delicious pie? She's been making it with Ohio apples for years! Ohio Apples. When it comes to apples, they come to us.

Plain Copy

Apples from Ohio? You'd never believe it, but they're the best! After one bite, you'll be convinced! Ohio Apples, ask for them by name, and remember . . . Grandma never made a great apple pie . . . unless she used Ohio Apples.

Popcorn
Sexual Copy

Pop's Popcorn. At long last, we have uncovered Pop Smith's secret country recipe for perfect popcorn. The secret's on the inside! Each delectable kernel already contains just the right amount of buttersalt. So when you taste the first morsel, you'll always come back for more! Pop's Popcorn. It comes with everything you need. For parties, get-togethers, or just munching on your own. It tastes exceptional!

Plain Copy

Pop's Popcorn. At long last Pop Smith has revealed his secret for perfect popcorn. Using a legendaty farming technique, Pop brings you a kernel that contains its own buttersalt. The days of greasy butter and messy salt are gone! When that popcorn pops, it's ready to eat! Pop's Popcorn. The secret is in the kernel.

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PSYCHOPHYSIOLOGICAL AND COGNITIVE RESPONSES TO
SEX IN ADVERTISING

Michael A. Belch, San Diego State University
Barbro E. Holgerson (Student), San Diego State University
George E. Belch, San Diego State University
Jerry Koppman, San Diego State University

Abstract

Cognitive and physiological measures were employed to determine viewers reactions to the use of sex in advertising. The results indicate that both nudity and suggestiveness will elicit physiological reactions, and that the cognitive and affective responses associated with these reactions will vary by sex of the receiver.

Physiological Response To Sex In Advertising

The apparent increase in the use of sex in advertising has motivated a number of researchers to attempt to examine the effects of employment of such a strategy. These studies have examined the effects on cognitive processing (Chestnut, LaChance and Lubitz, 1977), (Steadman, 1969), (Sciglimpalia, Belch and Cain, 1979) as well as on affect (Morrison and Sherman, 1972), (Ray and Wilkie, 1970), (Wheatley and Oshikawa, 1970), (Wheatley, 1971), and on overall attitudes (Wise, King and Merenski, 1974), (Peterson and Kerin, 1977) among others.

While such studies have provided a good deal of insight into the psychological state of the viewer from a cognitive perspective, advertising researchers have also turned to psychophysiological technologies in an attempt to determine the effectiveness of their ads (Bose and Ghosh, 1976; Caffyn, 1964; Kohan, 1968; Hess, 1968). Though physiological measures of advertising effectiveness, have often been reported in the literature, most of these have been in respect to attention to (Krugman, 1971) or recall (Krugman, 1977), (Appel, Weinstein and Weinstein, 1979) of non-sexual stimuli. The purpose of this research is to examine viewers' physiological responses to sexual stimuli, in an attempt to further our understanding of the relative effectiveness of utilizing sex in advertising to elicit attention. (Attention has been shown to be correlated with physiological arousal in previous studies (Appel, et. al.)).

Method

In establishing the methodology for determining physiological response to sex in advertising, two key issues emerge for consideration: (1) the operationalization of "sex"; and (2) the measures of psychophysiology to be employed. Each of these have precedents in the marketing literature.

Operationalizing Sex In Advertising

Previous studies examining the use of sex in advertising have defined sex according to two constructs: (1) nudity (c.f. Peterson and Kerin, 1977), (Alexander and Judd, 1978) and; (2) suggestiveness (c.f. Morrison and Sherman, 1972), (Sciglimpaglia/et al, 1979). These studies have demonstrated that both nudity and suggestiveness will generate reactions from respondents, though there is some disagreement as to the valence and strength associated with each type. As such, the design employed herein will include both varieties of sexual stimuli, with

suggestiveness employing the Freudian definition of "a command or piece of information that triggers or arouses an idea in a persons mind" (1958).

Measures Of Psychophysiology

As noted, a number of studies have examined the physiological effects of advertising. (See Watson and Gatchel, 1979 for an excellent review.) In respect to sexual stimuli, however, most of the studies examining physiological effects have been conducted outside the advertising domain. The vast majority of these studies have employed three measures of involuntary response: (1) pupillary response; (2) electrodermal response, (GSR); and (3) heart rate. While the first two measures have been shown to be quite effective in measuring attention and affective magnitude, heart rate has been shown to be much less effective in respect to the latter. No reported studies in the advertising literature have examined the relationships between the three measures.

Research Design

Based on an analysis of the issues previously stated, both forms of sexual stimuli (suggestiveness and nudity) were employed in this study. Only one measure of psychophysiological response, electrodermal (GSR), was employed, however, with pupillary response and heart rate eliminated as a result of cost restrictions and previous research evidence of lack of significant findings respectively.

Thirty student volunteers were asked to participate in a study to evaluate print ads. A laboratory setting was established with projection of the ads (with product names and copy eliminated for control purposes) on a screen clearly visible to the respondent. Pretesting determined that it would be necessary to show a number of dummy ads to relax the respondent as well as to allow an interval between ads to allow the GSR measure to return to baseline. The respondents (15 male, 15 female) were seated alone in a secluded environment, wired for GSR, and shown 12 experimental ads selected by the scores in a pre-test. These ads consisted of three levels of nudity (partially nude, fully nude, fully clothed) for each sex and as male-female couples, and three variations of suggestiveness (weak and strong suggestive couples, female suggestion.) No male suggestive ad was included as none was perceived as such in the pre-test. In addition control ads of pastoral themes which included no people were employed. All ads were actual print ads with the exception of the male nude for which no such ad was available. Debriefing revealed no prior familiarity with the ads. A computer-generated randomization process was employed to present the experimental ads in various orders to eliminate order bias. Based on the results of the pre-test a control ad was presented between each experimental ad which allowed the GSR to return to baseline before the next experimental ad was shown. After viewing each ad once, the respondent was given a paper and pencil questionnaire and instructed to rate each ad as they were shown again a second time on three dimensions, appeal, interest, and offensiveness.

Results

Three areas of concern were under investigation in this study; (1) psychophysiological response to sex in advertisements; (2) the relationship between the cognitive and physiological responses; and (3) differences between males and females responses on both measures. The results of each measure in each area of investigation follows.

Psychophysiological Response To Sex In Advertising

Examination of Table 1 indicates a very definite physiological reaction to both forms of sex in advertising. As can be noted, both males and females

Table 1

PHYSIOLOGICAL RESPONSE TO SEX IN ADVERTISING^a

Ad	Male	Female	P
Nudity			
Female Nude	60.02	71.22	--
Female Partially Nude	42.75	57.97	.04
Female Clothed	39.40	21.43	.05
Male Nude	59.05	50.74	.01
Male Partially Nude	55.54	57.58	--
Male Clothed	27.35	55.70	.005
Couple Nude	34.70	30.76	--
Couple Partially	44.27	45.73	--
Couple Clothed	30.20	34.23	.001
Suggestiveness			
Strong Suggestion (couple)	41.76	64.37	.08
Weak Suggestion (couple)	29.86	23.40	--
Strong Suggestion (female)	42.87	53.28	--

a. Baseline = 0

exhibit arousal to the various degrees of nudity and suggestiveness, with the most pronounced effects occurring at the display of the female nude slide. The fully clothed ads and the weak suggestion ads resulted in very little physiological arousal.

Examination of the response to the forms of sex employed demonstrates that suggestive ads evoke as strong a response as do those employing nudity, when the receiver is female. The reactions to the different degrees of nudity, however seem to be affected by the sex and the perceived attractiveness of the model (this will be examined more closely later in this report.)

The Relationship Between Cognitive and Physiological Reactions

As was noted in the preceding section both suggestion and nudity evoked physiological reactions. A limitation involved with this form of measurement, however, is that it can be used to measure intensity of the reaction, but not valence. To determine the cognitive reactions associated with these responses, it was necessary to ask viewers to evaluate the ads on three measures - interest, offensiveness, and appeal. Pearson Product - moment correlations between these measures and the physiological

measure were used to determine the relationships, with t-tests used for comparisons between the male-female groups. Examination of the cognitive evaluations of the ads (Table 2) and of the evaluations of the cognitive and physiological measures (Table 3) is necessary to attempt to ascertain the causes of the reactions.

Table 2

COGNITIVE RESPONSE TO SEX IN ADVERTISING

Ad		Male Female		P
		\bar{X}	\bar{X}	
Nudity				
Female Nude	Interest	5.75	4.53	--
	Offensiveness	5.56	4.60	--
	Appeal	5.94	4.33	.05
Female Partially Nude	Interest	5.69	4.20	--
	Offensiveness	5.25	4.67	--
	Appeal	5.50	4.40	--
Female Clothed	Interest	4.88	3.27	--
	Offensiveness	5.94	5.87	--
	Appeal	4.88	3.73	--
Male Nude	Interest	3.00	4.13	--
	Offensiveness	3.50	3.93	--
	Appeal	2.56	4.07	--
Male Partially Nude	Interest	4.38	4.87	--
	Offensiveness	5.94	6.60	--
	Appeal	4.44	5.47	--
Male Clothed	Interest	3.56	5.13	--
	Offensiveness	5.50	5.93	--
	Appeal	3.63	5.53	.05
Couple Nude	Interest	5.38	4.93	--
	Offensiveness	4.19	3.80	--
	Appeal	4.44	4.00	--
Couple Partially Nude	Interest	6.19	4.60	.05
	Offensiveness	4.81	3.27	.05
	Appeal	5.25	3.47	--
Couple Clothed	Interest	4.38	4.87	--
	Offensiveness	6.00	6.33	--
	Appeal	4.69	5.13	--
Suggestiveness				
Strong Suggestion (Couple)	Interest	5.94	4.33	--
	Offensiveness	5.19	4.27	.05
	Appeal	5.50	4.20	--
Weak Suggestion (Couple)	Interest	5.25	5.47	--
	Offensiveness	6.31	6.27	--
	Appeal	5.31	5.67	--
Strong Suggestion (Female)	Interest	5.69	4.60	--
	Offensiveness	4.63	3.80	--
	Appeal	5.07	3.93	.05

- 1=very unappealing 7=very appealing
- 1=very offensive 7=not offensive
- 1=uninteresting 7=interesting

As evidenced in Table 2, those ads eliciting a strong physiological reaction also tended to exhibit stronger cognitive reactions. For example, ad 1 (Female nude) tended to be rated as very interesting and appealing to both males and females (though more so to males) as was the case with the female semi-nude ad. The male and female fully clothed ads on the other hand elicited only slight reactions on GSR and the cognitive measure.

The suggestive ads likewise tended to elicit stronger cognitive reactions, particularly with females, who in general tended to find the ads more offensive, less

appealing and less interesting as the degree of suggestiveness increased.

Table 3
CORRELATIONS BETWEEN COGNITIVE AND
PHYSIOLOGICAL RESPONSES

Ad		Male/P	Female/P
Nudity			
Female Nude	Interest	-.12 --	-.11 --
	Offensiveness	.20 --	.18 --
	Appeal	-.03 --	-.10 --
Female Partially Nude	Interest	-.27 --	.30 --
	Offensiveness	.37 --	-.08 --
	Appeal	-.27 --	.07 --
Female Clothed	Interest	.6 .01	-.29 --
	Offensiveness	.17 --	.13 --
	Appeal	.45 .04	-.31 --
Male Nude	Interest	.21 --	-.03 --
	Offensiveness	-.10 --	.00 --
	Appeal	.26 --	.07 --
Male Partially Nude	Interest	.00 --	-.43 .05
	Offensiveness	-.08 --	.29 --
	Appeal	.24 --	-.51 .02
Male Clothed	Interest	-.11 --	.48 --
	Offensiveness	-.24 --	-.41 --
	Appeal	-.02 --	.64 .005
Couple Nude	Interest	-.48 .02	-.26 --
	Offensiveness	.29 --	.15 --
	Appeal	-.68 .002	-.23 --
Couple Partially Clothed	Interest	.01 --	.27 --
	Offensiveness	-.51 .02	-.06 --
	Appeal	.37 --	-.13 --
Couple Clothed	Interest	.27 --	-.40 --
	Offensiveness	.08 --	.13 --
	Appeal	.31 --	-.22 --
Suggestiveness			
Strong Suggestive	Interest	.10 --	.04 --
	Offensiveness	-.25 --	-.29 --
	Appeal	.34 --	.06 --
Weak Suggestive	Interest	.08 --	.37 --
	Offensiveness	-.54 .01	-.63 .005
	Appeal	.23 --	.47 .05
Strong Suggestive (female)	Interest	-.29 --	-.15 --
	Offensiveness	-.10 --	.00 --
	Appeal	-.20 --	-.24 --

1. 1=very unappealing 7=very appealing
2. 1=very offensive 7=not offensive
3. 1=uninteresting 7=interesting

Perusal of Table 3 indicates very weak correlations between the cognitive and physiological measures. Where strong correlations do tend to exist, the range of cognitive reaction tends to be much narrower, a tendency to indicate a lack of strong feelings toward the ads overall. As one should expect, these findings generally were associated with the fully clothed ads and the weak suggestive ad. Scattered evidence of consistencies among responses was also shown for the nude and semi-nude couple ads, where overall men found them to be interesting and appealing but not very offensive.

Differences Between Male And Female Responses

Earlier research has demonstrated differences in

responses to sex in advertising as a result of the sex of the receiver. While Table 1 and 2 reveal few statistically significant differences between males and females, on either cognitive or GSR measures, close examination does demonstrate a pattern of response variations. Overall women tend to show stronger physiological reactions than do men for those ads containing either nude or semi-nude females and for those ads perceived as strongly suggestive. Men demonstrated the most physiological reaction to female nudes and males either nude or partially nude respectively, with much less reaction to suggestion.

Examination of cognitive measures associated with these reactions shows that women view ads with female models at both levels of nudity and suggestiveness as less interesting, less appealing, and more offensive than do males. Likewise males tend to find the use of male models at various levels of nudity as less interesting and appealing and more offensive. In respect to the use of couples at various stages of nudity, once again males found such ads to be more interesting and appealing and less offensive than their female counterparts (though few significant differences were shown).

Conclusions

The results of the study presented here warrant a number of conclusions:

- the use of both nudity and suggestiveness in advertisements elicit strong physiological and cognitive reactions.
- the sex of the receiver will have an effect on the reactions to the use of sex in advertising, with women reacting much more to suggestive ads than do men.
- both opposite sex and same sex nude ads elicit strong physiological reactions, with appealing and offensive cognitive reactions respectively.

While the results of this study in general are consistent with those previously conducted, they also extend into the physiological domain, lending even stronger support to the fact that the use of sex in advertising is likely to elicit psychophysiological reactions from the viewer. The implications for advertisers are apparent--to elicit more attention and reaction to your ads employ the use of sex. At the same time one must be cautious, however, as reactions are not always favorable. Rather the arousal may be a result of offensiveness and/or dislike of the advertisement. Thus, while more reactions are elicited, which may be desirable, the fact that these reactions may read to negative evaluations may carry over to the product itself--an obviously unfavorable reaction. Based on these findings and those reported in previous studies it would appear as though those ads targeted at a specific sex should not employ nudes of the same sex. Further, it would appear that ads employing suggestiveness would not be useful for attracting favorable reactions among females. Opposite sexed models might, however, be effectively employed if done so with the product and theme of the ad consistent with the use of the model.

Finally, it must be recognized that this research has its limitations. While a sample size of 30 is quite large for research in the psychophysiological domain, it is barely sufficient for use in cognitive and affective assessments. Thus the lack of correlations between the cognitive and physiological measures may very well be a result of the small sample. Opposite cognitive reactions to an ad could still elicit strong physiological responses yet essentially "wash out" any consistencies between the measures. The same research employing a much larger sample would be quite useful and worthy of future research considerations.

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SEXUAL CONTENT AND ADVERTISING EFFECTIVENESS:
COMMENTS ON BELCH ET AL. (1981) AND CACCAVALE ET AL. (1981)

Robert S. Baron, The University of Iowa

Abstract

The relationship between sex and advertising is examined from four perspectives: the impact of sexual content on (a) attention, (b) affect, (c) arousal, and (d) information processing. The section on attention stresses the distinction between voluntary attention and the orienting response as well as the need to use more than one ad in a treatment condition. The section on affect points out that negative affect may impair advertising effectiveness. The section on arousal reviews recent research on misattribution of arousal and points out that under the correct circumstances sexual excitement may be misinterpreted as product interest and attraction. Finally, the section on information processing points out that sexual content may trigger a shallow processing of advertising copy that will detract from a high-quality logical message while improving the impact of emotional and/or implausible copy.

Introduction

As I prepared for this session on sex and advertising, I was struck by the relative scarcity of research on the topic. For example, in my own field, social psychology, there are only a handful of studies which investigate the impact that sexual stimuli have on persuasive messages. In the area of consumer behavior, research on the relationship between sexual material and advertising impact is a bit more common (than in social psychology), but even here the number of relevant studies is quite low. This is fairly surprising since the use of sexually suggestive material is an obvious and frequent strategy in advertising. Venkatesan and Losco (1975), for example, found that 65% of print ads in a 1969-71 sample of ads used women as sexual objects. One possible reason for this scarcity of research is that it is due to a theoretical emptiness. That is, it could be that the theoretical issues relevant to sex and advertising are obvious and common-sensical ones that have not required or elicited extensive research. I don't feel this is so, however. Indeed, I feel there are a number of intriguing and nonobvious research issues concerning the relationship between sexual stimuli and advertising, and I'd like to briefly discuss a few of these issues today in hopes that it may encourage research on some interesting conceptual points that presently have been ignored. My discussion will focus on four different mechanisms that may determine how sexual material affects advertising impact. The first two mechanisms are fairly straightforward, the second two are less obvious.

Sex and Attention

It seems quite likely that sexual stimuli in an ad will elicit attention to it. At the very least, blatant sexual content should elicit an orienting response (OR)--i.e., a short-term increase in attention--since explicit sexual content has been relatively unusual in the mainstream media (at least up until recently). Beyond acting as an initial attentional lure, it seems plausible that sexual material could hold one's attention for a longer period given that the models are attractive, the scene is amusing or pleasant, etc. It also seems likely that advertising effectiveness will be heightened less by a momentary OR than by a more prolonged attentional response. One danger

in using only electrodermal measures to assess attention to ads which are briefly presented is that it is hard to differentiate between a momentary OR and a more lasting voluntary attentional response when looking exclusively at electrodermal response. For example, it is possible that an individual could emit a strong but momentary OR to a sexual ad (as reflected in skin conductance) and yet experience little change in cognition or preference. One way to minimize this problem is to obtain cognitive measures as well as electrodermal ones. This, of course, is the strategy used by Belch, Holgerson, Belch, and Koppman (1981) in one of the papers we just heard. This study is generally consistent with the notion that sexual ads elicit more attention (as indicated by GSR) and a stronger cognitive response than nonsexual ads. A number of comments seem warranted regarding this paper. First, the reader would be helped by more detail regarding procedure (how was GSR measured, where were electrodes placed, etc.) and the nature of the statistical tests. Secondly, the row differences in Tables 1 and 2 need to be subjected to statistical test. While there is little doubt that many row differences reported in these tables will be significantly different from each other and from baseline, it is hard to fully assess this paper without more complete statistical analyses. Third, while the authors should be applauded for their use of actual ads, a real problem with the use of *in vivo* advertising stimuli culled from the media is that it is possible that the degree of sexuality of an ad may be subtly confounded with other powerful but nonsexual variables. For example, a fully clothed image of Mrs. Olsen in a Folger's commercial differs in innumerable ways from Meredith Baxter Birney's image in the L'Oréal commercials. Only a few of these differences concern the fact that Meredith's appearance and her "I'm worth it" line are sexually suggestive; age is different, accent is different, product is different, the use of close-up photography is different, etc. I admit after seeing the ads Belch et al. used, I'm reassured that the stimuli look to be equated for such things as age, attractiveness, and degree of close-up use, but a far superior strategy is to employ several ads in each experimental category. Thus, I would recommend using, say, four female nude ads rather than one. This use of a sampling drops the probability that all ads in the category share some unplanned confound.

Finally, the use of cognitive measures in conjunction with GSR must be viewed as a strength of this study. While the cognitive data are not as consistent as the GSR data, there is some basis to infer that at least some sexual ads (female nudes and semi nudes) have an impact at the cognitive as well as physiological level.

Sex and Affect

Another straightforward hypothesis is that sexual material may have an impact by eliciting affect. A positive affective reaction to a sexual ad (such as lust or attraction) should increase persuasive impact via classical conditioning, with the opposite occurring if the ad elicits negative feelings (such as disgust, embarrassment, or uneasiness).¹

¹A closely related notion is that individuals are more persuadable if they are in a good mood and less persuadable if they are in a bad mood.

A study by Peterson and Kerin (1977) can be interpreted in this light. In this study total female nudity in an ad lowered product evaluations. Indeed, just suggestive clothing on the female model also lowered product evaluations provided that sexual content was completely irrelevant to the product. In both these cases, the sexual content seems likely to have elicited negative affect such as surprise, disapproval, or shock. However, a suggestively clothed female model increased product evaluations when sexual themes were somewhat relevant to the product category. An unpublished study by Zimbardo, Ebbesen, and Fraser (described in Zimbardo & Ebbesen, 1969) makes a related point. In this study, undergraduate male subjects were distracted with slides as they listened to a message. The affective nature of the slides were varied. Positive slides depicted attractive female semi-nudes, while the most negative slides were gruesome medical photos. In accord with the conditioning hypothesis, positive slides heightened persuasive impact, while negative slides reduced the persuasiveness of the message (compared to a neutral control group).

The research and writing on subliminal implants is closely related to this classical conditioning perspective. Key (1976), for example, argues that one reason subliminal sexual implants heighten an ad's impact is that they generally elicit an emotional response which becomes associated with the product particularly after repeated exposure. This associative process, of course, is just a description of a classical conditioning procedure. While the power of classical conditioning is hardly a controversial issue, Key's notion that subliminal implants involving sex will generally elicit an emotional response which, in turn, will increase an ad's effectiveness must be viewed as speculation. The paper we just heard by Caccavale, Wanty, and Edell obviously offers little support for Key's arguments.

As the authors note, their study does have some limitations. For example, we are not sure whether the subliminal implants were too subliminal, especially since the ads were not presented repeatedly. Similarly, there is some question whether the implants and the sexually suggestive copy were "sexy" enough. Finally, the use of specially created "non-natural" ads introduces questions regarding external validity. In rebuttal, however, the obscene word implants used here are quite similar to those alluded to by Key, and the use of experimental ads permits a high degree of control over possible confounds. Perhaps the best strategy would be a convergent approach in which artificial ads were used in one study and actual ads, perhaps culled from Key's own examples, were used in subsequent research. If both types of stimuli produced similar data patterns, one's confidence in the data would be substantially greater.

Clearly, more research is required. No matter how fanciful Key's arguments appear to experienced researchers, assertions regarding the power and insidious influence of subliminal implants have continued to capture the public's curiosity. As a result, social scientists will be increasingly embarrassed if they cannot offer some opinions that are based on empirical fact.

Sex and Misattribution of Arousal

A third and less obvious reason sexual material may affect ad effectiveness is that it is possible that people may misinterpret physiological activity caused by sexual content. A good deal of research in social psychology in the last five years supports the Schachterian prediction that individuals on occasion will misinterpret physiological activity, thereby experiencing increases in such reactions as anger, aggression, sexual arousal, humor, and attitude change. For example, Zillmann and his associates have found insulted subjects are angrier and more aggres-

sive if they were aroused either by exercise or by an obscene film just prior to being insulted (Zillmann, 1971; Zillmann & Bryant, 1974). Cantor, Bryant, and Zillmann (1974) have also found that subjects have a greater reaction to humorous stimuli if they first have read highly erotic or aggressive passages designed to heighten excitement. Pittman (1975) found that attitude change caused by essay writing was greater if subjects were aroused by threat of shock before writing the essay. Similarly, Cooper, Zanna, and Taves (1978) found that increasing physiological activity of subjects with amphetamines also led to more attitude change after essay writing. Finally, Cantor, Zillmann, and Bryant (1975) found that males thought an obscene film to be more erotic if they were first aroused by cycling. These studies are all consistent with the view that physiological activity created by one source can be perceived as being caused by another source. In addition, they indicate this misattribution of arousal can elevate attitude change. Given that sexual advertising material will at least occasionally cause increases in physiological activity, this research has clear implications for research on sex and advertising. When conditions favor misattribution of arousal (cf. Cantor, Zillmann, & Bryant, 1975; Cooper, Zanna, & Taves, 1978), any physiological activity created by sexual stimuli may be interpreted as interest in or attraction to the product. Indeed, sexual arousal created on page 1 may contribute to the appeal of a product advertised on page 5. As of yet, I know of no research investigating these precise issues, but given the recent support for closely related phenomena in social psychology, there is ample basis to make such predictions with a good deal of confidence.

Sex and Information Processing

A fourth way in which sexual material may affect advertising impact is by altering information processing strategies and attentional capacity. This argument assumes that sexual material will often act as a distraction drawing attention from the message of the ad. Stated differently, sexual material may absorb attentional capacity, making the ad's message a lower priority input than the sexual material. If so, this should trigger what Petty and Cacioppo (1981) have referred to as peripheral processing--taking cognitive shortcuts in evaluating the message, i.e., reacting to such superficial things as attractiveness and credibility of the message source, number of arguments, audience reaction, and affective reactions. This process loosely resembles Zajonc's notion of noncognitive preference change alluded to in his talk earlier today. Peripheral processing is contrasted with central processing, i.e., carefully weighting the pros and cons of a message and deciding one's preference on the basis of this consideration. If sexual material makes peripheral processing more likely, this can increase persuasion if the message in fact is low quality. But if the message is high quality, distracting subjects with sexual content can draw attention from these positive message features and prevent them from thinking about and elaborating these points.

Petty, Wells, and Brock (1976) demonstrated just such an effect using a nonsexual distraction. When high-quality, logical arguments were used in a message, a mechanical distraction during the message decreased positive cognitive thoughts and lowered attitude change. If, however, the message contained weak and illogical arguments, distraction decreased negative (counterargument) thoughts and increased persuasion. In short, distraction led to less careful processing of the message. There is no reason to think this will be less true with sexual distractors. If so, ad copy embedded in sexual content is likely to be evaluated less assiduously and agreed with for more emotional and superficial reasons than is true in nonsexual ads. In addition, since preferences acquired

through peripheral processing have fewer strong cognitive supports, there is reason to predict that such preferences will be less resistant to change. Again, I know of no research specifically addressing these hypotheses as they apply to sexual material and advertising. However, given the emerging support for Petty and Cacioppo's conceptual distinction (Petty & Cacioppo, 1981), it seems likely to prove a fruitful area for research.

In summary, I have outlined four mechanisms that may bear upon the impact that sexual material has on advertising effectiveness. Two of these mechanisms--heightened attention and heightened affect--have already elicited some research attention. Two other mechanisms--misattribution of arousal and alterations in information processing--have been largely ignored. Research on all these mechanisms seems more than warranted given the heavy reliance of advertisers on sexual stimuli to publicize and market their products.

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COMPARISON OF EFFECTS OF REPETITION AND LEVELS OF PROCESSING IN MEMORY FOR ADVERTISEMENTS

Joel Saegert, The University of Texas at San Antonio
Robert K. Young, The University of Texas at Austin

Abstract

Level of processing orientation (shallow vs deep) and number of repetitions (one vs two) were varied simultaneously in an advertising memory experiment. One deep processing presentation of advertisements was found to produce greater recall than two shallow processing presentations. An interaction was also found such that the increase in percent recall from one to two repetitions was substantially greater for deep processing, compared to shallow. Thus, the type of processing and the number of repetitions combined to yield the best advertisement memory in the study.

Introduction

Despite recent controversy concerning its validity (e.g., Krugman, 1977), day-after recall remains one of the most widely used indicators of advertising effectiveness (Wall Street Journal, 1980). While this technique can make few claims of effectiveness in terms of attitude change, purchase intentions, or actual consumer behavior, demonstration of day-after recall of an ad at least gives an indication of potential brand name awareness, presumably a component of ad effectiveness. Thus, a major advertising goal can be said to be the creation of a brand name memory trace in the cognitive structure of the target viewer which will be maintained over time, at least until a purchase opportunity becomes available.

A number of consumer researchers (e.g., Mitchell, 1978; Olson, 1978; Saegert, 1978) have discussed advertising memory from the standpoint of Craik and Lockhart's (1972) "levels-of-processing theory." This memory research paradigm directs the attention of subjects (in this case, viewers of ads) to the semantic and/or personal features of stimuli (brand names) as opposed to physical features. The procedure used requires research subjects to answer a question about each of a number of (brand name) stimuli. Although no indication is given that memory for the stimuli is involved, a surprise recall and/or recognition task is then given to ascertain effects of different types of questions on memory. The levels-of-processing variable is manipulated by asking questions concerning meaning (Have you bought this brand before?) or form (Is the brand name in script letters?). An experiment by Saegert (1978) found recall for items about which semantic (deep processing) questions were asked to be approximately two times that for form (shallow processing) questions. Subsequently, Reid and Soley (1980) replicated this effect for retention of brand names in television commercials, demonstrating that the levels-of-processing principle can be applied to the day-after recall concept.

Although the levels-of-processing proposal as a theory of memory has been greeted with some reservation by psychologists (e.g., Nelson, 1977; Baddeley, 1978), as well as consumer behaviorists (Bettman, 1979), there is little cause for doubting that substantial differences in retention follow operations designed to manipulate the levels-of-processing variable. Some of the criticisms have been answered recently in the psychology literature. For example, the argument that a non-circular operational definition had not been developed was answered by Seamon and Virostek (1978) in a study which obtained an independent establishment of a hierarchy of processing levels, and which subsequently demonstrated differential memory performance as a function of the levels variable. Even if the theoretical

basis for the "levels" effect is not, as yet, completely worked out, it seems clear that material is better remembered when questions about the stimulus refer to some meaningful aspect, such as past personal experience with the stimulus object, compared to questions about formal stimulus features.

The introduction of the levels-of-processing notion into advertising theory focuses attention on the character or quality of advertising design, as opposed to the quantity or frequency of advertising presentation. The frequency or repetition variable has been investigated extensively, with an eye to determining the number of presentations needed for maximum effectiveness (Sawyer, 1974), and from the standpoint of determining when advertising "wear-out" begins to occur following frequent exposure (Craig, Sternthal and Leavitt, 1976; see Engle, Blackwell and Kollat, 1978, for a comprehensive review). In the present study, both the levels-of-processing variable and the frequency of presentation were manipulated simultaneously to determine the relative effects of the two, as well as to look for a possible interaction between them. It has been suggested (Saegert, 1978; Reid and Soley, 1980) that subsequent repetitions of ads may simply serve as opportunities for consumers to perform more of the type of elaborative activities hypothesized to occur in the "deep processing" operationalization. If this is so, it should be found that a second repetition of a brand name will increase memory following deep processing more than following shallow processing. Thus, the present investigation was specifically designed to compare relative effects of levels of processing and repetition as well as to look for an interaction effect between the two variables.

Method

Subjects. The subjects of the experiment were 117 volunteer undergraduate students at The University of Texas at Austin who were fulfilling a research participation requirement for an introductory psychology course. There were between 12-16 subjects in each of eight experimental groups.

Design. The subjects' memory for advertising was studied by presenting them a series of slides containing magazine ads for a variety of well-known national brands (e.g., Arrow, Toyota, Wesson Oil, etc.). The variables of interest in the study were the presentation frequency (once or twice), the levels of processing (shallow vs deep) and the retention interval (immediate memory test vs 24-hour delay). Finally, a counterbalancing variable, by which each stimulus ad was presented with both deep and shallow level questions, was included to rule out the possibility that any levels-of-processing effects obtained in the experiment could be list-specific.

Manipulation of the presentation frequency was carried out simply by presenting each stimulus slide to half of the subjects for one presentation while the other half of the subjects viewed two presentations of the same slides. In this latter case, all of the slides were shown before any slide was shown a second time, with the second order of presentation being different from the first.

The levels-of-processing variable was manipulated in the

manner used in previous studies (e.g., Saegert, 1978; Reid & Soley, 1980). Briefly, for half the slides, tape recorded questions were asked such that the brand names would be considered as simple aggregates of letters (e.g., "Is the brand name in blue letters?"). For the other half of the slides, the taped questions were designed to have the brand names treated as if they had meaning in the context of past experiences (e.g., "Have you heard of this brand name before?"). Following earlier convention, these conditions are referred to as shallow and deep processing, even though a number of authors (e.g., Nelson, 1977; Baddeley, 1978) have questioned whether attributing the observed effects to such theoretical processes as "levels" is warranted (other labels which have been used include "non-semantic" vs "semantic" processing).

For the retention interval variable, subjects were either given retention tests (recall followed by recognition) immediately following presentation of the slides or they were asked to return 24-hours later. In neither case were they told that they would be asked to remember the brand names depicted in the slides.

The counterbalancing variable was designed such that two sets of questions were recorded, Tape A and Tape B. For Tape A, half the presented advertisements had deep processing questions while the other half had shallow, with the order of the questions varied randomly. For Tape B, ads having a deep processing question on Tape A received a shallow question and vice versa. Thus, in the analysis of the results, the true levels-of-processing effect was contained in a Tape (A vs B) by Ad Set (1 vs 2) interaction. All references to the levels-of-processing effect in the discussion of the results refer to this counterbalancing interaction. The design of the experiment was thus a $2 \times 2 \times 2 \times 2$ factorial with Presentation Frequency (once or twice), Retention Interval (0 or 24 hours) and Tape (A or B), serving as between-subject variables and Ad Set (1 or 2) serving as a within-subject variable; again, the levels-of-processing effect is represented by the Tape by Ad Set interaction.

Procedure. Groups of 5 to 8 subjects were tested in a small semi-darkened amphitheater. Taped instructions were played to the subjects and any questions about the procedure were answered. As each slide was presented, a question was heard from the tape recorder followed by a 4-sec. silence to allow the subjects to check YES or NO on their answer sheets in response to the question asked on the tape. For each set of 50 slides, 25 shallow processing and 25 deep processing questions, similar to the examples above, were asked. In all, six different questions were used for shallow and six for deep processing. The order of the questions was random and the total time allotted for asking each type of question was the same for deep and shallow processing. After the 50 slides had been presented, the first YES/NO answer sheet was collected. In the case of those groups getting two presentations a second answer sheet was then distributed and a new tray with the same 50 slides in a different random order, along with a second set of taped questions, was played. In the second presentation, a different question of the same type as that asked during the first presentation was asked for each slide.

During the retention phase of the experiment, the subjects were either measured immediately after their answer sheets were collected or after they returned the next day. They were asked to write down as many of the brand names as they could on a blank sheet of paper. Two minutes were allocated for recall after which these papers were collected. Next, a check list with 80 brand names was distributed and the subjects were then asked to indicate, by checking the appropriate column, which brands had been previously presented and which had not. To reduce serial position effects, only the middle 40 brand names (i.e., slides 6 through 45) were included in the check list. In addition, 40 new brand names, not previously presented, were added to the recognition

check list in random order. Each original brand name was paired with a new brand name (e.g., an Exxon ad was one of the slides presented and both the Exxon and Texaco brand names were included on the check list).

Results

Recall. In analysis of the mean number of brand names recalled (out of the 40 middle names), recall was found to be poorer after a 24-hour retention interval (mean = 5.70 out of 40) than after an immediate test (8.84), with $F(df = 1,101) = 36.89, p < .001$.¹ In addition, more brand names were recalled after two presentations (8.26) than after one presentation (6.28), with $F(df = 1,101) = 14.69, p < .001$. A third main effect, Ad set, was also significant, with $F(df = 1,101) = 13.15, p < .001$. Comparison of the two sets of advertisements indicated that Michelob and Smirnoff ads were in the ad set which was easier to recall. It is hypothesized that these brands may have been differentially memorable because they were more salient to the student subjects of the study or because of an inherently greater simplicity of Liquor Ads (it has been reported that Starch Adnorms tend to be higher for beer and liquor ads than for other product categories.²)

Of central interest in the experiment was the relative effect of the levels-of-processing orientation given by the taped questions. This effect was significant, with $F(df = 1,101) = 142.32, p < .001$. When a subject was asked a question like, "Is the brand name in blue letters?", the mean number of brand names remembered was equal to 2.30 out of 20; when the subject was asked a question like, "Have you ever used this brand?"; the mean number of brand names recalled was 4.98—a greater than two-to-one advantage. Thus, the levels-of-processing variable was significant in the direction predicted, and is consistent with the previous demonstrations of the effect by Saegert (1978), and Reid and Soley (1980).

Even though a substantial recall advantage for deep brand names was observed, the difference between the two levels of processing may actually be underestimated because certain ads with a great deal of salience to a college audience (e.g., brand names such as Michelob and Smirnoff) would be likely to be well remembered even if the question they were asked was a shallow processing one. Some supportive evidence for this view is found in the interaction between levels of processing and retention interval. This interaction was significant, with $F(df = 1,101) = 17.56, p < .001$, and resulted from greater forgetting of the brand names in the deep processing condition than for those brand names in the shallow processing condition. Greater resistance to forgetting for shallow brand names would be expected if those few brand names which were remembered under the shallow processing condition were remembered because the product shown had a greater individual impact than would be expected on the basis of the question asked.

Further evidence supportive of this position is found in the interaction between number of presentations and level of processing. These data are presented in the left hand portion of Table 1 (see next page). The interaction shown is significant, with $F(df = 1,101) = 9.72, p < .01$. As can be seen, a second presentation increased retention of deeply processed brand names by 41 percent, while a second repetition increased retention of shallowly processed brand names by only 14 percent. Using Newman-Keuls procedures suggested by Winer (1971), it was found that the increase in retention from one to two presentations for the deeply processed brand names was significant, $p < .01$, while the

¹All F's reported were calculated via unweighted means analysis of variance.

²The authors thank an anonymous reviewer for this observation.

TABLE 1
RECALL AND RECOGNITION AS A FUNCTION OF NUMBER
OF PRESENTATIONS AND DEEP VS. SHALLOW PROCESSING QUESTIONS

	Recall			Recognition		
	One Presentation	Two Presentations	% Increase	One Presentation	Two Presentations	% Increase
Shallow	2.15	2.45	14%	11.53	13.92	21%
Deep	4.13	5.83	41%	16.22	17.86	10%

same increase for the shallowly processed brand names was not significant, $p > .05$. Similarly, more brand names were recalled following a single presentation of deep processing (4.13) than were recalled following two presentations of shallow processing (2.45), $p < .01$.

Recognition. The number of correct recognitions of presented ads was the basis of the analysis of the recognition data. In this analysis, retention was better after two presentations than after one (27.76 of 40 brand names vs 31.78), with F ($df = 1,101$) = 17.25, $p < .001$.³ As in the analysis of the recall data, the brand names in the deep processing condition were remembered better than were those in the shallow processing condition (17.05 vs 12.73), with F ($df = 1,101$) = 194.78, $p < .001$. Also, as before, two presentations with shallow processing resulted in lower performance than one presentation with deep processing. However, in this case (right-hand portion of Table 1), performance increased from one to two presentations for both shallow and deep processing conditions (p 's $< .01$); moreover, in contrast to the recall data, the percent increase was greater for shallowly processed ads than for deep (21% vs 10%). This almost certainly results from a ceiling effect for recognition performance; that is, since 16 of 20 ads were correctly recognized following one deep presentation, the room for improvement following two presentations was relatively small.

A second analysis of the recognition data added an additional within-subject variable to the design by including correct rejections of brand names which were not presented. The results of this analysis were essentially the same as in the analysis of presented items except that the ANOVA was based on correct responses to 80 ads (40 presented and 40 non-presented rather than only the 40 presented ads). The only new significant effect of interest was that of retention interval, which, like the recall data showed a decrease in performance over the 24-hour period, with F ($df = 1,101$) = 12.25, $p < .001$. A mean of 67.04 brand names (out of 80) were correctly classified immediately after presentation, but after 24 hours this fell to a mean of 62.56. Thus, when the correct rejection of brand names not presented are combined with correct recognitions of presented items, performance declined over the 24-hour period.

Discussion

Although the levels-of-processing paradigm is only a rough analogy to the processes involved in advertising effectiveness, the distinction between deep and shallow processing draws attention to the importance of "semantic" or "elaborative" encoding of material if memory is to be well maintained. The present study implies that repetition per se is not very effective in maintaining recall for an ad; what seems to be important is the kind of processing that occurs during or immediately following the presentation. The experiment supports the idea that a repetition provides an opportunity for deep processing operations to be carried out if appropriate orientation (semantic vs formal) is given.

³No correction for guessing was computed. However, analysis of previous studies using identical procedures indicated equivalent results with or without a correction for guessing.

The interaction between levels of processing and number of presentations found in the present experiment has been shown earlier with word stimuli by Craik and Tulving (1975, Experiment 3). Jacoby, Bartz and Evans (1978) have taken this result as evidence for a multiplicative theory of the relationship between levels of processing and repetition. That is, the combination of deep processing and several presentations results in greater performance than would be expected on the basis of either variable alone. Jacoby, et al, refer to the underlying process as being a hierarchical one involving 1) organization of items in memory and 2) the ease of recall of individual items. They further suggest that level of processing enhances "between-unit organization" while repetition enhances integration of items within units. In the present case, this argument would specify that thinking about a brand name under deep processing conditions promotes associative organization between organizational units containing the to-be-remembered brand name while successive presentations strengthens the integration of the brand name within those units. Thus, deeper levels of processing would increase the probability of accessing a given memory unit containing the to-be-recalled brand name while extended presentations would determine the recall of the brand name, once the unit is accessed. Therefore, in answer to the question of whether quality (deep processing) or quantity (repetition) of advertising presentation is more important, the evidence supports the notion that both of these variables act in concert to enhance memory for the brand name presented in an ad.

Another issue which has elicited considerable discussion is that of whether recall or recognition is a more appropriate test of ad memory (e.g., Krugman, 1977). Krugman maintains that recall does not adequately measure what viewers actually remember since they can recognize ads in a checklist with a much higher rate than they can verbalize ads in unaided recall. The present data certainly give some credibility to this argument. Not only was recognition performance characteristically higher, but the superior increase in performance across presentations for deep compared to shallow ad questions found on recall was not observed (indeed, was reversed) for recognition. Thus, even ads for which the recall test had shown minimal learning were found to have a high level of retention when measured by the recognition test.

On the other hand, it seems reasonable to question the quality or strength of an advertisement memory which can only be measured through recognition but not recall. Craik (1979) has recently attempted to shed some light on the "similarities and differences between recall and recognition" in the psychology literature. He suggests that recall may be more indicative of retrieval of stored meanings while recognition provides the meaning and asks only for retrieval of the original episodic context (Tulving, 1972). From an ad memory standpoint, it is important to consider the issue on the basis of the goals an advertiser is trying to accomplish. It is presumed that a goal of most ads is to enhance the memory of the brand name in the "semantic" memory of the viewer, as opposed to the "episodic" memory. That is, it is more important that the consumer become aware of the brand name as an alternative in his/her problem solving set than just that brand name X was mentioned at a given time and place (i.e., on last night's TV offerings). Thus, in defense of the traditional "day after" procedure, recall may be more consistent with an advertiser's goal of establishing an available and retrievable memory trace, especially when the consumer's problem solving behavior is dependent on his/her "stored knowledge" as opposed to the "task environment" (Mitchell, 1978).

One question which reasonably follows from the present study is what strategies are available to advertising practitioners as a function of awareness of the levels-of-processing effect. Unfortunately, the small amount of research to date has not been particularly encouraging in this regard. Reid and Soley (1980) have made suggestions to enhance the memorability of ads based on the levels-of-

processing theory. These include "prompting audience members to relate information...to personal experience and knowledge." One way, they argue, that this could be accomplished is by asking viewers to imagine themselves in the context of the product or brand portrayed in the ad. However, recent study by Mowen (1980) has failed to demonstrate that such a procedure enhances (semantic differential) brand evaluations or memory for brand attributes. Whether this single demonstration of the null hypothesis is attributable to ineffective experimental manipulations in the laboratory, or constitutes a genuine disconfirmation of the implications of levels-of-processing theory, is a subject for future investigation. Of course, other operationalizations of the levels concept in an advertising context are possible. It seems safe to say that much further work remains to be done if the processes underlying advertising effectiveness are to be fully understood. The levels-of-processing paradigm seems to provide a useful framework to investigate semantic and frequency effects and should ultimately yield applications for advertising strategists.

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FUNCTIONAL EXPOSURE AND CONSUMER BEHAVIOR: INTRODUCING AN
ALTERNATIVE HYPOTHESIS FOR FREQUENCY-AFFECT RELATIONSHIPS

Theo Poiesz, Tilburg University, the Netherlands

Abstract

Consumers are frequently confronted with product-related stimuli. According to Zajonc (1968), frequent exposure to stimuli renders these stimuli more attractive in the eyes of the perceiver. However, the "mere exposure" hypothesis cannot give an overall-explanation of observed frequency-affect relationships, neither can alternative hypotheses presented subsequently.

The attempt here is to join the different explanations of exposure-effects into one hypothesis. This hypothesis, focusing upon the functionality of exposure, finds support in Experiment I. Experiment II, an exploratory consumer-oriented study, suggests that this alternative hypothesis is possibly of relevance to consumer frequency-affect relationships. Results and research implications are discussed.

Introduction

This paper focuses upon frequency-affect relationships in the context of laboratory consumer behavior. It does so in three stages. In the first stage, procedures and findings of mere exposure studies are discussed. It is hypothesized that functionality of exposure is critical for obtaining positive frequency-affect relationships. In the second, an exploratory laboratory study on the new hypothesis is described. Finally, a consumer-oriented version of this study is described. This laboratory experiment is the first in a sequence of studies with the objective of approximating real life consumer behavior. Its results are not as yet generalizable to consumer affect outside the laboratory, but are suggestive of future research.

Mere exposure research

Zajonc's (1968) mere exposure (ME) hypothesis maintains that merely repeating the exposure of a particular stimulus will enhance the liking of that stimulus. As consumers frequently interact with products and product-related stimuli, a phenomenon as suggested by this hypothesis might be relevant for the explanation of consumer affect. Zajonc's (1968) paper was followed by numerous studies on the conditions under which positive frequency-affect (FA) relationships would or would not be observed (see Harrison, 1977). This resulted in the formulation of a number of hypotheses. The major hypotheses concern: the ME-effect as experimental artifact (Burgess and Sales, 1971), response competition (Harrison, 1968; Matlin, 1970), expectancy arousal (Crandall, 1970), two factor (positive habituation and tedium) theories (Harrison and Crandall, 1972), semantic satiation and generation (Grush, 1976) and arousal formulations (e.g. Berlyne, 1970). Instead of discussing pro- and counterarguments for each of the hypotheses, we can refer to Stang (1974), who summarized FA-research by statistically analyzing past experiments as to their conditions and types of FA-relationships observed. He found two major factors: 1. the size of the time-interval between exposure and rating - a longer interval increases the likelihood of a positive FA-relationship; 2. the type of stimulus - a positive FA-relationship is more likely with paralog, ideographs and portraits than with abstract patterns. The major FA-hypotheses

cannot account for this finding consistently. A possible explanation is suggested, however, by the nature of the procedures of FA-studies. Typically in these studies, pre-exposure instructions merely require S to pay close attention to the stimuli that will be shown. S is not informed about the subsequent task. It is assumed here that under such ambiguous circumstances, S will infer the nature of the future task from the characteristics of the experimental situation. One such characteristic is the type of stimulus exposed. It seems reasonable to assume that if paralog or ideographs are presented, S expects a "performance-task" (like a memory-test). On the other hand, if abstract stimuli like modern paintings are presented, S is likely to expect a "nonperformance- (like/dislike evaluation-) task". It is hypothesized that if stimuli are presented that suggest a performance-task, the exposure-frequency determines S's expectation to do well on this task. As a consequence, frequently exposed, and therefore "helpful" or instrumental stimuli will be evaluated more positively than less frequent stimuli. Stang's (1974) second factor fits in consistently with this interpretation. S's (confidence in his) ability to do well on the task (to correctly identify or memorize the stimuli) is likely to be negatively related to the size of the interval between exposure and rating. The most frequently exposed stimuli are the most helpful or instrumental and will, therefore, receive the most positive affect-ratings. This suggests that the critical factor may be that of the overall functional meaning of exposure-frequency. If functionality is found to be a key factor, it would be more appropriate to speak of "functional exposure" rather than "mere exposure".

Within this explanation, Stang's (1974) two factors can be interpreted as determinants of uncertainty as experienced by S. Conceptually, uncertainty is taken here as consisting of two components: 1. the lack of a clear course of action, and 2. the concern with the consequences of this lack.

In Experiment I the mere exposure hypothesis is tested against the functional exposure hypothesis: if higher exposure frequencies are experienced as (more) functional by S, a (more) positive FA-relationship will be observed. In accordance with the above, it is assumed that functionality of frequent exposure can be manipulated: 1. directly, by instructions that indicate to S to what extent higher frequencies can be functional, 2. indirectly, by instructions that affect S's uncertainty. These can be of two kinds: 2a. instructions as to the availability of a clear course of action, 2b. instructions regarding the personal consequences of a lack of a clear course of action.

In more operational terms:

1. If, prior to exposure, S is informed that the task will be very hard/very easy, higher exposure-frequencies are not functional. The task ahead is expected to be hard/easy anyway, irrespective of prior (exposure) conditions.
 - 2a. If, prior to exposure, S is made to expect a nonperformance (like/dislike) task in which any answer is acceptable, exposure-frequency is irrelevant.
 - 2b. If S's interest in the outcome of a performance-task is low, functionality/exposure-frequency is irrelevant.
- The instructions of Conditions 1, 2 and 3 of Experiment I correspond to possibilities 1, 2a and 2b, respectively. For the functional exposure hypothesis to be corroborated

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three conditions must be met:

1. the observation of non-positive FA-relationships in Conditions 1, 2 and 3.
2. the observation of positive FA-relationships in two control conditions: Condition 4: a condition in which S is made to expect a performance-task, and Condition 5: a conventional ME-condition; no pre-exposure task-information; paralog presented as stimuli.
3. in Condition 5 Ss expect a performance-task rather than a nonperformance-task.

Experiment I tests the hypotheses reflecting these three conditions.

Experiment I

Method

Ninety students from Tilburg University participated in the study. They had signed up for two consecutive studies (of relevance for instructions in Condition 3). Ss were divided evenly between conditions. One suspicious subject was replaced.

The stimuli were six paralog of three syllables each. Examples: HEWONAT, ZODEGIN. Prior to the experiment, stimuli had been rated as to their neutrality by non-participants. Presentation was on slides. Stimuli were exposed at frequencies 0, 1, 3, 6, 10 or 15, one stimulus per frequency. Stimuli were rotated over frequencies. Affect-ratings followed immediately after exposure. To maximize contrast between frequency-levels, the order of frequencies in the rating-phase was fixed (6, 0, 15, 1, 10, 3). In both exposure- and rating-phase, stimuli were exposed for 2 seconds. Inter-exposure intervals were 4 seconds. Some additional remarks must be made with regard to the five conditions:

Condition 1: hard/easy task. For one half of the Ss the task was described as very hard; for the other half it was described as very easy.

Condition 2: nonperformance task. The instruction was: we are starting a new phase in our research. All we want you to do is to give your opinion as to the quality of the slides.

Condition 3: low interest (in task-outcome). Ss had signed up for participating in two consecutive experiments. E told them that the first one had been cancelled and asked them to wait until the start of the second. In the interval, E aroused Ss' interest in the cancelled study. He offered them the opportunity to participate "as if". He made clear that data obviously would not be checked. Then, Ss received the Condition 5 (ME) instruction.

Condition 4: performance task. Instruction: try to get as high a score as possible on the task that you will receive after the slide-presentation.

Condition 5: ME-condition. Instruction: please watch the slides that will be presented carefully. Following exposure, Ss received an "in-between-question" - the affect-rating. Stimuli had to be rated on a 9-point scale (this word makes an extremely favorable (=9)/unfavorable (=1) impression upon me). Prior to this rating-task, Ss in Condition 5 were asked to indicate their perceived chance of having to do a performance-task and the perceived chance of a nonperformance-task (chances adding to 100%). It was made clear how both types should be interpreted. After the rating-phase, Ss received a bogus task reflecting initial instructions. Finally, they were questioned for suspicion. (It was decided to refrain from manipulation-checks. These either would have increased the exposure-rating interval, thus confounding manipulations, or would reflect the joint effects of the uncertainty and frequency-manipulation).

Results

The mean scores per exposure-frequency are presented in Figure 1 (for the Nonfunctionality-Conditions 1, 2 and 3) and in Figure 2 (for the Functionality-Conditions 4 and 5).

FIGURE 1
Mean Affect per Frequency, Nonfunctionality-Conditions

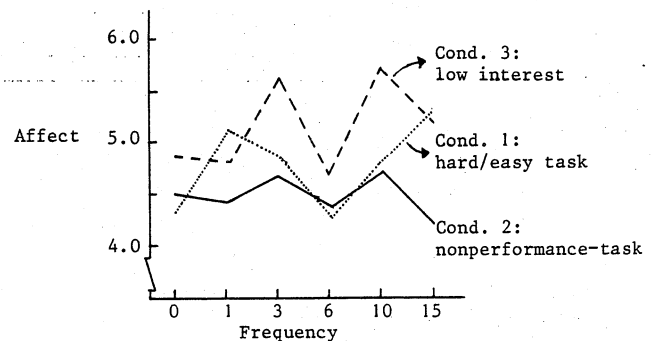
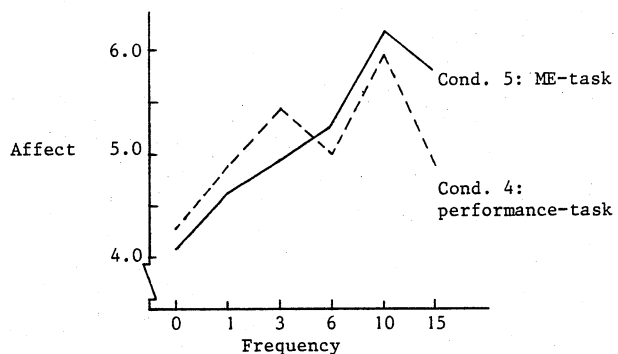


FIGURE 2
Mean Affect per Frequency, Functionality-Conditions



Inspection of Figures 1 and 2 suggests the sensitivity of exposure effects for the type of task-instruction given. Differences between conditions seem in accordance with those suggested by the functional exposure hypothesis. This is most apparent when comparing Conditions 2 (nonperformance-task) and 5 (ME-condition). In the latter condition, 14 out of 18 Ss expected a performance- rather than a nonperformance-task. Only one S did not expect a performance-task at all (chance 0%). The mean perceived performance-task chance was 66.3%. This finding supports the suggested interpretation of ME experimental procedures. As it is always possible, by simply increasing exposure-frequencies, to obtain curvilinear effects, emphasis will be here upon the linear components of the FA-relationships. This restriction does not affect the hypotheses. Furthermore, because hypotheses refer to differences between FA-relationships, interaction-effects rather than main effects will be our main point of interest. An analysis of variance (repeated measures on exposure-frequency) indicated a non-significant interaction effect of conditions x frequency: $F(20,425) = 1.10$, which is not surprising as we predicted the presence of interactions between the Nonfunctionality- and Functionality-conditions and the absence of interactions within each of these condition-groupings. Of the simple interactions that were predicted only the one in the Condition-combination 3 (nonperformance-task) and 5 (ME-condition) is significant: $F(5,170) = 2.57$, $p < .05$. The interactions in the Condition-combinations 1 (hard/easy task) and 5 (ME-condition), and 3 (low interest) and 5 tend in the right direction: $F(5,170) = 1.65$ and 1.52 , respectively. Simple interactions within the Functionality-

Nonfunctionality-groupings are nonsignificant, as predicted. Although irrelevant here, main effects for conditions and exposure-frequency were significant: $F(4,85) = 2.64, p < .05$ and $F(5,425) = 4.93, p < .01$, respectively. Assuming psychologically equal intervals on the frequency-continuum, an analysis of linear trend was performed to find out whether results reflect differences in slopes of the best-fitting straight lines to the profiles of the conditions. The overall interaction, $F(4,85) = 2.39$, is not significant. Again, simple interaction effects were calculated. As expected, within the Nonfunctionality- and Functionality-groupings interactions were nonsignificant. Simple interactions between conditions showed significant effects for the Condition-combinations 1 (hard/easy task) and 5 (ME): $F(1,34) = 4.39, p < .05$; 2 (nonperformance-task) and 5: $F(1,34) = 11.89, p < .01$; and 3 (low interest) and 5: $F(1,34) = 4.21, p < .05$. Interactions between Conditions 1, 2, 3 and 4 (performance-task) were nonsignificant, however.

As Figures 1 and 2 seem to suggest a turning-point in the FA-relationship between frequency-levels 10 and 15, and as it is legitimate to focus upon linear components (curvilinearity can always be obtained by increasing frequency-levels), an additional analysis of linear trend was performed, now excluding ratings on the 15-frequency paralogs. The overall conditions x frequency interaction proved significant: $F(4,85) = 2.77, p < .05$. The general pattern seems to support a functional exposure interpretation: simple interactions in Condition-combinations 2 (nonperformance-task) and 4 (performance-task), 1 (hard/easy task) and 5 (ME), and 2 (nonperformance-task) and 5 (ME) proved significant: F's (1,34) were, respectively, 4.47 ($p < .05$), 5.63 ($p < .05$) and 8.14 ($p < .01$). Simple interactions in Condition-combinations 1 (hard/easy task) and 4 (performance-task), and 3 (low interest) and 5 (ME) tend in the right direction: F's (1,34) were, respectively, 3.02 ($p < .10$) and 3.89 ($p < .10$). Finally, the simple interaction in combination 3 (low interest) and 4 (performance) shows a very slight trend in the right direction: $F(1,34) = 1.48$. As predicted, simple interactions within the Nonfunctionality- and Functionality-groupings were nonsignificant (all F-values < 1.0).

Discussion

In all, the pattern of results seems to justify the conclusion that functionality of higher exposure-frequencies may indeed be the necessary condition for positive frequency-affect relationships to occur. However, the mechanism through which functionality is supposed to be effective was not assessed directly. Furthermore, it is not clear why there is no clear confirmation of hypotheses in condition-combinations involving Condition 4 (performance-task). The post hoc explanation that might be suggested is that the performance-task instruction, by emphasizing a high score, may have changed the nature of this condition towards that of Condition 1: the very hard task instruction. If so, perceived functionality of the higher exposure frequencies was depressed relative to the ones in ME-condition 5.

Experiment II

After having focused, in Experiment I, on exposure-effects in abstract, Experiment II attempts to explore a more consumer-oriented task. In this study, perceived risk is taken as the consumer behavior counterpart of uncertainty as conceptualized and manipulated in Experiment I. Conceptually, perceived risk is also taken as consisting of two components: 1. the lack of brand information (or, the lack of a clear course of action) and 2. the consequences of this. It is hypothesized, in accordance with the functional exposure hypothesis, that a positive FA-relationship will be observed under conditions of perceived risk and that the relationship will be nonpositive

when perceived risk is low. Next to exposure frequency (within Ss) and perceived risk, position of risk-instruction relative to exposure (before/after) is included as a between subjects factor for exploratory reasons.

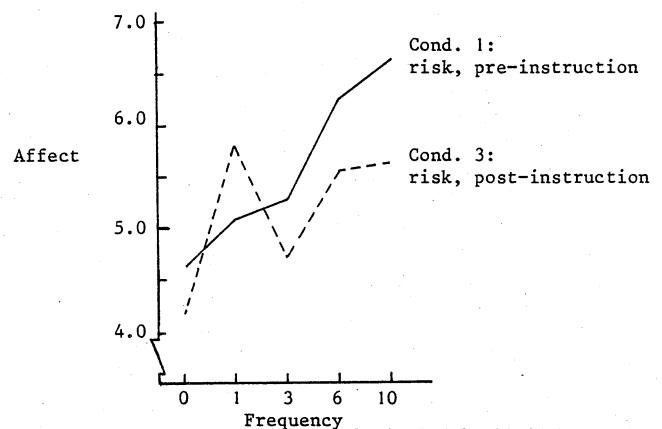
Method

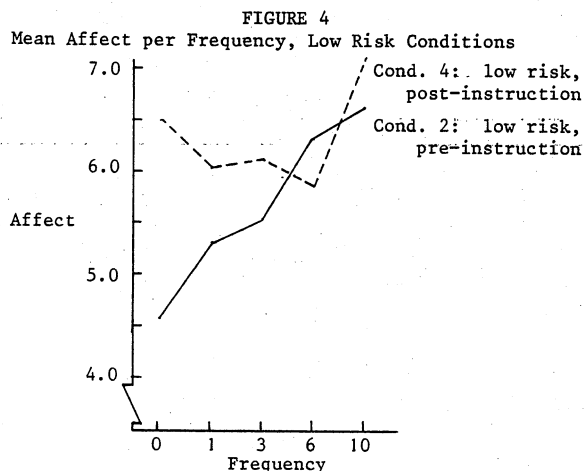
Forty-four housewives participated in this "food-test" study. They were divided evenly over the four cells. The stimuli were of the same type of stimuli as exposed in the previous experiment, but were labeled as "brandnames". Words, two per frequency-level, were presented on slides. Basically, the procedure is similar to that of Experiment I, with the exception that frequencies were 0, 1, 3, 6 and 10. Manipulation of the risk-factor is through the description of product-types. In the two risk-conditions, Conditions 1 and 3, products are described as African food-products. Ss are informed that the demand for these in European countries is low, due to their unusual "swamp- and jungle-ingredients". The instructions were that Ss were to test several brands of such a product. In the two low risk conditions, Conditions 2 and 4, the product is described as a successful foreign product exported to the Netherlands. Ss were informed that this product had received very positive ratings by 196 out of 200 housewives. Instructions were that they (Ss) also were to test several brands of this product. In Conditions 3 and 4 risk-instructions were given after the exposure-phase. In order to avoid a conventional ME-setting in these latter conditions, Ss received, prior to exposure, the instruction that at first example-slides would be presented to familiarize them with the procedure. In the rating-phase, Ss were required to guess the quality of each of the brands. Slides were shown again once. Possible scores ran from 1 to 10 (from extremely inferior to extremely superior quality, respectively). Finally, Ss received some food-items to taste. Manipulations were not checked for reasons indicated in the description of Experiment I.

Results

Figure 3 and Figure 4 show the mean affect (quality) ratings at the various exposure frequencies, Figure 3 for the two risk conditions and Figure 4 for the low-risk conditions. Position of instruction seems to be a more dominant factor than product-risk as manipulated here. An analysis of variance (repeated measures on exposure-frequency) showed that the predicted risk x exposure frequency interaction is not significant: $F(4,160) = 1.32$.

FIGURE 3
Mean Affect per Frequency, Risk Conditions





The instruction-position x exposure-frequency interaction is significant: $F(4,160) = 2.63, p < .05$. The (between Ss) interaction risk x instruction-position almost reaches significance: $F(1,40) = 3.84, .10 < p < .05$, suggesting that the pattern of affect ratings in the two risk groups depends upon the position of the risk-instruction. Main effects were significant for risk, $F(1,40) = 5.59, p < .05$, and exposure-frequency, $F(4,160) = 9.07, p < .01$. These, however, are not of direct relevance for the hypothesis. The results do not confirm the hypothesis: there was no significant risk x exposure-frequency interaction. An analysis of linear trend (assuming psychologically equal intervals on the frequency-continuum) indicated no interaction between Condition 1 (pre-exposure instruction, risk) and Condition 2 (pre-exposure instruction, low risk): $F = 0.00$ - the slopes of these conditions do not differ. Therefore, if the risk-factor would have any effect at all, it would have to be in the Condition-combination 3 (post-exposure instruction, risk) and 4 (post-exposure instruction, low risk). The simple interaction effect was $F(4,80) = 2.72, p < .05$. However, an analysis of linear trend indicated that this outcome did not reflect differences in slopes of the best-fitting straight lines in the two conditions: $F(1,20) = 0.88, n.s.$ Only when the 5-level frequency-factor was reduced to a 2-level factor (exposed vs. nonexposed brandnames), the risk x exposure interaction was significant: $F(1,20) = 6.19, p < .05$.

Discussion

With regard to the outcomes of Experiment II, there seem to be (at least) two questions. The first one is: why is risk as manipulated not successful, especially when risk-instructions are given prior to exposure? And second: why does position of instruction relative to exposure have an influence on the FA-relationship? The answer to the first question may be that instructions in Condition 2 (pre-exposure instruction, low risk) made Ss expect, in fact, a risky task: the judgment of foreign products before their export to the Netherlands possibly contains two elements of risk: S's responsibility and the product's origin. With regard to the second question, it may be that the relaxing pre-exposure instructions depressed the effect of the risk-manipulations, thus depressing also the functionality of the higher exposure-frequencies relative to the ones in Conditions 1 and 2. Another possibility is that the contrast between the relaxing pre-exposure instructions and the more arousing post-exposure instructions may have affected the credibility of the latter.

General discussion

The hypotheses and results of Experiment I suggested a curvilinear relationship between subjective uncertainty and the likelihood of a positive frequency-affect relationship, with most positive relationships at intermediate uncertainty-levels. This makes the operationalization of subjective uncertainty extremely difficult and may have hampered the finding of results in Experiment II. With additional information provided by manipulation-checks it might have been possible to correctly interpret the failure of the risk-manipulation and the effect of position of instruction. Therefore, future studies will contain control-conditions for checking manipulations. However, for reasons indicated earlier, such checks should be the exclusive purpose of such conditions. In general, outcomes of both experiments are suggestive of future studies on the effects of functional exposure and on its possible relevance to consumer affect.

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THE EFFECTS OF REPETITION AND LEVELS OF PROCESSING
ON LEARNING AND ATTITUDES

Alan G. Sawyer¹, The Ohio State University

Abstract

Two empirical studies about repetition and levels of processing are analyzed. Suggestions for future research are discussed.

Introduction

Two studies (Saegert and Young 1982; Poesz 1982) have focused on the effects of repetition. I reviewed both these papers earlier and thus many of my and two other reviewers' comments have been already incorporated in their final drafts. However, a few remaining comments seem pertinent. This paper discusses these experiments and then briefly addresses suggestions about appropriate future directions for research about repetition and information processing.

Saegert and Young

Saegert and Young's (S & Y's) experiment has some important strengths. It uses actual print advertisements (shown via slides) for well-known national brands, is carefully controlled and analyzed, and, as I've previously advocated (Sawyer 1981; Sawyer and Ward 1979), examines delayed effects of repetition in addition to the immediate effects. Essentially, this experiment adds repetition (one or two exposures) and time of measurement (immediate or 24 hour delay) to the previous levels-of-processing experiment by Saegert (1978).

Although I have no specific criticisms about S & Y's research method and analysis, I do worry about the possibility that a reader might infer some overly simplistic conclusions from S & Y's experimental results. Perhaps future research in this area can address some of my speculative concerns which, if appropriate, may limit the external and/or construct validity of S & Y's research.

First, although I cannot dispute their results, I question the validity of S & Y's hypothesized explanation. They write:

Subsequent repetitions of ads may simply serve as opportunities for consumers to perform more of the type of elaborative activities hypothesized to occur in the "deep processing" operationalization. If this is so, it should be found that a second repetition of a brand name will increase memory following deep processing more than following shallow processing.

I would have predicted (incorrectly, I guess, based on these data and that of Jacoby, Bartz, and Evans (1978) that, with deep processing, a great deal of meaningful processing occurs during a single exposure, whereas, with shallow processing, very little meaningful

processing occurs.² Thus, I would predict that repeated exposures would lead to much less incremental processing under deep processing conditions than for those limited to shallow processing--a result opposite to S & Y's prediction and results. Krugman's (1962) initial speculations about repetition and low involvement (which I assume would more likely lead to shallow than deep processing) suggests that repetition is crucial for low involvement situations but not for high involvement. Later, Krugman (1972) implies that only three exposures are necessary for complete effect--if attention and processing are sufficiently intense (presumably a high involvement situation).

A possible explanation of S & Y's results is that the operational manipulation of deep processing (e.g., "Have you heard of the brand name before?") restricted subjects from more elaborative processing. Focusing on brand name recognition may interfere with more elaborative cognitive processing or responding such as, "Do I agree with these statements?", "There is little merit in those claims," or "I wonder whether that could be true?" This interference might occur if the focusing on the brand name restricts subjects' attention and diverts them from the message itself. More elaborative processing might produce my hypothesized ceiling effect or, at least, cause it to occur at lower exposure levels. Also, perhaps, as Krugman suggested, the benefits of repetition continue during two or three exposures before the end in incremental effect is reached. Furthermore, it may take many (e.g., five or ten) exposures under shallow processing to get much incremental recall or recognition (Krugman's preferred measure).

As a die-hard skeptic, I worry about the external validity of S & Y's results under more mundane real viewing conditions. First, as speculated above, the results may be quite different with higher exposure levels. I would expect that, with a greater number of exposures, the difference between deep or elaborate processing and shallow or narrow processing would lessen. Of course, deep processing should never become worse than shallow processing at any level of repetition. (However, I would guess that shallow processing would less likely lead to tedium. If so, shallow processing might yield more positive results at very high exposure levels. That is, "wearout" (Axelrod 1980; Greenberg and Suttoni 1973) might occur sooner for deep processing than for shallow processing³.) However, unless a "real world" way to elicit deep or elaborate processing is found (such as has

²Like S & Y, I'll use "shallow" and "deep" even though I agree with them and others (e.g., Olson 1978) who argue that these terms are too simple.

³Obviously, we need more research about what causes boredom or irritation in advertising. In survey research, repetition is cited as a prime source by consumers (Bauer and Greyser 1967), but there may be factors such as "soft sell" vs. "hard sell" (Ray and Sawyer 1971; Silk and Vavra 1974) that interact with advertising repetition in terms of tedium/irritation and information processing.

¹I thank Carl Obermiller for his helpful comments.

been attempted by Reid and Soley (1980) and Mowen (1980), the advertiser does not have the choice about how consumers attend or process an advertisement. Thus, the advertiser may have to settle for low level shallow processing. S & Y do not say otherwise, but I do fear that a reader might incorrectly draw such a conclusion from their results.

Part of the basis for my intuitive hypothesis contrary to that of S & Y may be based on the fact that I assume that processing is likely to change at different levels of exposure, if not tightly controlled experimentally. For example, Thomas Smith's (1885) Hints to Intending Advertisers speculated that the following might take place.

The first time a man looks at an advertisement, he does not see it.
The second time he does not notice it.
The third time he is conscious of its existence.
The fourth time he faintly remembers having seen it before.
The fifth time he reads it.
The sixth time he turns up his nose at it.
The seventh time he reads it through and says, "Oh bother!"
The eighth time he says, "Here's that confounded thing again!"
The ninth time he wonders if it amounts to anything.
The tenth time he thinks he will ask his neighbor if he has tried it.
The eleventh time he wonders how the advertiser makes it pay.
The twelfth time he thinks it may be worth something.
The thirteenth time he thinks it must be a good thing.
The fourteenth time he remembers that he has wanted such a thing for a long time.
The fifteenth time he is tantalized because he cannot afford to buy it.
The sixteenth time he thinks he will buy it some day.
The seventeenth time he makes a memorandum of it.
The eighteenth time he swears at poverty.
The nineteenth time he counts his money carefully.
The twentieth time he sees it, he buys the article, or instructs his wife to do so.

In addition to the fact that today no wise husband tells his wife to do anything, levels (or spread) of processing theory suggest a different way to explain Smith's and my speculations. Initially, depending upon the situation, processing might be either shallow or deep. (Alternatively, processing might be both shallow and deep. Nelson, Reid, and McEvoy (1977) and Bransford et al. (1979) found similar evidence of both semantic and non-semantic processing with only one exposure.) Middle-levels of exposure would be more likely deep and elaborative whereas, at very high levels, processing likely becomes neither shallow nor deep but a kind of middle level recognition-like retrieval of past processing. This speculation may be akin to Krugman's (1972) hypothesized three stages of "What is it?", "What of it?", and "Ho hum, I've seen that before." Whatever the pattern, it seems unlikely that shallow processing will remain shallow as repetition increases. Likewise, initially deep processing will likely not remain deep at all exposure levels.

Finally, let me turn from independent variables to dependent ones, I would like to know more about the validity or appropriateness of recall versus recognition. I think the correct answer depends, as S & Y suggest, on the advertiser's needs and goals. However, these goals should, in turn, depend on what type of "memory behavior" is adopted by the consumer (or what type can be prompted by the ad copy). Bettman (1979) discusses in-store and out-of-store processing which describe when the consumer activates the memory trace. These types of processing may better be measured by, respectively, recall (semantic memory) and

recognition (episodic memory). Larry Jacoby of McMaster University has coined the term "perceptual fluency" to denote a third type of learning—one that may be most valid of all for other than a few exposures. If the phrase "more research is needed" were ever appropriate, it would seem to be so for this question of an appropriate measure of recall—or, more likely—the appropriate measures of recall under various communication strategies and situations.

Poiesz

Poiesz⁴ (1982) has perhaps personified Jerry Olson's (1982) presidential address plea to entertain creative hypotheses about important topics. He has conceived the notion of "functional exposure" which he believes can offer an explanation of Zajonc's mere exposure results that is an alternative to those commonly cited (e.g., response competition, expectancy arousal, and positive habituation and tedium). As I'll briefly discuss later, I don't think that his functional exposure explanation can explain all past mere exposure results. However, neither can any of the other explanations (see Harrison, 1977; Sawyer 1977, 1981). Despite the fact that Poiesz's cognitive explanation seems to ignore Zajonc's (1980) recent conceptualization, it does seem very worthwhile to carefully consider Poiesz's interesting ideas.

Poiesz argues that a positive frequency-affect relationship depends upon the subject's perception of the experimental task. An expectancy of a "performance task" (such as memory) will likely lead to a positive effect whereas expectation of a "non-performance" task (such as a like/dislike evaluation) will likely result in no frequency-affect relationship. Poiesz suggests that variables manipulated in past experiments—such as type of stimulus and time-interval between exposure and ratings—are confounded by differences in subject's perception of the task expectation.

McGuire (1969) points out that there is often a research life cycle to an artifact in which it is first unknown, then noticed but perceived as a nuisance that must be controlled, then ultimately studied because artifactual behavior like all behavior is interesting in its own right. Accordingly, it seems appropriate to try to understand what psychological process underlies Poiesz's functional exposure concept—even if it is an experimental artifact.

Although I am not confident I fully understand Poiesz's conceptualization of functional exposure, his operational manipulations suggest to me that a parsimonious explanation of his construct involves information processing. Craik and Lockhart's (1972) original conceptualization of the levels of processing framework for memory research cited as evidence the consistent superiority of recall under intentional learning compared to incidental learning. Poiesz's functional exposure construct seems very similar to past manipulations of intentional versus incidental learning.

It seems very likely that the operational manipulations in the various experimental conditions do not just manipulate uncertainty or functional exposure but also motivation to process and/or extent of processing. Indeed, these con-

⁴It's very appropriate that someone with such an unpronounceable name as Poiesz join in the investigation of the exposure-affect relationship made famous by Zajonc (that's "Zionts" not "Zajonk"). Peter Wright humorously pointed out this morning that Zajonc could use his own name in a mere exposure study. However, Peter did not realize that Zajonc and Rajecki (1969) did use both surnames in a mere field exposure study. Surely, Poiesz has the potential to continue this tradition.

cepts may be irrevocably intertwined. A brief examination of Poesz's manipulations may be enlightening. Condition 1 ("hard/easy task") likely manipulates motivation to process the repeated stimuli. Condition 2 ("non-performance task") seems to manipulate extent or level of processing. In fact, the instructions "all we want you to do is to give your opinion as to the quality of the slides" is similar to Bower and Karlin's (1974) manipulation of deep or elaborative processing. It also may lead the subjects to engage in what Peter Webb (1979) calls "central processing." Most theories of mere exposure focus on "initial" processing of the exposure and not on any subsequent evaluative thoughts. Since this subsequent "thinking" will likely dominate mere exposure effects (c.f. Grush 1976), there is a low likelihood of any frequency-affect relationship in this condition. Finally, condition 3 (low interest) seems certain to lower attention in comparison to the instructions in conditions 4 and 5.

Of course my speculations are just that--speculations. Without manipulation checks (Kidd 1976, 1977), I cannot assess just what is being manipulated in the various conditions. However, unfortunately, neither can Poesz. In my review of his first draft, I suggested the need for manipulation checks. In this draft, Poesz answers my suggestion by stating:

It was decided to refrain from manipulation checks. These either would have increased the exposure rating interval, thus confounding manipulations, or would reflect the joint effects of the uncertainty and frequency manipulation.

I disagree with Poesz's rationale. Manipulation checks are needed to assess the adequacy of the experimental operations. Moreover, Poesz's reasons for not including the manipulation checks are incorrect. Instead of preventing a confounding of the experimental conditions by omitting manipulation checks, Poesz's design is in fact confounded because he does not include a manipulation check.

Using Cook and Campbell's (1976) symbols to diagram a research design, I have described Poesz's experiment in Figure 1. Poesz did include a type of manipulation check question in one condition--condition 5 (the mere exposure condition). In that condition, he asked subjects, just after exposure but before the affect ratings, to "indicate their perceived chance of having to do a performance or task (chances adding to 100%)." However, no similar question (or any other) intervened between the exposures and the affect ratings which were the dependent variable in the other four experimental conditions. Thus, the omission of any similar question in conditions 1, 2, 3 and 4 means that the "mere exposure" condition 5 is confounded by the longer interval between exposures and ratings in condition 5.

Is such a confound likely to be important? Can this confound explain the experimental results? I believe the answer is "yes" to both questions. First, note that the only condition which showed an exposure effect was condition 5.⁵ Second, remember that Poesz himself referred to Stang's (1974) review which indicated that even very short delays between exposure and measurement of affect increased the likelihood of a positive frequency-affect relationship. Therefore, Poesz, by omitting the manipulation checks which would yield useful information,

⁵I reject the analysis that omitted the 15 frequency level as a post hoc fishing expedition for statistical significance. The data are what are important not the Type I error probability (see Sawyer and Peter 1982).

has unintentionally biased his treatments to yield results favorable to his hypothesis.

FIGURE 1.
Poesz's Experimental Design

X_1	-	0_{AR}	X_B	0_S
X_2	-	0_{AR}	X_B	0_S
X_3	-	0_{AR}	X_B	0_S
X_4	-	0_{AR}	X_B	0_S
X_5	0_{MC}	0_{AR}	X_B	0_S

X_i = with experimental exposure condition

0_{MC} = manipulation check-type question in condition 5

0_{AR} = affect rating measure (9 point scale)

X_B = "bogus task"

0_S = final question about "suspicion"

Let me briefly discuss the second experiment in Poesz's paper. He admirably tried to "explore a more consumer-oriented task." However, the relationship between perceived risk and the functional exposure construct is not clear. Furthermore, Poesz's operational manipulations of perceived risk seem to also manipulate product quality (higher in the low risk conditions since, in the high risk conditions, the product was described as having low demand "due to their unusual 'swamp-and-jungle ingredients'"). I don't understand why the "pre-instruction" condition produced more positive results than the post-instruction. Since, in the latter condition, there was a longer interval between exposures and affect ratings, I would have predicted the opposite result. My guess (considerably aided by the Monday morning advantage of being able to see the results) is that the level or extent of processing was varied between the two types of instruction in some important way. Again, manipulation checks might be very informative.

In summary, I think that, although Poesz's hypothesis about functional exposure is a very interesting one, his two experiments do not adequately test this theory. Moreover, like other mere exposure explanations, his theory does not seem to have the potential to explain all past exposure results. Functional exposure cannot explain results of positive affect formation independent of cognition (e.g., Matlin 1971; Wilson 1979). Nor can it easily explain positive effects in field experiments (e.g., Crandall 1972; Zajonc and Rajecki 1969); nor can it explain negative (Cantor 1968) or inverted U-curve frequency-affect results (Zajonc, Shaver, Tavis, and Van Kreveld 1972). However, I applaud Poesz's creative hypothesis generation and encourage him to work further in this area. (I have a filedrawer full of repetition experiments that forced me back to the drawing board.)

Future Research

In addition to further research about how to obtain more elaborate cognitive processing in ways controllable by advertisers, future studies involving levels of processing ought to examine attitude measures as well as learning. The learning results are interesting and useful, but they

would be especially so if they were linked as explanations of the process by which attitude effects occur. Carl Obermiller, a doctoral student at Ohio State who will join the marketing faculty at the University of Washington, currently is working on a dissertation that manipulates spread of processing or encoding elaboration (distracted processing, structural processing, semantic processing, associative processing, and affective processing) and exposure (0, 1, 2, 3, or 6). Measurements of both recognition and evaluation will be included. Later experiments (not in the dissertation) may involve delay of measurement as well as exposure intervals more akin to mundane real levels than that of S & Y and most other repetition studies. Given the controversy about whether cognition mediates the effects of repeated exposures on affect formation (cf. Zajonc 1980) and the priority of interest by advertisers in attitudes instead of recall, it seems inappropriate to me to restrict information processing research in consumer behavior to only cognitive measures. Although cognition is of interest by itself, I am more interested in its role (or non-role) in affect formation and/or choice behavior.

Finally, I hope that we learn more about how people process repeated exposures outside of the lab under various "natural" conditions. Does the level or extent of processing vary with repeated exposures? If so, how does it differ under different advertising situations? Belch (1981) and Calder and Sternthal (1979) have studied exposure conditions much more mundane real than in the usual laboratory setting. Similar research that tries to assess the extent and type of information processing under these conditions would be very useful.

I hope future research will build on my recommendations and the important empirical work of Seagert and Young and Poiesz.

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WHY DO FOCUS GROUPS WORK: A REVIEW AND INTEGRATION
OF SMALL GROUP PROCESS THEORIES

Edward F. Fern, Virginia Polytechnic Institute and State University

Abstract

Several small group process theories were reviewed and integrated into a more general theory of social impact. The resulting model suggests alternative explanations and hypotheses for the focus group phenomenon.

Introduction

Focus groups have been in use for approximately twenty five years, yet most of what is known about this popular research tool comes from experiential reports by group moderators. Almost no empirical research has been done on the use of groups and no theoretical foundation has been offered to support the evidence provided by moderators. The purpose of the paper is to (1) explore the group moderators' explanations for why focus groups work, (2) review several small group process theories which may account for the focus group phenomenon, (3) integrate several theories of small group processes into a more general theory of social impact, (4) assess the implications of group process theory for focus group research, and (5) suggest theory based hypotheses for the future study of focus groups.

Several "naive theories" or hypotheses have been advanced by moderators and others as explanations for why focus groups seem to work. One hypothesis depicts the group member as hiding in "the midst of the lonely crowd" [Hess, 1968]. The group is seen as providing security for its members in the same way a crowded city provides a sanctuary for fugitives. Focus group participants, according to this explanation, have a feeling of lowered identifiability or greater anonymity than participants in individual interviews. As a consequence group members feel less inhibited and are more willing to volunteer information, even when it is highly personal.

Another explanation of the focus group phenomenon is that a norm is created which makes it okay to speak out in front of others. In the course of group discussion, the less inhibited individuals "ventilate" their experiences, which encourages others to ventilate theirs. If the "self-starters" are rewarded or receive approval, norms will be established for the more inhibited members. Once the process is well under way it tends to be "self-maintaining and self-reinforcing." As other group members see the atmosphere becoming more permissive, they become less reluctant to discuss personal experiences and habits.

Another explanation suggests that increased excitement and enthusiasm, resulting from a warm-up period, leads participants to want to get their ideas out and expose their feelings [Hess, 1968]. Goldman [1962] sees the group as providing social strength and support which members can draw upon when expressing anxiety-provoking or socially unpopular ideas.

Although these explanations make intuitive sense, one might have more faith in focus groups if small group process theories, which have been tested empirically, were found to support them. To this end a review of group process theory was undertaken. This review looks at studies done on (1) deindividuation theory, (2) social facilitation theory, (3) diffusion of responsibility theory, and (4) social impact theory.

Deindividuation

According to Zimbardo (1969), the deindividuated internal state is characterized by diminished self-awareness and self-evaluation, and less concern for the evaluation of others. Anonymity, the presence of other people, decreased responsibility, and arousal will all lead to a deindividuated state of mind which in turn results in less restrained or uninhibited behavior. Several studies have supported the prediction that high anonymity and low identifiability result in uninhibited behavior (Dipboye, 1977). The effect of group size or the presence of an audience on deindividuated behavior has been reported less consistently.

The effects of group presence, anonymity, and arousal on aggression and deindividuation were studied by Diener (1976). Eighty male introductory psychology students participated in a factorial design study with two levels of group presence (group vs. alone), two levels of anonymity (anonymous vs. nonanonymous), and two levels of arousal (arousal vs. no arousal). Arousal was induced by having subjects perform the rather extreme behavior of throwing bottles against a wall. The bottle throwing activity was eliminated for the no arousal condition. Aggression was defined as "any potentially pain-producing stimuli" delivered to a role player who acted as a target for the aggressive weapons (e.g., foam swords and newspaper balls). Subjects upon entering the experimental room were told they could do "various things" to the role player with the weapons but specific behaviors were not suggested.

Observers recorded aggressive behavior but deindividuation was measured using a post experimental questionnaire. As might be expected, the aroused subjects displayed significantly more aggressive acts than the unaroused subjects. However, individuals in the three person group condition were less aggressive than those left alone with the role player. Also anonymity (whether or not other members and the role player knew the subjects names) did not result in greater aggressive behavior as expected. The latter two findings were contrary to the predictions from deindividuation theory. Responses to the questionnaire items showed that anonymous subjects did feel less concern for social evaluation, but this did not result in a significant difference in aggressive behavior. Perhaps anonymity is not a sufficient condition for causing uninhibited behaviors. A second unexpected finding was that groups were less inclined to behave aggressively than individuals. Moreover, neither groups nor individuals showed evidence of the deindividuated state as measured by the questionnaire. In this particular study groups did not cause a release of inhibition.

Another extreme manipulation was used by Gergen, Gergen, and Barton (1973) to test deindividuation theory. Approximately fifty 18-25 year old college students were divided into groups of eight members, four males and four females. In the high anonymity condition, each group was put into a 10 x 12 foot room for an hour with only a pinpoint of red light. The subjects were told "There are no rules ... as to what you should do together." Subjects in this condition were compared with subjects in a lighted room to determine how a situation which is free from normative pressures

¹ Although several deindividuation measures were used in this study, social evaluation (i.e., concern for what others would think of them) was the only one on which anonymous subjects showed a significant difference.

affects behavior. Compared to the lights-on condition, conversation in the dark became "muted, disjointed, and faltering." Subjects in the lighted room found seats where they remained throughout the session. However, in the dark, subjects moved about continuously and frequently touched each other. Fifty percent of the dark room subjects reported hugging another person with 80 percent reporting sexual excitement. Some subjects reported feeling free, more serious, less anxious to be known by others and less anxious to know others.

In a follow-up study, Gergen and his associates used an additional 22 students similar to those in the first experiment but told them they would meet after the session. Compared to the extreme anonymity situation, these subjects were more likely to be bored, less likely to hug, and in general had less intense relationships. The Gergen report concludes "state of anonymity seems to encourage whatever potentials are most prominent at the moment--whether for good or for ill." This statement is no doubt an attempt to reconcile the reports that in some situations anonymity leads to aggressive behavior and in other situations it leads to sexual behavior. It could be alternatively argued that the red light in the Gergen study and the bottle throwing warm-up in the Diener study provided non-verbal cues as to what behavior was expected of the subjects.

Dipboye (1977), in an extensive review of the literature, attempts to integrate two different theoretical and empirical research approaches to the deindividuation phenomenon. The above studies are examples of the first approach in which lowered personal identifiability reduces moral constraints and results in antinormative behavior such as bottle throwing. For the deindividuated person, lowered identifiability is a positive or desirable experience. The second perspective views man as actively seeking an unique identity. A loss of personal identity is not seen as a pleasurable experience--rather it is a negative experience to be avoided. In this case the individual renews his/her search, presumably through anti-normative behavior, for identity. Contrary to the positive experience associated with the first perspective, being lost in the crowd or being just another face in the crowd is an undesirable experience.

In attempting to integrate these differing perspectives of deindividuation theory, Dipboye hypothesizes three moderating variables (1) structure of the social system, (2) the person's self-evaluation, and (3) prior self-awareness. He notes a common element among the studies demonstrating a release of inhibition: the studies involved groups of strangers in novel situations. In unorganized groups, facing the uncertain reactions of others in the group, deindividuation is likely to reduce inhibiting self-consciousness and arouse positive affect. In an organized permanent group where an individual occupies a role central to his or her self-concept, deindividuation is likely to serve as a threat and therefore arouses negative affect and a search for identity.

Given the unorganized social situations, the reaction of individuals to deindividuation may depend upon their self-esteem. People with low self-esteem should have positive feelings when self-awareness or self-consciousness is reduced due to the effects of (1) anonymity, (2) being part of a large group, or (3) responsibility being diffused. On the other hand, a person with high self-esteem facing the unorganized group may react by seeking out experiences that will heighten self-awareness and react to deindividuation with negative feelings and identity-seeking behavior.

The final moderating variable is prior self-awareness. Reactions to deindividuation may depend on the prior level of self-awareness but Dipboye is not at all clear on how the two concepts are related. Therefore, just what predictions would follow from this variable are uncertain.

Deindividuation theory was thought to provide a plausible explanation of what might occur in interacting discussion groups. A review of the recent studies in this area makes this notion less tenable. Where uninhibited behavior was noted, the studies used extreme manipulations which do not parallel conditions normally found in discussion groups. Dipboye's discussion provides additional insight into what variables and conditions may be necessary to account for the focus group phenomenon. This idea will be pursued later in the paper. First, another theory in which group presence plays an important role will be explored.

Social Facilitation

Unlike deindividuation theory, social facilitation theory posits the mere presence of others is a sufficient condition for explaining behavior in groups. How the presence of other people affects individual performance has been studied using either: (1) the audience paradigm, or (2) the coaction paradigm. Audience refers to the presence of passive spectators during the performance of a task. The presence of other people doing the same task but independently of the subject is termed coaction. Studies employing these paradigms have resulted in some divergent findings. Some studies have shown that the mere presence of others facilitates individual performance while other studies have shown the mere presence of others leads to decrements in performance.

Using the audience paradigm Travis,² and Dashiell³ have shown that the mere presence of others facilitates task performance. Travis found improvement in the performance of a pursuit-rotor task when college students performed in the presence of four to eight people. Dashiell likewise found improvement in simple multiplication or word association tasks when subjects performed in front of others. Not all studies have supported these findings, however.

In a study reviewed by Cottrell [1972], Pessin asked college students to learn nonsense syllables either with others present or alone. When in front of an audience, subjects required more trials in learning the list than when alone, plus the audience condition produced significantly more errors. Other researchers using other tasks have supported the Pessin finding. Zajonc [1965] has attempted to resolve these differences by noting the Travis and Dashiell studies involved well learned tasks while the Pessin studies involved learning or acquiring a set of new responses in front of an audience.

In a review of many past studies involving humans, insects and birds, as well as a wide range of behaviors, Zajonc found support for the idea that coaction and the presence of an audience facilitates learned responses and leads to decrements in the performance of not well learned responses. Zajonc reasons that this effect is due to the audience enhancing the dominant response. The dominant response is the most probable response whether it is the right or wrong one. If the task is well learned, the dominant response is the right response. If the task has not been learned, the dominant response is most likely to be the wrong response or error. Thus, Zajonc offers a simple generalization to cover both situations, "audience enhances the emission of dominant responses."

Zajonc also provides evidence that drive, arousal, and activation increase the chances of emitting the dominant response. The mere presence of others is hypothesized to increase the individual's general drive level. If the

²Reported in R. B. Zajonc, "Social Facilitation," *Science*, Vol. 149, No. 7 (July 1965), pp. 269-274.

³*Ibid.*

right or sought responses are dominant, the then increased drive will improve performance by increasing the probability of correct responses. If, on the other hand, the correct or appropriate responses are subordinate to stronger incorrect responses, the increased drive state will impair performance by increasing the probability of incorrect responses.

In a modification of the Zajonc hypothesis, Cottrell (1972) suggests that individuals learn to anticipate positive and negative outcomes when others are present through classical conditioning. This anticipation and not the mere presence of others is hypothesized to increase the individual's drive level. The anticipation of negative outcomes should lead to decrements in performance of a not well learned task, while anticipated positive outcomes for a well learned task should facilitate performance. The presence of other people may also lead to decrements in performance if, as a result of their presence, each individual feels less responsible for completion of the task at hand.

Diffusion of Responsibility

Two different areas of study on group behavior have led to the explication of a diffusion of responsibility hypothesis. Wallach, Kogan, and Bem (1962) have used a diffusion of responsibility hypothesis to explain "risky shifts" in group choice situations. Diffusion of responsibility to others in a crowd has been offered by Latané and Darley (1970) as an explanation for the lack of bystander intervention in emergency situations. Both the unresponsive bystander and the member of a decision making group face essentially the same dilemma. Standing alone, each individual carries the burden of responsibility for the consequences of their decision to act or to remain passive. Failure to intervene in an emergency results in the individual receiving all the blame when others are not present. Likewise, the responsibility for a risky choice falls on the individual if others are not present. That is, a wrong decision falls on the shoulders of the lone individual. If others are present, however, the individual is less likely to receive all the blame--the responsibility is diffused to all of those present.

Latané and Darley [1970] tested the diffusion hypothesis using male and female introductory psychology students in an epileptic seizure study. Subjects were led to believe they would be part of a group discussion on problems associated with college life. Actually all participants except the subject were tape recorded voices. Each subject was put in a room and was told the discussion would be held over the intercom to preserve anonymity. Each participant was to present his or her problems to the group with a free discussion to follow. The epileptic seizure victim spoke first during the discussion pointing out that he was prone to seizures, particularly when he was studying hard or taking an exam. The naive subject spoke last, after the last prerecorded voice was played. When it was the victim's next turn he feigned an epileptic seizure. The major independent variable was the number of other people in the discussion group. The lapsed time from the start of the seizure until the subject left the room to seek help was the dependent variable. The speed of response along with the percent responding is presented in Table 1. Analysis of variance on the reciprocal of response time indicated the effect of group size was highly significant. All comparisons, except between two and three person groups, were significant. According to Latané and Darley the subjects found themselves in a state of conflict and indecision about what to do. On the one hand, subjects worried about the guilt and shame they would feel if they did not help the person in distress. On the other hand, they were concerned about making fools of themselves by overreacting, about ruining the ongoing experiment by leaving their intercoms, and about destroy-

ing the anonymous nature of the situation which the experimenter had earlier stressed as important.

Table 1
Effects of Group Size on Likelihood and Speed of Response

Group Size	n	Percent responding by end of seizure	Percent ever responding	Time in seconds
2 (Subject and victim)	13	85	100	52
3 (Subject, victim, and one other)	26	62	85	93
6 (Subject, victim and 4 others)	13	31	62	166

Although diffusion of responsibility is a widely reported phenomenon, other types of social inhibition have been reported, namely social influence and audience inhibition (Latané, Nida, and Wilson, 1978). More recently Petty *et al.*, reported group members put forth less cognitive effort on an evaluative task than did individuals. Seventy-five introductory psychology students of both sexes were asked to evaluate an editorial and a poem either alone or as one of a group of four or sixteen people. After reading the communication, the students answered four questions that constituted a general evaluation of the communication and a set of three questions that comprised an effort index. As predicted, the individuals felt they put more effort into the task than did the subjects in groups. The researchers claim this finding supports their hypothesis that responsibility diffusion should lead to reduced cognitive effort.

Wallach *et al.*, [1968] provide support for the diffusion of responsibility notion in a study on group risk taking. A rather elaborate procedure and set of instructions was developed to isolate two distinct components of the decision making process--group decision and group responsibility. The participants in this study were 336 male and female college undergraduates enrolled in the summer session. They were given booklets of questions from past College Board Examinations to answer. Each question was coded as to level of difficulty, ranging from questions which 10 percent of previous test takers failed to questions which 90 percent failed. A correct answer could win from 17 cents to \$1.50 depending on the level of difficulty of the question. Each group or individual first had to decide on the difficulty level of the question to be tried and then they had to answer it.

The procedure involved experimental conditions representing combinations of group decision and group responsibility. The personal responsibility condition involved a group decision on difficulty but each individual answered each question (therefore no responsibility to the group should be felt). The group responsibility-individual decision condition had each individual deciding on his own level of difficulty. One individual was then randomly selected to answer the question with each member winning or losing based on that individual's performance. It was expected that this condition would make conservative choices in question difficulty. The group responsibility group decision conditions involved the group deciding on the difficulty of the question with an individual, randomly selected in one condition and selected by the group in the other, answering the question. Since, in the random condition, each member faced an equal chance of being selected, felt responsibility to the group should have resulted in a conservative choice in question difficulty. That is, each individual should have chosen a less

difficult question than if he or she were only responsible to himself or herself. Presumably if subjects felt responsible to the group they would want to maximize the chances of the group being rewarded for a correct answer.

The results show that in the personal responsibility-group decision condition the shift in question difficulty⁴ indicated increased risk taking compared to a control group. In the group responsibility-individual decision condition the shift was as expected in the conservative direction. When group responsibility and group decision were both present there was a strong shift toward greater risk taking whether the responsible person was randomly selected or chosen by the group. The researchers saw these findings as supportive of the diffusion of responsibility hypothesis. Since the individual was answering the questions at a difficulty level determined by the group, he may have felt that the group would have absolved him of the blame for failure. Wallach *et al.*, suggested the group decision brought about diffusion of responsibility in two ways. First, it appeared in making the decision by pushing decisions in the risky direction. Second, it reduces the felt responsibility of any group member designated to act as the group's representative. In the eyes of the responsible group member, the group shares his responsibility since the decision is a group product. Higher risk levels with greater probability of failure apparently could be tolerated more in this situation than when the responsible individual must carry out his responsibility without benefit of communication with the group.

Social Impact Theory

Latané and Nida [1980] have proposed a more general theory of social impact which should accommodate the above theories. Latané defines social impact as "any effect of the presence or actions of other people on an individual." The effect may be "changes in physiological states, motives, cognitions, emotions, beliefs, values, and behavior that occur in an individual as a function of the real or imagined presence or actions of other people." Three basic principles of the theory will be discussed briefly.

The first principle states that the amount of impact experienced by an individual should be a multiplicative function of the strength (S), immediacy (I), and number (N) of social forces or $I = f(SIN)$.

The second principle specifies a marginally decreasing impact on an individual as another person is added to a social situation. That is, the addition of a fourth person should have a greater impact than the addition of the eighth if individual difference variables are held constant. Specifically, Latané proposed social impact (I) should equal some root (t) of the number of sources (N) times a constant (s) or $I = sN^t$, where $t < 1$.

To support the second principle, Latané and Harkins (1976) sought to determine if a power law applies to the multiplication of impact prediction. Ten of 26 introductory psychology students were used in a pretest with the remaining sixteen used in the main experiment. The main experiment involved four cross-modality matching tasks. In two of the tasks, subjects matched brightness of light with sound levels and loudness with levels of luminance. In the other two, subjects were asked to imagine reciting a poem in front of audiences of size one, two, four, eight, or sixteen, whose faces were presented on colored slides. Subjects were to make the light as bright or the sound

⁴The shift index was the difference between mean question difficulty of a practice booklet involving no payoffs and the real booklet containing payoffs.

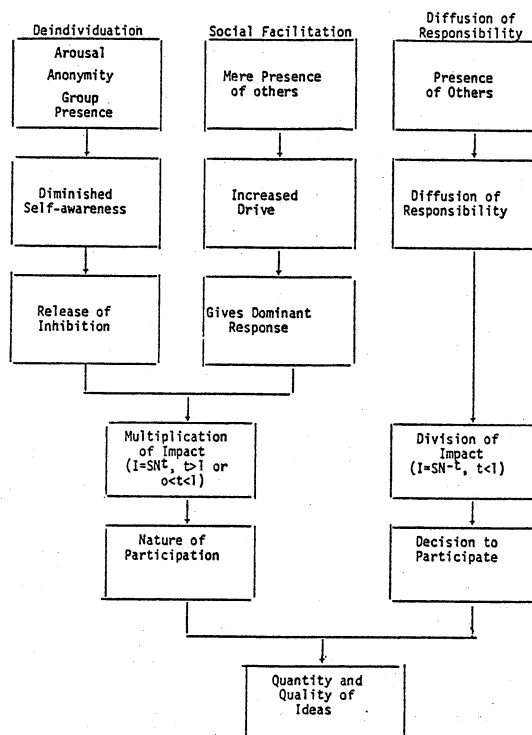
as loud as they would be anxious, nervous, or tense in performing in front of an audience whose faces they had just been shown. The audience was composed of either males or females in their early teens or late 30's. As predicted from social impact theory, tension increased at a decreasing rate as audience size increased. The exponent for the effect of audience size was estimated to be .52.

Where the second principle deals with an individual as a target of social forces, the third principle deals with others with the individual. Increasing strength, immediacy, and number of other people in this situation should lead to a division of impact. Each person in a group should feel less social force than if he/she were the sole target of the social forces. The effect of a social force from outside the group should be some power of people which is negative but less than one. Therefore, the prediction in this situation would be $I = sN^{-t}$, where $0 < t < 1$. This principle was derived from the diffusion of responsibility hypothesis discussed previously.

Several studies support the division of impact idea. A recent study by Petty *et al.*, [1977] (reviewed in the Diffusion of Responsibility section) examined the effects of group size on cognitive effort and evaluation. If cognitive effort, such as required in critically evaluating a poem or editorial, is viewed as costly to the individual and other people are available to share the cost or load, each individual may be tempted to reduce his/her own share. A trend analysis on the logarithm transforms of group size and effort index scores was significant, accounting for 91 percent of the variance. The exponent implied by the linear trend was -.10, supporting the hypothesis that perceived effort is an inverse power function of group size with an exponent less than one.

Figure 1

Integrative Model of Social Impact



An Integrative Model of Social Impact

Although most of Latané's studies have dealt with social impact in terms of social inhibition, in certain instances the effect attributed to social impact could be more specifically attributed to either deindividuation, identity seeking, or the facilitating effects associated with the presence of others. In this section the previously discussed theories will be integrated to help explain the predictions from social impact theory. The resulting model depicted in Figure 1 is offered to bring the relevant theories into sharper focus.

Social facilitation theory provides one avenue for explaining the multiplication of impact findings. If the presence of other people is facilitating then the contradictions between the experiential evidence offered by focus group researchers and empirical evidence offered by Latané may be explained by social facilitation theory. If the task is spontaneous thought generation, the dominant response may be well rehearsed thoughts or often repeated tales of little information value. The fear of being negatively evaluated by other group members and little promise of reward for participation in group discussion, could inhibit spontaneous thought generation (i.e., in this case the dominant response would be the wrong response). With repetition of previously stated ideas and irrelevant stories occupying much of the group's discussion time, it would seem likely that the number of different ideas generated would increase as group size increased but at a decreasing rate.

Another explanation of the multiplication of impact principle follows from the identity seeking side of deindividuation studies. Although some participants may seek solace by hiding in the crowd, others--most likely those with high self-esteem--may have a disruptive effect with their attempts to reestablish their lost personal identity. That is, they may become "pests" in order to bring attention to themselves. The focus group moderator whose purpose is to maintain control, may thwart attempts to hide and at the same time serve as a roadblock to identity seeking. Insofar as hiding and seeking activities continue, they may be dysfunctional to the group's task. By performing the very activities deemed necessary as control techniques, moderators may be unwittingly attenuating the groups effectiveness.

Contrary to the above lines of reasoning, it would be expected from the synergism hypothesis that the number of thoughts would be a monotonically increasing function of group size. This effect might be noted if the discussants were involved in a well learned task where the dominant response was more likely to be the right or acceptable response than wrong (e.g., discussing personal product experiences).

Two plausible explanations of the synergistic effect seem to be offered by deindividuation theory. The presence of other people may afford each individual some degree of perceived anonymity which may result in less self-awareness and less concern for the evaluations of others. Decreased self-awareness may in turn free the individual from personal inhibition which could result in greater freedom in thought generation. In the second explanation, generalized arousal resulting from the pre-discussion warm-up period may cause reduced personal inhibition. Getting caught up in the carefree excitement of the occasion may tend to reduce self-awareness leading to a deindividuated state.

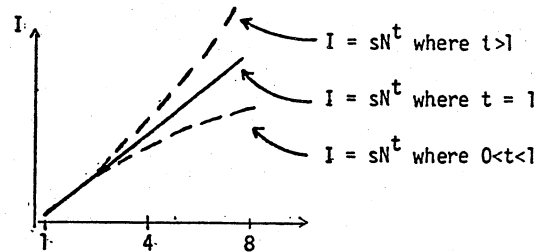
Social facilitation theory and deindividuation theory are depicted in Figure 1 as affecting the nature of the individuals contribution to the group discussion (i.e., the quantity and quality or nature of the thoughts presented). These two theories can be viewed as competing explanations of the focus group phenomenon. Future research can

provide tests to determine which theory provides greater understanding of this process.

An illustration may help clarify the predictions derived from these theories. Figure 2 summarizes the effects, on the number of ideas generated as a function of group inhibition, facilitation, and no group effect. If focus groups provide a synergistic effect through interaction, an exponent greater than one would be expected. In this

Figure 2

Number of Ideas as a Function of Group Inhibition, Facilitation, and No Group Size Effect

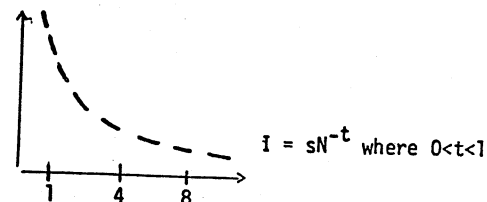


case the number of ideas generated by the group would be greater than the sum of the ideas generated by its members working independently of each other. If group size is inhibiting, an exponent less than one would be expected. The number of ideas generated by the group would be less than the sum of the contributions of the individual members. An exponent of one suggests that group size has no effect or the number of ideas generated by the group is equal to the number of ideas generated by members independent of each other.

The division or diffusion of impact principle would suggest that, as group size increases, any one individual would feel less compelled to attend to the comments of others or would be less likely to participate in the discussion. Therefore, the number of ideas contributed by each individual should decrease as group size increases. This effect would be modeled by an exponential function but in this case the exponent would be negative as depicted in Figure 3. The diffusion effect may be caused by audience inhibition or diffusion of responsibility for participation to others.

Figure 3

Diffusion of Impact as a Function of Group Size



Participation in the group discussion may be withheld due to evaluation apprehension. Potential negative outcomes such as looking foolish could cause some individuals to withhold participation. Also, since there are no explicit goals to strive for in focus groups there is no way

for the individual to share in the rewards associated with meeting the group's goals. Additionally, an ambiguous situation calling for unrehearsed behavior, such as in focus groups, may cause participants to look to others for support. If the others respond in a safe or neutral way, the individual may find comfort in doing likewise. If others on the other hand respond brilliantly, the individual may feel his/her contribution would appear foolish by comparison. The net result might be a diffusion of responsibility or an avoidance of responsibility for contributing to the group's output.

Many of the above theories may not be directly applicable to focus groups. Most of these studies had naive subjects performing a task in front of an audience or group of passive spectators. In these studies it is fairly clear as to which direction the cause/effect relationship flows. The experiments were designed to put the subject in a single role--either the source or the target of social forces. However in interacting discussion groups the individual is both the source and target. In effect, the individual switches roles from talker to listener. When talking the individual is a target of social forces emanating from the group and a source of forces directed at the group. When listening the individual is both a target of social forces emanating from the speaker and a source directed at the speaker. As the size of the group increases the magnitude of social forces aimed at the speaker should increase. Also, as the size of the group increases, diffusion of forces from any one speaker should increase. The presence of both the multiplication of impact and division of impact in interacting discussion groups makes researching this phenomenon difficult.

Theoretical Implications For Focus Group Research

The theories reviewed in this paper are only representative of the many that could contribute to understanding why and how focus groups operate. This section will explore the implications of these theories (i.e., why and how they may operate) for the conduct of focus group research. Primary emphasis will be placed on how these theories might be used to develop a more effective focus group technique.

Up to this point no distinction has been made between the different types of focus groups. However, it now becomes useful to differentiate various types of focus group research. In an important step towards developing a theory of qualitative research, Calder [1977] has delineated three distinct focus group approaches: (1) the exploratory approach, (2) the clinical approach, and (3) the phenomenological approach. The exploratory approach defines those situations in which the researcher is looking for ideas or hypotheses that lead to scientific investigation and theory. The clinical approach reflects the perspective of clinical psychology. Its purpose is to uncover the underlying or subconscious causes of behavior. The phenomenological approach seeks everyday or experiential knowledge. This approach has been most often used to discover how consumers think, feel, and behave in product purchase situations. As an aid to planning marketing strategies, the phenomenological approach seeks to uncover consumers' product experiences.

The implications which can be drawn from theories about small groups depend upon the specific approach being considered. A few theoretical constructs will be presented and their differential effect depending upon the focus group approach will be explored. First, from studies on deindividuation it was learned that anonymity, decreased responsibility, and arousal may lead to uninhibited behaviors. If group moderators want to vary the degree of inhibition felt by group members they can try to control the amount of anonymity and arousal that participants are subjected to. Turning the lights off to achieve anonymity may be rather extreme but other available means are:

- (1) insuring that strangers are recruited,
- (2) eliminating respondent interaction before the group session,
- (3) eliminating personal references during the warm-up, and
- (4) using numerical or alphabetical labels rather than names during the sessions.

On the other hand, arousal can be achieved through preplanned warm-up sessions designed for the specific focus group task at hand.

When clinical groups are conducted greater spontaneity and candor may be called for. Openness may be particularly critical when attempting to uncover preconscious motives. Therefore, enhancing respondent anonymity may be effective in helping the moderator achieve greater depth of analysis. Anonymity may also be crucial when the phenomenological approach is used to uncover product experiences--particularly when consumers are sensitive about discussing the products (e.g., personal hygiene products). In the exploratory approach anonymity is probably a less important factor.

In situations calling for actual product usage experiences (i.e., well-learned responses), the presence of others and induced arousal may facilitate members' participation in the discussion. In the phenomenological approach a few minutes spent raising the level of arousal (i.e., getting the consumers in role) may increase each individual's drive state thereby increasing the respondents' accuracy in providing relevant product use experiences. However, heightened arousal and drive may be inappropriate and even detrimental to the goals of the clinical approach. For exploratory research arousal may or may not be appropriate depending on the nature of the specific task.

Diffusion of responsibility for participation in the group discussion may be directed horizontally toward other group members or vertically toward the moderator. The effectiveness of clinical groups may not be impaired due to a reduced sense of responsibility because the group's goals are not so obvious (i.e., there is not much responsibility to be diffused). On the other hand responsibility diffusion may be a problem as group structure becomes more formal and/or more rigid. In exploratory research the group participants may be more aware of where the group is going (i.e., more moderator-participant interaction may provide cues) and therefore foster feelings of reduced responsibility as groups size increases. In situations where the moderator's role is more central to the process (e.g., exploratory research), effort may be reduced simply because the moderator is perceived to have greater responsibility for the outcome than the respondents.

Social impact theory provides the potential for a relatively simple and straight forward way to structure focus groups to fit specific tasks. If the task is exploratory in nature (i.e., to generate lots of ideas, thoughts, or hypotheses) than the researcher may be concerned about the size of the group. In a study which compared the number and quality of ideas generated in individual interviews with focus groups of four and eight members, Fern [In press] found evidence to support the diminishing returns hypothesis. The exponent of the power function ($I=N^k$) fitted to the data was .7 with 86% of the variance in number of unique ideas explained by the group size factor. However, if the task is to learn about consumers' experiences in using products then size may not be a critical factor. To date there is very little empirical evidence to suggest what types of focus group tasks are affected by the size of the group.

The relative strength of social forces (e.g., perceived social status) may be a critical variable when using the phenomenological approach. In this approach the role of the moderator should be unobtrusive. Therefore the moderator should attempt to neutralize any apparent differences in social status. Moreover, groups should probably be comprised of respondents with similar social backgrounds. These concerns are probably unfounded when the task is

exploratory in nature. In this approach moderator obtrusiveness is not a problem.

The immediacy (i.e., physical proximity) of social forces is also well within the control of focus group moderators. Moderators may not consciously manipulate immediacy but they seem to have individual preferences for seating arrangements. Some prefer informal seating arrangements around the perimeter of the room (low immediacy) while others prefer a more closely knit aggregation around a small table. Still others may prefer a small table with the respondents facing the moderator (high immediacy). Greater distance among group members may be called for in clinical sessions where the moderator is less involved in the group interaction. However, for exploratory research more control may be required and therefore tighter seating arrangements may be in order. With the one exception noted, none of these relationships have been studied. These notions along with others taken from the literature review provide ideas for needed research on the focus group techniques.

Hypotheses for Future Research

Several hypotheses were derived to demonstrate potential avenues for research on focus groups. These hypotheses do not represent an exhaustive list. However, they do suggest opportunities for future research in this area. The first set of hypotheses test many of the notions from deindividuation theory. If arousal and/or anonymity from being part of a group results in a release of inhibition, the productivity of focus groups may be greater and qualitatively better than the productivity of an equivalent number of individual interviews.

- H_{1.1}: The overall quantity and quality of information obtained from focus groups will be greater than that obtained from an equivalent number of participants in individual interviews.
- H_{1.2}: As group size increases the more willing group members will be to participate in group discussion.
- H_{1.3}: As group size increases the more willing group members will be to disclose personal information.
- H_{1.4}: As group size increases the greater the relative participation of members with high personal self-esteem will be.
- H_{1.5}: Focus groups using warm-up sessions will produce more uninhibited responses than groups not using warm-up sessions.

On the other hand, some slightly different hypotheses might be formulated from the Zajonc perspective. The presence of other group members may serve to reduce the amount of creative or unrestrained thought of group participants.

- H_{2.1}: The more familiar the group members are with the discussion topic, the more spontaneous and uninhibited will be their participation in the presence of others.
- H_{2.2}: The less familiar the group members are with the discussion topic, the more they will resort to story telling and other irrelevant conversation.

Still other hypotheses may be formulated from the diffusion studies. Reluctance to participate in a discussion which poses the risk of looking foolish and which offers

little chance for reward may attenuate the group's performance.

- H_{3.1}: As group size increases, the number of voluntary contributions per group member will decrease.
- H_{3.2}: As group size increases, the incremental cognitive effort exerted by each individual member will decrease.
- H_{3.3}: As group size increases, the amount of responsibility each member feels for the group's task decreases.

Finally, hypotheses can be derived from social impact theory. According to the Latané definition of impact (I), beliefs, attitudes and behavioral intentions can all be dependent variables in the social impact function $I = f(SIN)$. Additionally, immediacy (I) and strength (S) of social forces can be treated as independent variables. Although no theoretical support has been presented in this review, hypotheses could take the form of:

- H_{4.1}: As the other group member's status relative to the respondent's status increases, the more reluctant the respondent will be to participate.
- H_{4.2}: As the physical distance among group members decreases (e.g., decreasing the size of the table) responsibility diffusion decreases.

Several theories have been reviewed which may add to the understanding of the focus group phenomenon. An attempt was made to integrate these theories into a more general theory of social impact. The theories reviewed in this paper are not the only viable candidates for explaining this phenomenon. Other theories need to be reviewed and tested if a theory based focus group methodology is to be developed. Currently experiential information is the focus group researcher's only guide. It is hoped that this paper will provide a step in the direction of augmenting experience with theory based research. The result could be more confidence in using this popular research technique.

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ON THE MANAGEMENT OF SELF IMAGES IN SOCIAL SITUATIONS:
THE ROLE OF PUBLIC SELF CONSCIOUSNESS

Robert E. Burnkrant, The Ohio State University
Thomas J. Page, Jr. (student), The Ohio State University

Abstract

This paper will briefly review the treatment of the self image in the marketing literature. It will then suggest a more dynamic treatment of the self, one which holds that consumers who contemplate their presence in social situations process information about the kind of image called for in those situations and then use that information to construct an image of themselves through their strategic use of consumer goods. An individual difference variable, public self consciousness, will be employed to discriminate between people who are likely to take this strategic approach to self presentation and those who are not likely to take this approach.

Introduction

The self concept has been treated in the marketing literature as a relatively stable characteristic of the individual which causes that individual to act in a manner which he (or she) believes is consistent with that concept. Several researchers have suggested that people seek and prefer products which they believe to be consistent with their concepts of themselves (Birdwell 1968, Dolich 1969, Grubb and Hupp 1968, Landon 1974, Ross 1971). This conclusion was based on the attainment of greater similarity between the individual's self-concept and the image of his most preferred brand than between his self-concept and his least (or less strongly) preferred brand. Since these results are based solely on associative evidence, the causal flow implied by this self-concept purchase-congruence model is open to serious question. Brand image-self concept congruence may have followed rather than preceded the formation of product preference, or lacking an image of the brand, people may use their own self concepts as a basis for inferring brand image.

A second major problem with the self concept-product congruence notion is that it implies trans-situational consistency in product selection. People prefer and purchase products that are similar to a relatively stable concept they have of themselves. Since it is presumed that this concept is stable across situations, it is also assumed that product choice is stable across situations. However, this implied cross-situation stability is inconsistent with other consumer research that has examined the impact of situations on product choice. Sandell (1968) found that a person's choice of beverage was highly dependent on the situation, and that a person's choice in one situation was not necessarily the choice in another situation. Green and Rao (1972) showed that consumer's choices for baked goods varied considerably with meal situations. In fact, Belk (1975) reviews several studies that demonstrate that product choice is not consistent across situations.

In a more general sense, it is quite well known that measures of traits (including the self-concept) tend not to be very good predictors of situation specific behaviors (Kassarjian, 1971; Mischel, 1973). Epstein (1978, 1980), however, argues that trait stability will emerge if errors of measurement in behavior are removed. Specifically, he demonstrates that behavior can vary significantly with the situation and still show consistency when it is averaged over many situations. The self concept-product congruence notion has not demonstrated this consistency, at least as

it has been treated in the consumer behavior literature. Therefore we must remain quite skeptical of this proposed relationship.

An alternative self relevant conceptualization which is much more situation specific than the traditional self concept congruence model is provided by social identity theory (Schlenker, 1975, 1980). This theory suggests that people who are about to enter a situation attempt to determine the impression which is called for or likely to be rewarded in that situation. They then attempt to present themselves in a way that they believe will generate the proper impression. In other words, people will project reward consistent self concepts. In some situations they will project positive self concepts, and in others they will project negative ones. Thus, rather than being a stable trait of the person, it is an image which is manipulated in order to achieve positive outcomes. This suggests very dramatic situational differences in the types of images people will project.

It has been shown, in support of this phenomenon, that people will present themselves in a manner which is inconsistent with their own self perceptions if that inconsistent presentation is likely to be believed by an audience and is in the individual's interests (Schlenker, 1975). A considerable body of other research has also shown that people will spontaneously state opinions, report behaviors, and make other claims that are inconsistent with their own internally held opinions when those opinions or behaviors are believed to be consistent with situational contingencies (see Schlenker, 1980; and Jones and Wortman, 1973).

Calder and Burnkrant (1977) have shown that consumers are able to form impressions about others based on their brand selection and that these impressions are sensitive to situational contingencies. It has also been shown that people contemplating their own presence in a situation will choose products for use in that situation that are consistent with the reward contingencies of the situation (Burnkrant, 1981). If those situational contingencies change, people change their selection of products. It will be argued in the research reported below that, if, when situations are manipulated, people select products that project inconsistent or contradictory but reward consistent images, that this result is in direct opposition to the trans-situational stability implied by the self concept-product congruence literature.

Public Self Consciousness

It is very likely that some people will be more sensitive than others to the impressions called for or likely to be rewarded in social situations. These people may also be more inclined than others to present an image of themselves that would lead to the desirable impression in these situations. The isolation of a variable that would identify these people would then permit marketers to reach groups who may be particularly inclined to use consumer goods to create and project favorable images of themselves. It is believed that public self-consciousness is such a variable.

Self-awareness theory, in general, "concerns a self regulation process that controls the intensity and direction of ongoing behavior. Specifically, self-attention is presumed

to evoke a matching to standard process, whereby the person conforms to whatever he or she takes as the standard of appropriate behavior" for the situation (Wegner and Vallacher, 1980, p. 247). The greater the situationally induced self-awareness, the greater the correspondence to behavioral standards.

In addition to situationally induced self-awareness, there appears to be a disposition to be self-aware called self-consciousness. Public self-consciousness is an individual difference variable that accounts for the tendency of an individual to adopt the perspective of other people and view himself (or herself) as others do (Fenigstein, Scheier, and Buss, 1975; Carver and Glass, 1976). People who are high in public self-consciousness are particularly concerned with their social appearance and the impression they make on others (Turner et al., 1978).

"An implicit assumption of researchers working on this area has been that individual differences in self-consciousness will produce the same effects on behavior as will situational manipulations of self-focused attention" (Wegner and Vallacher, 1980, p. 249). This assumption has been supported by the relatively small amount of research on public self-consciousness. For example, Fenigstein (1979) found that women that were high in public self-consciousness were more sensitive to peer group rejection and less willing to affiliate with the group in the future than were women that were low in public self-consciousness. Scheier (1980) tested the hypothesis that individuals high in public self-consciousness should try harder to create a favorable public image and should therefore be more likely to change their own beliefs to make them more consistent with beliefs of others around them than individuals low in public self-consciousness. To test this hypothesis, he had subjects write an essay reflecting their opinions on an issue and he told them the essay would be discussed with another individual. His results demonstrated that individuals high in public self-consciousness expressed opinions that were more moderate than the ones they actually held, whereas individuals low in public self-consciousness did not change their opinions.

The existing research on public self-consciousness (Fenigstein, 1979; Scheier, 1980) has demonstrated that people who score highly on this construct are more sensitive than others to the impression they make in social situations and are more aware of the actions, thoughts, and feelings of relevant others. It is reasonable to expect, but has never been shown, that people who score highly on this variable would also be more inclined than low scorers to use consumer goods to create favorable impressions. It was expected in this research that those who were high in public self-consciousness would choose products that were more consistent with the kind of impression called for in a given situation than would be chosen by people low in public self-consciousness.

Method

The method employed in this research was similar to a procedure employed earlier by Calder and Burnkrant (1977). Scenarios were developed which were found to be realistic and representative of the kind of situation a subject might encounter. The scenarios described the subject and her husband (all subjects were married women) preparing to have the husband's boss over to dinner. The boss was always described as a gourmet who in the past had served the husband and wife duckling roasted in a cherry and wine sauce, artichoke heart salad, and cherries jubilee for dessert. The scenarios then manipulated the impression called for in the given situation. In half the scenarios the boss was described as preferring to promote people who have tastes and interests which are very similar to his own. In the other scenarios the boss was described as preferring to promote people who have tastes and interests which were very different from his own.

Subjects were assigned to scenario conditions by the random distribution of test booklets. After reading the scenario, the subject was asked to describe the meal she would serve when the boss came to dinner. A series of blank lines was provided for that purpose. After the meal was described, subjects were asked to complete the Fenigstein, Scheier, and Buss (1975) self-consciousness scales.

The meal provided by each subject was then typed on a new questionnaire and given to a separate group of subjects who judged the characteristics of the meals created by the initial subjects. These judges were unaware of the manipulation and condition that generated each meal. Each judge rated all the meals provided by the initial subjects in terms of their sophistication and whether or not they were gourmet meals. In addition, the judges also rated each meal in terms of its similarity to the meal that had been served by the boss (i.e., duckling roasted in a cherry and wine sauce, artichoke heart salad, and cherries jubilee).

The dependent variables were generated by the judges. They were the judges' ratings of the meals' sophistication, gourmet characteristics, and similarity or difference from duckling roasted in cherry and wine sauce, artichoke heart salad, and cherries jubilee.

Two independent variables were employed in this research. The first independent variable was whether the situation described to the initial subjects called for an impression of an individual that was similar or different from the boss. The second independent variable was created by generating a public self-consciousness score for each initial subject. Then, subjects were divided into high and low public self-consciousness groups by a median split of their scores on this dimension. Thus, the design conformed to a 2 (similar or different impression) by 2 (high vs. low public self-consciousness) between subjects factorial experimental design.

Results

A preliminary 2 x 2 factorial multivariate analysis of variance was performed on the three dependent variables to generate a within-cell (or error) correlation matrix of dependent variables. This provides correlations among dependent variables which are unbiased by treatment effects. This was done to determine whether it would be appropriate to combine any of the dependent variables into multi-item scales. The analysis showed that the sophisticated and gourmet ratings correlated at .93 ($p < .001$), but the similarity scale was not correlated with either of the other 2 scales. Therefore, a sophisticated-gourmet scale was created by summing judged ratings on the sophistication and gourmet scales. The similarity scale was maintained as a separate dependent variable for the subsequent analysis of this data.

A 2 x 2 factorial multivariate analysis of variance was performed on the two remaining dependent variables (see Table 1). The multivariate effect of the subjects' self-consciousness score was significant ($p < 0.05$). An examination of the univariate F ratios shows that the multivariate effect was due to the effect of public self-consciousness on the similarity of chosen meals ($p < 0.05$). The means (see Table 2) show that this was due to the greater tendency of high public self-consciousness subjects (relative to low public self-consciousness subjects) to serve meals which were similar to the meal initially provided by the boss.

A highly significant ($p < 0.0001$) multivariate effect was also obtained for the similar-different impression treatment. The univariate F-ratios show that this was due to the effect of the impression called for on the sophisticated-gourmet characteristic of the chosen meals ($p < 0.0001$). The table of means shows that when a similar

Table 1
Multivariate Analysis of Variance

	Multivariate		Univariate		
	F approx.	p	Variable	F	p less than
Public Self Consciousness (A)	3.27	< .05	Sophisticated plus gourmet	.97	NS
			Similarity	5.76	< .05
Similar or Different Impression (B)	13.01	< .0001	Sophisticated plus gourmet	25.49	< .0001
			Similarity	1.00	NS
A x B	.01	NS	Sophisticated plus gourmet	.001	NS
			Similarity	.03	NS

impression was called for, a more sophisticated-gourmet meal was created than when a different meal was called for.¹

Discussion

It was maintained initially that people will be sensitive to the kind of impression called for in various situations and that they will seek to create an impression consistent with what is called for through their strategic selection of consumer goods. This contention was supported by the data. It was found that consumers created a meal which was more sophisticated when a sophisticated impression was likely to be rewarded and they created a meal which was less sophisticated when a different impression was called for. The results show that consumers do use consumer goods to create impressions and that their selection of these goods is consistent with the reward contingencies inherent in social situations. It shows, furthermore, that their selection of goods is not stable across situations.

This implies a more active process of consumer decision making and behavior than is suggested by a self concept congruence model. According to self concept congruence, an individual has a relatively stable concept of himself (herself) that he (she) seeks to express in his (her) purchase behavior. This suggests relatively stable product selection and use across situations, where the selected products are the ones that are congruent with the individual's self concept. Through random assignment of subjects in this post test only experimental design, the two groups should not have differed significantly in terms of their aggregate self-concepts. Therefore it is unlikely that differences in self-concepts between the two groups could account for the results, and we are forced to conclude that different types of products were chosen in order to project different self-images. The present research suggests then that consumers first determine the type of impression likely to lead to positive outcomes in a given social situation and then select products for use in that situation which they believe will help create that impression.

It was also maintained initially that people who are high in public self-consciousness should be more sensitive to the type of impression called for in social situations and

they should be more inclined to act in accord with these impressions than people who are low in public self-consciousness. Support of this contention would have required a significant interaction effect so that in the similar condition those high in public self-consciousness would have chosen a meal which was more similar to the meal initially served by the boss and more sophisticated than the meals chosen by low public self-consciousness subjects, but in the different condition, high self-consciousness subjects should have chosen a meal which was more different from the meal initially served by the boss and less sophisticated. This interaction did not emerge from the data. Thus, it appears that high public self-consciousness subjects are not more inclined to act in accord with the reward contingencies inherent in social situations. Instead, subjects high in public self-consciousness may be aware of the kind of impression they are creating, but they do not necessarily use this knowledge to gain approval of others. In other words, even though people high in public self-consciousness may be aware of the kind of impression required to gain approval from others, this knowledge alone does not automatically insure that they will seek to gain such approval (Wegner and Vallacher, 1980).

A main effect for public self-consciousness was obtained. People who were high in public self-consciousness tended to create meals that were more similar to the meal initially served by the boss whether or not a similar impression was likely to be rewarded. Thus it appears that individuals high in public self-consciousness may be more sensitive to the past behavior of the person with whom they are planning to interact than to the reward contingencies of the

Table 2
Table of Means for the Manova Results of Table 1

Scale	Public Self Consciousness	
	Low	High
Sophistication plus Gourmet	8.04	7.45
Similarity	3.00 ^a	3.70 ^b

Scale	Initial Condition	
	Similar	Different
Sophistication plus Gourmet	9.04 ^b	6.33 ^b
Similarity	3.52	3.25

(a) means are significantly different $p < 0.05$
(b) means are significantly different $p < 0.0001$

¹In order to assess possible demand artifacts that may have affected this result, at the end of the questionnaire subjects were asked what they thought the purpose of the experiment was. In response to this question, nobody correctly guessed the hypothesis being tested.

situation. This finding appears to be the first experimental support for what Wegner and Vallacher (1980) call the recency principle. This theory says that a major determinant of the self-aware person's behavior is the extent to which the potential source of influence is already having or has recently had an impact on the person's behavior. Therefore, the recent past action of the boss having served a gourmet meal should have a more dominant impact on the subject's choice of meals than reward contingencies. In light of this theory, it is not surprising that subjects high in public self-consciousness chose meals that were similar to the one the boss had already served regardless of the impression called for in the situation.

Conclusion

These results suggest that an important consideration in the selection of products used in social situations may be the impression likely to be created by the use of those products. Marketers of socially consumable products may be able to enhance the effectiveness of their marketing programs by studying the situations in which their products are consumed. This study should include an assessment of the types of impressions likely to lead to favorable outcomes in these situations as well as an assessment of the impressions likely to be generated by use of the manufacturer's brands. This information could help marketers develop promotional and other strategies to clarify and strengthen the association between their brands and a set of cohesive desirable impressions.

The research also suggests that, for socially consumed products, public self consciousness may be an important segmentation variable. It could help isolate the type person that is likely to be highly aware of the type of impression called for in a given situation and aware of the types of products that could be used to create that impression.

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AN EMPIRICAL STUDY OF LIFESTYLE CORRELATES
TO BRAND LOYAL BEHAVIOR

Stephen M. Goldberg, University of Pennsylvania

Abstract

This paper investigates a causal link between lifestyle and brand loyal behavior in the context of a beer market. The results indicate that lifestyle advertising themes may cause a negative response by those not favoring the promoted lifestyle.

Introduction

Virtually all marketers attempt to develop and maintain customer loyalty to the company's brands. What is not so clear is how marketers can foster the development of brand loyalty, and maintain it among consumer segments over time. Much past research has attempted to profile the brand loyal consumer for various kinds of products and services (Frank, 1967; Fraser and Wind, 1980, etc.). However, little research has attempted to relate consumer lifestyles to brand loyalty, in spite of the current emphasis on lifestyle variables as a basis for market segmentation and promotional objectives. This study addresses that issue--namely, do differences in consumer lifestyles provide a useful basis for predicting differences in brand loyalty?

A first consideration is a precise definition of both "brand loyalty" and "lifestyle." Despite the myriad of studies on brand loyalty, much confusion exists about its definition. Jacoby and Chestnut (1978) reviewed fifty-five definitions/measures employed in various research efforts over several years and arrived at this definition of brand loyalty:

(it is) . . . the biased (i.e., nonrandom), behavioral response (i.e., purchase), expressed over time by some decision-making unit with respect to one or more alternative brands out of a set of such brands, and is a function of psychological (decision-making, evaluative) processes.

This definition is intuitively pleasing because it rejects the potentially spurious loyalty that is detected when using a "purchase runs" criterion (loyalty is present when an undetermined number of consecutive purchase of an item is made). It also posits that brand loyalty can exist for multiple individuals within some decision-making unit. Thus if the husband is directing the purchase of a particular product but the wife is performing the actual purchase, loyalty exists for the decision-making unit of both husband and wife, not just the wife alone.

Jacoby and Chestnut's definition provides a useful step beyond previous attempts; however, it does not elaborate about possible psychological processes which may underlie the formation and/or maintenance of loyalty. This paper seeks to explore those processes; namely, the causal relationships between psychological processes inherent in different psychographic lifestyle patterns, and the degree of brand loyalty.

The practical concerns of marketers addressed here center around the issue of selection of promotional themes as they may relate to the creation or maintenance of brand loyalty.

¹Stephen Goldberg is a Ph.D. candidate at the Wharton School, University of Pennsylvania, Philadelphia, PA 19104. He would like to acknowledge his appreciation to Scott Ward of the Wharton School for all his helpful comments.

In some markets, advertisers tend to focus on image themes directed at particular psychographic segments, rather than on physical attributes. For example, while the blue jean market might be broadly segmented into "nondesigner" jeans (e.g., Penney's, Levi's, etc.) and "designer" jeans (e.g., Calvin Klein, Jordache, etc.) at least brands in the latter category might be considered homogeneous in that they all focus on image aspects of the brands rather than on other attributes (e.g., physical characteristics). Similarly, the major national beers (as opposed to local, price beers or premium beers) often compete on the basis of lifestyle themes. One can conclude that in these and similar situations, marketers believe that purchase behavior (e.g., loyalty) results from linking use of the product to certain lifestyles. Moreover, the implicit assumption would seem to be that individuals with different lifestyles than those portrayed and appealed to will, at the very least, not react negatively.

In the following sections, brand loyalty and lifestyle, or psychographics, are briefly discussed; the methodology and variable section for the study is then described and results presented. Finally, conclusions and implications are drawn for the loyalty-lifestyle relationships and managerial ramifications discussed.

Brand Loyalty

In an early experiment, Tucker (1964) established that brand loyalty develops over time. He concluded,

Whether one looks at the concentration of household purchases among brands at a point in time or at its stability over time, there is marked evidence that brand loyalty is a 'real' and reliable phenomenon.

Consequently, much of the subsequent research concerning the question of brand loyalty has been directed toward developing an adequate measure of the phenomenon in the real world. Jacoby and Chestnut's (1978) review of thirty-three different behavioral indices of brand loyalty leads us to the conclusion that brand loyalty exists if it can be measured post hoc (i.e., it is an empirical phenomenon exclusively). Most of this kind of research specifies criteria by which loyalty obtains, rather than defining, a priori, what it is and then trying to measure it. This is intuitively unsatisfying; if brand loyalty is nothing more than repeat purchase behavior, it is strictly an empirical phenomenon and has limited applicability for marketing strategy. Day (1969) emphasized this point:

There is a difference between true or 'intentional' loyalty and 'spurious' loyalty associated with consistent purchase of one brand because (among other reasons) there are no substitutes or because of a long series of deals, etc.

In Jacoby's words (1971), ". . . repeat purchase behavior is a necessary but nonsufficient condition for brand loyalty." The concept of brand loyalty must account for the motivational bases of repeat purchase behavior, both to contribute toward theory development and to provide direction for marketing action.

In an effort to link a priori motivations to subsequent repeat buying, researchers have explored attitudinal indices of brand loyalty. Consumer statements of loyalty

(e.g., attitudes toward the brand) are taken to be indicators of brand loyalty. The critical problem here is that there is no direct tie to purchase; by these measures a person could be quite loyal but rarely buy the product (e.g., the consumer has most positive attitudes toward car A but buys the less expensive brand B). Without a direct link to behavior, it is virtually impossible to determine the functional relationship between the attitude toward the brand and the purchase of it. Again, this would be very unsatisfying to a marketer. In order for the concept to have practical use and contribute toward a viable theory, a measure of both attitudes and behavior is needed as a basis for inferring brand loyalty.

The final thrust of research in the brand loyalty area attempts to derive composite indices of brand loyalty which combine attitudes and behavior. Jacoby (1971) says,

... it seems reasonable to reserve the phrase 'brand loyal behavior' for instances where the purchase decision is the result of a process in which various alternative brands are psychologically (perhaps even physically) compared and evaluated on certain criteria and the 'optimal' brand(s) is (are) selected.

Several authors have sought to develop correlates of brand loyalty, with varied results. Garman (1972) reports positive results when looking at store loyalty, some personality variables, information sources, and miscellaneous others. However, the major explanatory variable is store loyalty--not surprising considering the number of brands available was not controlled for in the study. Nonetheless, the study does support the search for a causal factor to explain brand loyalty.

Frank (1967), in a series of articles dealing with this subject, had limited success in trying to develop indicators of brand loyalty for grocery products. In one study, Frank tried to segment the market based on consumption, degree of repeat purchase, store loyalty, extent of dealing, and some other variables. He used a factor analytic approach to develop a brand loyalty dependent variable; however, Frank does not use any attitudinal indices. He regressed husband and wife scores on the Edwards Personality Preference Schedule, but concluded that brand loyal consumers cannot be profiled on the basis of these personality measures. In more recent years, psychographic measures generally have supplanted personality tests in attempts to relate personal characteristics to specific buying behavior (Wells, 1974, 1975). Consequently, it may be fruitful to look at these types of measures to see how well they explain brand loyalty.

Psychographics or Lifestyle

Lifestyle and psychographics are commonly used as synonyms; however, there is a slight difference as noted by Hustad and Pessemier (1971):

(Psychographics) imply a broad range of general psychological and personality measures . . . Life Style . . . puts emphasis on attitudes and activities and also examines 'state' variables . . .

Wells (1974) elaborated:

. . . psychographics refer to comparatively heavy emphasis on generalized personality traits . . . 'lifestyle' . . . tends to focus on either broad cultural trends or on needs and values . . .

Of course, there is nothing to prohibit using many different types of statements within a large battery to cover attitudes, activities, "state" variables, personality traits, etc. The common procedure is to subject the responses to a factor analytic procedure to determine the underlying constructs of lifestyle (Kerlinger, 1964; Bruno

and Pessemier, 1972).

Methodology of the Current Study

A questionnaire was administered (via personal interview) to a random sample of over 1,000 Canadian beer drinkers as part of an overall market segmentation study. Respondents supplied several types of data which were used to develop a brand loyalty measure, lifestyle measures and segmentation criteria. In addition, each supplied consumption and demographic information.

Brand Loyalty Measure

Following Jacoby, a Brand loyalty measure was constructed which links attitudes toward the favorite (or usual) brand and purchase behavior. Specifically:²

$$\text{Brand Loyalty} = \left(\frac{\sum_{i=1}^8 \text{Attitude}_i \text{ toward favorite brand}}{48} \right) \times \left(\frac{\text{Proportion of purchases of favorite brand over the last ten occasions}}{1} \right)$$

This measure's two components represent indices which interact to form the construct of brand loyalty. Management indicated repeat purchase percentage was about 75% which was similar to the sample value of 73%. The mean loyalty here was only 67% for the sample--conceptually, attitudes seem to attenuate behavior.

Both components of this composite measure have the desirable property of having a zero to one range. In addition, each one is unambiguous in its assignment of its share of loyalty--the greater the value, the more loyal a person is. Consequently, the product of the two components is also on a zero to one scale, where one denotes complete loyalty and zero indicates no loyalty whatsoever. Practically speaking, one would not expect to see a zero score for any respondent in this study given s/he has specified, and is evaluating, her/his favorite brand. However, if a person specified a brand which is purchased only about half the time and s/he is only lukewarm toward it (i.e., marked a three or averaged three on all semantic differential scales), then the brand loyalty value would be only 0.25.

Lifestyle Measures

In contrast to what one might consider a relatively unique measure of brand loyalty, the lifestyle measures employed in this study were rather ordinary. A battery of over sixty psychographic statements were self-administered by the respondents. The battery used was a subset of one of the more or less standard ones used with the addition of several unique statements.

Unfortunately, there are two potential problems with measures of this kind: first, the interpretation of factors derived from the analysis is subjective; second--

²The attitude statements which subjects evaluated on a semantic differential scale (coded 0 to 6) reflecting their attitudes toward their favorite brand were:

An average quality beer	-----	A very high quality beer
I don't like it	-----	I like it
A beer that doesn't have a crisp refreshing taste	-----	A beer that has a crisp refreshing taste
Hard to digest	-----	Easy to digest
Harsh	-----	Smooth
A beer not brewed more carefully than others	-----	A beer brewed more carefully than others
A beer that would not be completely acceptable to all my friends	-----	A beer that would be completely acceptable to all my friends
A watery beer	-----	A full-bodied beer
		0 1 2 3 4 5 6

related to the first--is that no standard set of lifestyles exists; e.g., results are idiosyncratic to the particular data set analyzed. However, due to the vast number of published psychographic studies, Bruno and Pessemier (1972) were able to examine common factors and loadings on factors across studies. Table 1 shows how the factors obtained from this study compare with those highlighted by Bruno and Pessemier. One can see that there is a fair congruence between factors derived in this study and factors derived in other studies. Hence, there is reasonable confidence in the validity of the lifestyle constructs derived here.

TABLE 1
A Partial List of Variables Which Load Together; and Factor Loadings for This Study (G) and Those Found by Pessemier & Bruno (PB) (if available)

	(G)	(PB)
Sports Enthusiasts		
I enjoy conversations about sports	.739	NR
I read the sports page every day	.82	NR
Independent Leaders		
I am more independent than most people	.396	.62
My friends or neighbors often come to me for advice	.54	.68
I am influential in my neighborhood	.609	.53
Swingers		
I like parties where there is lots of music and talk	.629	.49
I like to think of myself as a swinger	.519	.56
Social Responsibility		
Advertising leads to wasteful buying in our society	.648	.71
Cosmopolitan Sophisticates		
I enjoy looking through fashion magazines	.46	.46
Magazines are more interesting than TV	.531	.37
Conservatives		
I don't like to take chances	.463	.38

In this study, the factor solution was limited to the extraction of ten factors whose combined accounted-for variance was 38.8% (at the upper end of the range--30 to 44%--found by Bruno and Pessemier in their comparison). These lifestyle constructs were judgmentally identified as:

Health Concerned	Cosmopolitan Sophisticates
Swingers	Passive Sports Enthusiasts
Social Responsibility	Outdoors Enthusiasts
Conservatives	Constant Feeders
Independent Leaders	Drinkers

Appendix A provides a complete description of each lifestyle construct.

Market Segmentation

While lifestyle or psychographics are often used as segmentation criteria, this would provide little new information. There are many potential segmentation criteria available, two of which had primary appeal--demographics and attitudes toward beer in general. Management felt that product-use segments would provide the most information regarding the beer drinking market, thus demographics were discarded and a post hoc segmentation scheme (Green

and Tull, 1978) was adopted. Consequently, a Howard-Harris cluster analysis was conducted using attitudes toward beer; a five cluster solution was derived (based on the decrease in pooled within-groups variance). Given the centroids of each group, the segments were defined as follows:

- Beer is just another beverage--These people do not attach any special import to beer or beer consumption
- Beer as a substitute--These people drink beer as a substitute for hard liquor for a variety of reasons
- Negative toward beer--These people drink beer but it's difficult to ascertain just why
- Hard core beer drinkers--These people drink beer regularly and often as a reward
- Proud social beer drinkers--These people like beer and are proud to drink it on social occasions

A demographic profile of the market segments is shown in Table 2. Segments two, four, and five show the highest weekly consumption, tend to be predominantly male, and are older than the sample population in general. Segments three and five are the most educated and have the highest incomes.

TABLE 2
Demographic Profiles of Segments - Indexed as % of Total Sample*

Segment	Weekly Consumption	% Male	% Married	Age	Education	Annual Income
1	43.5	79.7	96.3	96.7	99.1	97.2
2	152.2	119.9	101.9	101.1	97.4	99.7
3	58.2	88.4	96.8	91.3	111.0	112.1
4	127.5	117.8	100.8	109.6	90.3	91.8
5	136.3	103.2	104.9	100.7	102.8	101.1

*Base value of total sample is 100.0

Research Questions

Given the tremendous amount of lifestyle advertising which exists in this market, the question of whether brand loyalty can be predicted based on lifestyle seemed to be quite relevant. If none of the lifestyles were to prove significantly related to loyalty, it would indicate that managers ought to pursue other advertising themes for their products.

One possibility, however, is that any specific effect may be significant to one market segment but not to others. Hence, the effect would be undetectable when looking at the market as a whole. In addition, a specific effect could be lost if it is positive in one segment and negative (of roughly the same magnitude) in another segment. Consequently, a second research question was posed--do lifestyle effects vary across different attitude segments? Since most campaigns are targeted at specific segments, knowledge of lifestyle patterns among drinkers provides considerably more insight for the marketer.

The regression results can be seen in Table 3. In examining the intercepts (which are, in a sense, the mean brand loyalty for the segment), there are some intuitively satisfying results. Overall, the beer market exhibits very high brand loyalty--an average of 0.67. While

TABLE 3
Significant Regression Coefficients for Lifestyle Factors
(p = .10)

Segment	Lifestyle										Adjusted R ²	
	Intercept	Health Concern	Indep- pendent Leaders	Social Stability	Swingers	Conser- vatives	Como- politan Sophis- ticated	Passive Sports Enthu- siasts	Outdoors Enthu- siasts	Consent Preaders		Drinkbe- rs
Overall	0.67	0.015	-0.028	-	0.010	0.031	-0.012	0.010	-	-0.010	0.016	0.038
Beer is just another beverage	0.66	0.021	-0.028	-	-	0.023	-0.022	-	-	-	-	0.051
Beer as a substitute	0.71	-	-0.23	-	0.017	-	-	0.017	-	-	0.016	0.035
Negative toward beer	0.63	-	-0.028	0.025	-	0.040	-	0.017	-	-0.021	-	0.092
Hard Core Beer Drinkers	0.67	0.023	-0.036	-	-0.013	0.018	-	-	0.011	-	0.020	0.071
Proud Social Beer Drinkers	0.69	-	-0.013	-	0.033	0.047	-0.012	-	-0.012	-	-	0.076

Regression over groups significant at p = 0.05 level

adjusted R-square³ is not high, eight of ten lifestyle coefficients are significant and their direction was in accord with management's feelings.

Since the regression for each segment is significant and the test for differences in coefficients across groups is also significant, the hypothesis that lifestyle effects differ across segments is supported. Indeed, a look at the mean loyalty for the segments shows marked differences. As might be expected, the negative toward beer segment is the least loyal on average. Interestingly enough, the hard core segment is not the most loyal; in fact, it is just at the population average. Perhaps these people are somewhat more committed to drinking beer than they are to a particular brand. The most loyal segment is the beer as a substitute segment. It appears once these people find a substitute, they are loyal to it.

The results shown in Table 3 indicate that the composition of significant effects in each segment differs; in fact, the only lifestyle with an effect in all segments is the leader lifestyle (in the negative direction as would be expected from the overall leader coefficient). Thus, there is additional support found that lifestyles are differentially loyal depending upon the segment under consideration.

Two lifestyles, swingers and outdoors enthusiasts, show some of the most interesting results. The change in sign of the regression coefficients across segments demonstrates the potential peril of lifestyle themes in advertising. A strategy aimed at outdoors enthusiasts might build loyalty in the hard core segment, but these people tend to be less loyal in the social segment--a segment which shows higher consumption than the hard core one.

Intuitively, one would think sports enthusiasts would have a propensity toward loyalty across all segments. But this is true in only two segments--the substitute and negative ones. Considering all the sports oriented beer advertising directed at the hard core segment, it appears much money is being wasted.

³Since the factor analysis accounted for only a portion of the variance in the psychographic data, and a substantial amount of within-groups variance from the cluster analysis remained, it would be expected that a multiple R² from regression would be relatively low, in the neighborhood of 0.05 to 0.15. Wells (1971) also noted that with data of this kind, a high proportion of accounted-for variance is not likely to occur:

When expressed as product-moment correlations, the relationships between AIO items and products or media are low--often around 0.2 and seldom higher than 0.3 or 0.4. Thus, they do not 'explain the variance' very well, even when put together in a prediction equation . . . It should be remembered, however, that the variance 'explained' is the variance in the behavior of individuals, not the variance in the average behavior of groups, so a product-moment correlation of 0.2 is deceptively small.

A marketer devising a strategy to build or maintain loyalty for his brand would obviously seek to concentrate on the substitute and social segments for two reasons. First, average loyalty in these segments is highest; and, second, consumption is highest there too. In the substitute segment, though, appeals based on lifestyle themes may have little effect given the few positive coefficients and the high loyalty already present.

The social segment offers an advertiser two highly positive lifestyle effects--swingers and conservatives. Nevertheless, execution of a campaign will require care since three of the lifestyles have negative coefficients in this segment.

Additional Analyses

Among others, Fraser and Wind (1980) have examined demographic measures along with attitudinal measures in a predictive model of behavior. The question of whether the addition of demographic variables would affect the results of the earlier analysis was investigated. While the number of significant demographic variables differed across segments, changes in the number and value of significant lifestyle coefficients (which were the primary interest) were negligible--the mean sum of squared deviations was 0.0001. However, the variance accounted for in each segment's regression equation improved substantially:

Segment	Adjusted R ²
1	0.062
2	0.083
3	0.135
4	0.129
5	0.118

The test for differences across groups was still significant. Thus, it can be concluded that the effect of lifestyle is stable though the addition of other explanatory variables may improve predictive power of the overall model.

Conclusion

It should be obvious that brand loyalty is an important concept to a marketer. From there, it is not a great leap to say that the dimensions of brand loyalty and the ability to predict loyalty should be understood as completely as possible.

In this study, it was shown that lifestyle has a differential effect on brand loyalty for different consumer segments. In addition, the lifestyle effect was stable with the inclusion of other explanatory variables. While the change in lifestyle effects was minimal, one area for further research would be to investigate the possible interaction effects of demographics and lifestyle on brand loyalty.

Since this study was limited exclusively to the beer market, another fruitful area of research would be to see if people with different lifestyles exhibit differing loyalty patterns with respect to other consumer goods (such as coffee, breakfast cereals, and other frequently purchased products). Such an investigation would be useful to marketers in planning their communications strategies.

Appendix A: Lifestyle Descriptions

- A. Health Concerned--A major part of one's life is spent on activities surrounding the maintenance of the body and the mind, i.e., exercise, grooming, entertainment, etc. These people pursue activities which maintain their physical condition and their surroundings.

- B. Swingers--Life revolves around social activities. These people are adventurous and behave in ways which enhance this characteristic.
- C. Social Responsibility--An important part of life is wrapped up in promoting general welfare and uncovering potentially harmful actions by others. These people are concerned with identifying major social problems and leading the charge to solve them.
- D. Conservatives--In some ways, these people are living in the past. Life revolves around dependence on input from friends, media, etc. These people do not change often and are relatively proud of it.
- E. Independent Leaders--Life is a series of decisions; decisions made for others or for oneself. These people are busy influencing what others do, at work or at leisure.
- F. Cosmopolitan Sophisticates--Life is a series of intellectual, worldly, fashionable pursuits. These people are doing all the "right" things. There is an acceptable model for a person to which they aspire.
- G. Passive Sports Enthusiasts--These people live for sports events and news concerning them. Another appropriate term would be armchair quarterbacks.
- H. Outdoors Enthusiasts--A major part of life involves active outdoor pursuits--hunting, fishing, camping, etc. This is the predominant avocation.
- I. Constant Feeders--Life is one big meal. These people are overweight and tend to stuff themselves at every opportunity.
- J. Drinkers--These people are very concerned with alcohol ingestion. They will drink any alcoholic beverage at almost any time of the day; they drink frequently.

These ten dimensions are chosen specifically because they represent a wide range of (hopefully) nonoverlapping lifestyles.

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PREDICTING BEHAVIOR WITH INTENTIONS: A COMPARISON
OF CONDITIONAL VERSUS DIRECT MEASURES

Paul W. Miniard, The Ohio State University
Carl Obermiller (student), The Ohio State University
Thomas J. Page, Jr. (student), The Ohio State University

Abstract

This research attempts to extend upon an earlier study (Warshaw, 1980) concerning the predictive validity of alternative behavioral intentions measures. Contrary to Warshaw's findings, our results indicate little difference between conditional and direct measures. In addition, contextual correspondence between intention and behavior had little effect on their relationship.

Introduction

Behavioral intention has long been an important construct in consumer research. Theoretical treatments (e.g., Engel, Kollat, and Blackwell, 1978; Howard and Sheth, 1969) position behavioral intention as intervening between attitude and behavior. Empirical applications have demonstrated that behavioral intention can be used to predict behavior (e.g., Stapel, 1968; Wilson, Mathews, and Harvey, 1975; Ryan and Bonfield, 1980). Given its importance both as a theoretical construct and as a useful predictor variable, questions regarding the appropriate measurement of behavioral intentions are critical to research in the area. This is particularly true since the large body of published research employing paper and pencil measures of intention is small in comparison with the number of real-world applications in consumer surveys.

Despite the importance given behavioral intention in consumer behavior theory and the widespread use of intention measures in practice, many researchers have found low correlations between measured intentions and observed behavior. One area of explanation for such predictive variations has focused on the manner in which intention is assessed. Ajzen and Fishbein (1980) claim that the strength of the intention-behavior relationship will be influenced by the degree of correspondence between the intention measure and the behavior criterion. Prediction should be enhanced when the measure of intention and behavior correspond in terms of target, action, context, and time elements. Intentions to purchase an automobile (a general target), for example, should not be expected to accurately predict purchases of a particular automobile brand (a specific target). Similarly, behaviors that can be performed in a number of contexts or situations may not be accurately predicted when the criterion behavior is to be observed in each of these contexts and the intention measure fails to fully specify the situations in which the behavior can occur.

Evidence supporting the predictive need for correspondence between predictor and criterion variables has been generated by research investigating attitude-behavior relationships. In an extensive review of this literature, Ajzen and Fishbein (1977) found that strong relationships between attitudinal and behavioral measures existed under high levels of correspondence whereas low levels generated weak relationships. They noted, however, that there is a conspicuous lack of research relevant to the need for contextual correspondence. More recently, Miller and Ginter (1979) examined the value of employing contextually correspondent attitude measures for predicting patronage behavior of fast-food outlets. Their research indicated that a contextually correspondent attitude measure provided a superior prediction of patronage behavior than at-

tained by an attitude measure lacking contextual correspondence.

Warshaw (1980) has also argued that the lack of contextually specific measures may partially account for low intention-behavior relationships, and has recommended measuring the contextual antecedents of intentions. If these conditional antecedents are specified completely and independently, then intentions can be decomposed as follows:

$$BI_y = \sum_{i=1}^n P(X_i) P(Y/X_i)$$

where BI_y is the likelihood of performing behavior y , $P(X_i)$ is the likelihood of conditional antecedent X_i , $P(Y/X_i)$ is the likelihood of performing behavior y given conditional antecedent X_i , and n is the number of relevant conditional states.

One possible contextual antecedent of product purchase is purchase location. Soft drinks, for example, can be bought in a number of acquisition sites (e.g., store, vending machine, restaurant). For estimating intention to purchase a given soft drink brand, assessment of $P(X_i)$ would involve asking respondents the likelihood of product purchase from each location (e.g., How likely is it that you will buy a soft drink from a vending machine?). Measures of $P(Y/X_i)$ would require respondents to estimate the probability of purchasing a particular brand of soft drink given that product purchase occurred at each acquisition site (e.g., How likely is it that you would buy a Coke if you purchased a soft drink from a vending machine?).

Warshaw (1980) compared conditional and direct measures of intentions to purchase various soft drinks and concluded that a conditional measure employing purchase location as the conditional antecedent was superior in predicting purchase behavior. It is not clear, however, whether these differences were due to the measurement format or the lack of equivalence in contextual correspondence as both factors covaried together. That is, the direct measure of purchase intention did not specify the acquisition sites that were incorporated into the behavioral measure and thus lacked contextual correspondence with the criterion behavior. In contrast, because purchase location represented the antecedent upon which the conditional measure was based, this measure did possess contextual correspondence. One cannot, then, unambiguously determine which of these two measurement issues contributed to Warshaw's results. In a comparison of direct and conditional measures that were equivalent in their contextual correspondence, Jaccard, Knox, and Brinberg (1979) found the two approaches to yield essentially equivalent predictions of behavior. This would imply that the differences reported by Warshaw were due to the inequities in the measures' contextual correspondence. The goal of this research was to disentangle these factors by examining conditional and direct measures that contextually corresponded to the criterion behavior.

Method

Subjects and Procedures

Subjects were 66 junior and senior level undergraduates enrolled in various marketing courses. On Wednesday morning subjects received a questionnaire containing the direct and conditional measures of likelihood of purchasing seven brands of soft drink between that moment and the following Monday morning. The brands were Coke, Pepsi, 7-Up, Dr. Pepper, Sprite, Tab, and "other brand." These brands were identified in a pretest done several weeks earlier as the most popular with the subjects. The following Monday afternoon, subjects reported purchases for each brand in three purchase locations (restaurant/bar, store, and vending machine).

Questionnaires

Subjects were randomly assigned one of two questionnaire versions. Thirty-two subjects received questionnaires with noncontextual direct measures of intention. The noncontextual direct items read "What is the probability that you will purchase 'given brand' between now and next Monday?" The remaining 34 subjects received a questionnaire version with a modified direct measure of intention, which read "What is the probability that you will purchase 'given brand' from a store, vending machine, or at a restaurant/bar between now and next Monday?" The modification in the second version of the questionnaire was designed to equalize the contextual correspondence of the direct and conditional measures.

Both versions of the questionnaire included items required for the conditional measure of intention suggested by Warshaw (1980). These items were:

"What is the probability that you will make one or more purchases of soft drink from 'given location' between now and next Monday?" (W_L)

"Assuming you do make one or more purchases of soft drink from 'given location' between now and next Monday, what is the probability that you will, in total, buy only one brand of soft drink rather than more than one brand?" (X_{L1})

The conditional probability of buying more than one brand (X_{L2}) from one location was derived by $1 - X_{L1}$.

"Assuming you do purchase one and only one brand of soft drink from 'given location' between now and next Monday, what is the probability that it will be (each of seven brands listed)?" (Z_{L1i})

"Assuming you do purchase more than one brand of soft drink from 'given location' between now and next Monday morning, what is the probability that each brand below will be one of those two or more brands you select (each brand listed)?" (Z_{L2i})

All items were scored on an 11-point percentage scale ranging from 0 to 100%.

According to Warshaw (1980) the conditional probability of purchase is derived from the preceding measures in the following manner:

1) The raw scale values (Z_{L1i}) were standardized:

$$Z_{L1i} = \frac{\hat{Z}_{L1i}}{\sqrt{\sum_{i=1}^7 \hat{Z}_{L1i}^2}}$$

This guaranteed that for each subject $\sum_{i=1}^7 Z_{L1i} = 1.0$.

2) For each location (L), intentions were measured as

$$BI_{Li} = W_L (X_{L1} \times Z_{L1i} + X_{L2} \times Z_{L2i}).$$

3) The overall derived BI_y for each brand was one minus the joint probability of not buying from any location, where

$$\prod_{L=1}^3 (1 - BI_{Li})$$

is the probability of not buying brand i, and the derived purchase intention is given by

$$BI_y = 1 - \prod_{L=1}^3 (1 - BI_{Li}).$$

Results and Discussion

There are several ways to evaluate the performance of intention measures. Warshaw (1980) divided subjects into purchasers and nonpurchasers of each brand. He asserted that the ideal values of a behavioral intention measure are 1.0 for purchasers and 0.0 for nonpurchasers. His analysis, then, consisted of paired-comparison t-tests on the mean purchase probabilities for the conditional and direct measures. Table 1 presents the data for this analysis from the present study.

The upper half of Table 1 shows the results for the questionnaire condition involving the noncontextual direct measure. Purchasers' responses to the direct and conditional measures statistically ($p < .03$) differed (in favor of the direct measure) on only the "other" brand. Across brands, the direct measure ($\bar{X}=.634$) produced a slightly higher estimate than the conditional format ($\bar{X}=.599$), although this difference was not statistically significant ($p > .2$). For nonpurchasers, the conditional measure yielded lower ($p < .01$) estimates overall (.185 vs. .223). Only this latter finding is consistent with Warshaw's results. The absolute level of intention estimates for nonpurchasers are higher in this study; the absolute levels for purchasers are about the same. (Warshaw's results:

Purchasers: $BI_{direct} = .539$, $BI_{conditional} = .652$;

Nonpurchasers: $BI_{direct} = .077$, $BI_{conditional} = .051$).

The lower half of Table 1 contains the results for the contextually correspondent direct measure versus the conditional measure. For Coke ($p < .03$) and Tab ($p < .08$), the direct measure gave statistically significantly higher estimates, but overall the difference between the direct ($\bar{X}=.620$) and conditional ($\bar{X}=.607$) measures was not statistically significant ($p > .59$). For nonpurchasers, the conditional format ($\bar{X} = .218$) again produced lower ($p < .01$) estimates than the direct measure ($\bar{X}=.258$).

Using Warshaw's analytical approach, then, the present results replicated Warshaw's findings for nonpurchasers but failed to reproduce his results for purchasers. In addition, changing the level of contextual correspondence of the direct measure did not affect its performance relative to the conditional measure. It is interesting to note that purchasers indicated a greater ($p < .01$) probability of purchase than did nonpurchasers for both the direct and conditional measures.

Table 1
Comparison of Direct and Conditional Measures
a. Noncontextual Direct vs. Conditional

Brand	Purchasers				Nonpurchasers			
	n	BI _{Direct}	BI _{Conditional}	P ^b	n	BI _{Direct}	BI _{Conditional}	P
Coke	17	.659 ^a	.686 ^a	.71	15	.107 ^a	.145 ^a	.43
Pepsi	13	.639	.698	.17	19	.311	.203	.05
7-Up	8	.488	.463	.74	24	.250	.255	.46
Dr. Pepper	6	.617	.459	.14	26	.204	.196	.80
Sprite	5	.600	.366	.18	27	.248	.201	.15
Tab	5	.820	.821	.99	27	.141	.110	.07
Other Brands	14	.636	.541	.02	18	.306	.217	.20
Total	68	.634	.599	.22	156	.223	.185	.01

b. Contextual Direct vs. Conditional

Brand	Purchasers				Nonpurchasers			
	n	BI _{Direct}	BI _{Conditional}	P ^b	n	BI _{Direct}	BI _{Conditional}	P
Coke	15	.700 ^a	.621 ^a	.02	19	.374 ^a	.304 ^a	.04
Pepsi	18	.589	.569	.61	16	.400	.283	.10
7-Up	13	.539	.617	.21	21	.286	.260	.58
Dr. Pepper	5	.760	.640	.15	29	.200	.165	.20
Sprite	7	.486	.478	.89	27	.244	.200	.13
Tab	5	.960	.877	.07	29	.141	.125	.19
Other Brands	14	.543	.589	.62	20	.280	.278	.94
Total	77	.620	.607	.60	161	.258	.218	.01

^aDenotes mean intention states as probability.

^bDenotes two-tailed significance level for paired comparison t-tests on intra-subject differences between BI_{Direct} and BI_{Conditional}.

The soundness of the preceding analysis is directly dependent upon the validity of assuming that the ideal estimates for purchasers and nonpurchasers are 1.0 and 0.0 respectively. This conception confuses behavioral intention, a continuous variable, with behavior, a dichotomous variable. One may well grant that the true mean behavioral intention of purchasers is likely to be higher than that of nonpurchasers, but there are certainly many instances in which behavioral performance (nonperformance) is not preceded by an intention of 1.0 (0.0). Moreover, for predictive purposes, it is unnecessary for stated intentions to correspond with measures of purchase so long as they correlate with them. Thus, measures that produce means of .7 and .3 for purchasers and nonpurchasers respectively will classify behavior as well as measures that produce means of 1.0 and 0.0. Therefore, both between and within-subject correlational procedures were employed for examining the measures' predictive power. The former method involves correlating intentions with purchase within each brand across subjects. Since behavior is a dichotomous variable (i.e., purchaser either did or did not occur), a point-biserial correlational test was used. The results (Table 2) of the between-subjects correlational analysis indicate little difference in predictive ability. For the comparison of the noncontextual direct measure with the conditional format measure, the latter predicted purchase of Pepsi better and Sprite worse ($p < .05$). For the comparison of the contextual direct measure with the conditional measure, no differences were statistically significant ($p > .1$).

For the within-subjects analysis, a point-biserial correlation was computed between intentions and purchase be-

Table 2
Between-Subjects Correlations Between Intention Measures and Behavior

Brand	Noncontextual Direct vs. Conditional		Contextual Direct vs. Conditional	
	BI _{Direct}	BI _{Conditional}	BI _{Direct}	BI _{Conditional}
Coke	.66	.73	.47	.49
Pepsi	.44	.69	.32	.45
7-Up	.38	.37	.48	.59
Dr. Pepper	.42	.27 ^a	.68	.61
Sprite	.45	.19 ^b	.33	.38
Tab	.66	.76	.76	.74
Other	.38	.40	.39	.48

Note: All correlations differ from zero at $p \leq .05$ unless noted.

^a $p < .1$

^b $p > .1$

havior across brands for each subject. This approach may be superior to the former method (i.e., between-subjects) since it avoids predictive attenuations arising from scale interpretation differences among respondents. Each individual's correlation was converted using an r to z transformation and these z scores were employed for estimating the measures' average correlation and comparing their predictive power. Three subjects were eliminated from this analysis since they failed to purchase any soft drink during the specified time interval.

The results of this analysis revealed little predictive difference between the direct and conditional measures. In the condition involving the noncontextual direct measure, direct ($r=.72$) and conditional ($r=.76$) measures provided very similar ($p > .59$) predictions. Similarly, the two measures did not differ in their predictive power ($p > .5$) when the direct measure contextually corresponded to the criterion behavior. In this condition, the intention-behavior correlation was .71 for the direct measure and .67 for the conditional measure.

It should be noted that the present correlations between intentions and behavior are somewhat higher than those obtained in many marketing investigations. This may be due to the nature of the product category and/or the short time interval between the intention and behavior measures. Alternatively, the size of the correlations may be due to bias stemming from reliance upon self-reported behavior.

Finally, the preceding analyses have suggested that the direct measure's predictive power was unaffected by its contextual correspondence with behavior. To specifically examine this issue, the intention-behavior correlations involving the contextual and noncontextual direct intention measures were compared. Since existing evidence suggests that increases in contextual correspondence should enhance prediction, a one-tailed test was employed. For the between-subjects correlations (Table 2), the only noteworthy predictive difference occurred for Coke where the contextual direct measure tended to provide a superior prediction ($p < .07$). For the within-subjects correlations, the contextual ($r=.71$) and noncontextual ($r=.72$) measures yielded virtually identical predictions of purchase behavior.

Conclusion

The two aims of this research were to (1) compare the predictive power of conditional and direct measures of intention and (2) examine the need for contextual correspondence between intention and behavior measures. In attempting to replicate Warshaw's study involving the first research goal, we failed to fully duplicate his results. When we

used the same method of analysis, we found the conditional measure "better" for nonpurchasers but not for purchasers. No explanation is readily available. Several differences existed between the present and Warshaw's study: subjects were American students rather than Canadian housewives, data were gathered by questionnaire rather than personal interview, and "other location" (included in the Warshaw study but dropped in his analysis) was not employed in the present investigation as one of the contextual antecedents. It is not clear, however, how these differences could account for the discrepancies in results between the two studies.

Because of the previously discussed problems we have with Warshaw's mode of analysis, we would place more weight on the correlational results for evaluating the measure's relative merits. These analyses suggested that the two measurement approaches were equivalent in their predictive power. Since the conditional format required nine times as many measurements in this study, the present evidence does not justify its use for predictive purposes.

Ajzen and Fishbein (1980) have argued that the strength of the intention-behavior relationship will be influenced by the degree of correspondence between the intention measure and the behavioral criterion. For the present investigation, there would seem two potential conditions under which the contextual measure could outperform the noncontextual measure. First, to the extent specification of purchase locations reminds the person of a location which otherwise might not have been considered and in which purchase occurs, contextual correspondence should enhance prediction. Second, if the person considers some location other than those employed in the behavior measure (i.e., other than store, vending machine, and restaurant/bar in the present study) in responding to the noncontextual measure, then this could lower the predictive power of the noncontextual measure relative to the contextual measure. Surprisingly, contextual correspondence had little effect upon the direct intention measure's predictive accuracy, thus suggesting that neither of the above conditions were operative in this particular test situation. Further research concerning the role of contextual correspondence in the intention-behavior relationship would seem desirable.

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Richard W. Olshavsky, Indiana University

Introduction

The paper presented by Paul W. Miniard, Carl Obermiller, and Thomas Page is concerned with a topic quite different from the topic covered in Stephen M. Goldberg's paper. Therefore, each paper will be discussed separately.

Miniard, Obermiller, and Page

The stated objective of Miniard, Obermiller, and Page's study was to determine if Warshaw's (1980) results could be attributed to "inequities in the measures' contextual correspondence." It is perhaps unfortunate that they failed to replicate fully Warshaw's results (i.e., in their noncontextual direct vs. conditional condition). In my opinion, however, their outcome and their inability to explain their outcome (to quote them, "No explanation is readily available.") is a fortunate development because it raises further doubts about the utility of the traditional theoretical relationship between intentions (BI) and behavior (B). If the measurement of BI is to prove managerially useful then it is essential that a valid theory concerning the relationship between BI and B be used. In this paper, I propose a quite different theoretical relationship between BI and B, a relationship that has quite different implications for intentions measurement than that pursued by Warshaw (1980) and by Miniard, Obermiller, and Page. But first, the important aspects of the traditional view must be stressed.

The Traditional Theoretical View of the BI-B Relationship

As pointed out by Miniard, et al. and by Warshaw (1980), BI is viewed by most theorists as a variable that intervenes between cognitive variables (like beliefs (B') and attitudes (A)) and B (e.g., Engel, Kollat, and Blackwell 1978; Howard and Sheth 1969). And, as Warshaw (1980) pointed out, the specific nature of this relationship evolves from the Fishbein extended model (e.g., Ajzen and Fishbein 1973).

That is,

$$B = BI = W_o(Aact) + W_l(NB) \cdot (MC).$$

The first important aspect of this theory of the BI-B relationship to note is that BI comes later in the chain of cognitive events which are hypothesized to determine behavior. This implies, as Warshaw (1980) states, that "intentions outperform attitudes, beliefs, and other cognitive measures as behavioral correlates" (p. 26). A second important aspect of this theory to note is that the relationship between BI and B is not precisely stated. The conditions which influence the degree of relationship between BI and B are outside the formal theory and take the form of verbal statements concerning the "degree of correspondence" that exists between BI and B. Correspondence is defined in terms of target, action, context, and time (Ajzen and Fishbein 1980).

Because the observed empirical relationship between BI and B is frequently low and because the Ajzen and Fishbein theory does not explicitly predict B (only BI), Warshaw (1980) and Miniard, et al. made an effort to incorporate some of the variables Ajzen and Fishbein (1980) state are important into the measurement of BI. Warshaw (1980) argues that since "direct measures of BI confounds intentions and

situational contexts" then "behavior-specific intentions should be derived from condition-specific measures" (p. 27).

As I see it, enormous difficulties arise from this solution to the problem. In particular, the difficulties arise from the large number of contingencies which may be determinant (i.e., target, action, context, and time). Even in the relatively simple purchase situation selected by Warshaw (1980), i.e., softdrinks, the number of contingencies that may determine outcome (brand choice) is quite large. For instance, the brand of softdrink purchased may depend not only on the general nature of the acquisition site (i.e., vending machine, store, restaurant, bar) and the number of brands purchased, as pointed out by Warshaw (1980) and by Miniard, et al. but also on several other factors such as the specific type of store involved (e.g., supermarket, discount, convenience) or restaurant (e.g., fastfood or gourmet), the specific type of other foods purchased (e.g., hamburger or Beef Wellington), the time of day, the presence or absence of others, the nature of other people in the shopping party, and the intended use of the product (e.g., beverage or mixer). Clearly this approach to the problem will fail if only because of the large number of variables and the lack of a comprehensive theory to guide the selection of likely determinant variables in each shopping condition. The only reason Warshaw (1980) avoided this problem is because he limited, quite arbitrarily and without any rationale, the number of contingent variables. Even so, the conditional format required nine times as many measures as the direct format in these studies.

A New View of the BI-B Relationship

Another solution to this problem is to develop a better theory. One drastically different theoretical view of the BI-B relationship I would like to propose is to assume that BI is not a variable that intervenes between the cognitive variables (like B' and A) and B. For instance, according to one version of information processing theory (Olshavsky 1975), B is determined directly by an interaction between characteristics of the consumer, the consumer's goal, and the characteristics of the task environment. According to this theory BI does not intervene between cognitive variables and B; indeed BI may play no role in determining B. Instead, BI is viewed as a prediction made by the consumer concerning his or her own future behavior. As such, the formulation of an intention is itself a complex cognitive process akin to "attribution." The inputs to this prediction process may include those same consumer and task environment variables that determine behavior directly but in addition may include other inputs such as retrieved information concerning past behavior in this context.

Therefore, according to this theory, the degree of relationship between BI and B will vary with the inherent predictiveness of the behavior and the degree of sophistication of the consumer in recognizing and understanding which variables determine his/her behavior and the manner in which these variables interact to determine behavior. The degree of predictiveness of behavior is expected to vary with many of the same variables described by Ajzen and Fishbein, namely target, action, context, and time.

This new view of the BI-B relationship suggests that less effort should be directed at developing a better measure of

BI and more effort should be directed at the development of a more comprehensive theory of behavior (not BI). Such a theory will explicitly incorporate those variables which Warshaw (1980) is presently trying to build into a measure of BI. Further, such a theory may provide a better explanation as to why BI and B are frequently observed to display a weak correspondence. Finally, this theory may help to explain why Miniard, et al. (1981) failed to replicate fully Warshaw's results.

In summary, the low correspondence frequently observed between BI and B and the incompleteness of the traditional theories of the BI-B relationship has lead Warshaw (1980) to seek a better measure of BI. I am arguing that this approach is doomed to failure if only because of the large number of contingencies involved and because of the lack of a comprehensive theory to determine, a priori, which of these contingencies will be important. Another solution lies in the development of a better, more comprehensive theory of consumer behavior (not intentions). And in particular, I propose a theory that eliminates BI as a variable that determines behavior; instead, intentions are viewed as the outcome of a separate cognitive process, namely the prediction of one's own consumer behavior.

Goldberg

The stated objective of Goldberg's study was to determine if "differences in consumer lifestyles provide a useful basis for predicting differences in brand loyalty." No specific hypotheses concerning the nature of these differences were presented. The only rationale provided for performing this study is that, "little research has attempted to relate consumer lifestyles to brand loyalty, in spite of the current emphasis on lifestyle variables as a basis for market segmentation and promotional objectives."

Although studies that are strictly empirical are generally defensible, the atheoretical nature of this study is a very serious shortcoming, because it is not intuitively clear just what relationship, if any, holds between lifestyle and brand loyalty. If one simply accepts the author's operationalization of "brand loyalty" and "lifestyle," there is still considerable ambiguity concerning the relationship between these two variables. For instance, what is the theoretical relationship between a lifestyle characterized by "passive sports enthusiast" and brand loyalty? According to the author, the positive relationship observed was consistent with "management's feelings," that is, those beer drinkers whose lifestyles have a closer fit to this description should be more brand loyal. The problem is, without a theory, just the opposite relationship could easily be hypothesized; that is, "passive sports enthusiasts" should be less brand loyal. Or, it could just as easily be hypothesized that being a "passive sports enthusiast" is unrelated to brand loyalty!

Furthermore, the atheoretical nature of this study prevents any clear expectations concerning the relationship between "attitude toward beer in general" and the lifestyle - brand loyalty" relationship.

As a consequence of the atheoretical character of this study it is very difficult to provide a meaningful interpretation of the results either for the development of theory or for guiding management strategy. The author interprets his findings as providing evidence that "lifestyle has a differential effect on brand loyalty for different consumer segments." Given his bias that such a relationship exists, the very low R^2 (0.058) and the very low correlation coefficients (which ranged from 0.010 to 0.031) were interpreted as providing support for the expectation. The author attributes the low percentage of variance explained and low correlation coefficients to the intermediate factor analysis and to the individual as opposed to group level of aggregation involved. Even so,

the absolute magnitude of the overall R^2 was so small as to be of dubious value for managerial policy. Moreover, given that brand loyalty was measured both in terms of an attitudinal as well as a behavioral aspect, unambiguous implications for market share from the size and direction of the correlation coefficients cannot be made.

In summary, more theoretical effort is required to develop specific hypotheses between lifestyle and brand loyalty before managerially useful research can be conducted. Hopefully, such theoretical efforts will also serve to resolve many of the definitional problems surrounding these two concepts.

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THE ATTITUDINAL IMPLICATIONS
OF A NEW BRAND'S NAME

George M. Zinkhan, University of Michigan
Claude R. Martin, Jr., University of Michigan

Abstract

The research results reported in this paper show that a brand name alone can shift a consumer's attitude away from a neutral or zero level. However, the results also support the conclusion that such a brand name cannot similarly impact consumer purchasing intentions. Further, the results indicate high levels of experience and interest in a product class can lead to high attitudinal levels for a new brand name.

The evidence in this paper supports the hierarchy of effects model for high involvement products. The results also support the notion that there is a relationship between past product experience and attitudes toward a new brand name.

Purpose

The purpose of this paper is to report on our preliminary research into methods used by consumers in responding to a new previously unknown, brand name. Specifically examined are both the attitudinal implications and behavioral intentions associated with such a new brand name. Coupled with this objective is a review of the way in which the attitudinal responses are influenced by prior experience, familiarity, and interest in the overall product classification.

Theoretical Basis and Hypothesis Development

A key concept underpinning our research is that a brand name is a major product attribute and a part of what the consumer buys (Davis 1981). The importance of the brand name is amplified by a Wall Street Journal report (1981) on "brand personality...defined as...how people feel about a brand rather than what the brand does." Intrinsic to this is that a brand name is something more than a label; it is a complex symbol for the potential consumer. Gardner and Levy (1955) described this as a "public image, a character or personality that may be more important for the overall status (and sales) of the brand than many technical facts about the product." For the sake of this paper, image is defined as a composite of knowledge, beliefs and feelings -- attitudes -- a person has and takes into account when responding to an object (Meyers 1968). Kinnear and Taylor (1973) have shown that image is related to the brand in at least two ways. First, the brand name contributes to the image; and second, it is through the brand name that image is projected.

In a previous ACR conference (Lastovicka and Gardner 1978) it was proposed that with respect to high involvement products, consumer responses can be categorized in a hierarchy of effects model:

Cognition → Affect → Behavior.

A variant of this concept, with respect to product names, can be presented (Palda 1966) as:

Awareness → Attitude → Behavioral Intention.

One criterion used to evaluate the appropriateness of a new product name is that of memorability (Rewoldt, Scott and

Warshaw 1977). This obviously relates to the first stage of the hierarchy above, awareness. However, our focus in this research is on the other two dimensions: attitude and behavioral intentions as they relate to new brand names.

The very nature of the hierarchy of effects model (Urban and Hauser 1980) suggests the postulate that in the population as a whole, more people would experience an attitudinal effect than would experience a behavioral effect. This leads to our initial two hypotheses:

H₁: Attitudes will be shifted away from the neutral level by the product name alone.

H₂: Behavioral intentions will not be shifted away from the neutral level by the product name alone.

Perhaps another way of stating the thrust of these hypotheses comes from Richard O'Brien, Executive Vice President of Grey Advertising: "The litmus test is if I took the name out of the commercial, could you tell me the product?" (Wall Street Journal 1981).

We observe that marketers, trying to correct for initial attitude formation, have adopted the first of these hypotheses as operational when attitude change is modelled in communications research. While it may be proper to similarly correct for prior behavioral intentions, it is our a priori notion that this is not necessary for a new brand name choice.

Howard and Sheth (1969) associate limited problem solving (LPS) with moderate attitudes and extensive problem solving (EPS) with low attitudes. High experience, familiarity, number of purchases and interest are representative of an LPS situation. Thus we would expect to find high levels of experience, familiarity, number of purchases and interest to be associated with high attitude levels. The hierarchical model is in agreement when it concerns new products; as customers gain experience with a new product classification they move along a hierarchy beginning with awareness and culminating in purchase. Recall our first hypothesis that a brand name alone can move potential customers along the hierarchy from the awareness to the attitudinal stage. Another way of stating this concept is: "Because the expectancy-value measures (of attitude) elicit relatively specific cognitive and evaluative reactions, it is expected that crystalized attitudinal responses will only occur for those with prior experience with the attitudinal act." (Bagozzi 1981).

In a marketing context, experience with the attitudinal act is equivalent to experience with a particular product classification. This then leads to our remaining hypotheses:

H₃: High experience levels lead to high attitude levels.

H₄: High interest levels lead to high attitudinal levels.

H₅: A large number of prior purchases (experience) leads to high attitudinal levels.

H₆: High familiarity levels lead to high attitudinal levels.

Here, a "high attitude" is equivalent to a favorable attitude toward the product; a "low attitude" is equivalent to an unfavorable attitude toward the product; and a "neutral" or "zero level" attitude is equivalent to a condition of apathy. Experience, interest, familiarity and prior purchases are all measured for the product classification.

Measurement

Essential to this research is a product class that fosters high levels of brand involvement or product interest. At the same time the product classification has to be one with which many people are familiar and which is relatively inexpensive. Fitting all these criteria are electronic calculators, especially relevant to the eventual, available research subjects -- undergraduate college students.

Product interest is measured on an 8 point scale anchored at the two ends by "not at all interested" and "very interested." Number of purchases is measured by having respondents indicate how many times they have purchased a calculator in the last 15 years. Familiarity is operationalized in two stages (Scott 1962, 1963). First, in a free format, respondents list all of the important attributes that they can think of associated with calculators. Second, respondents put these attributes into groups that are similar. A respondent can make as many or as few groups as seem appropriate. A measure of familiarity can be derived according to a formula derived from information theory (Attneave 1959):

$$H = \sum_{i=1}^n p_i \log_2 (1/p_i) = \log_2 (n) - 1/n \sum_{i=1}^n n_i \log_2 (n_i)$$

where n is the total number of attributes,

n_i is the number that appears in a particular combination of groups, and p_i = n_i/n.

H may be treated as an approximate measure of the dimensional complexity of the cognitive domain referring to a particular class of attributes. It is a purely structural property, because it does not depend on the content of the attributes, but on a relations (similarity or dissimilarity) among them (Scott 1962).

An additional measure R, or the index of relative entropy, may be used to correct for varying numbers of attributes initially listed by different subjects:

$$R = H/\log_2 (n),$$

Where n is the number of attributes listed by the subject. While H represents the absolute complexity of the subject's category system, R may be interpreted as the complexity relative to the number of attributes to be comprehended. R thus tends to correct downwards the familiarity scores of subjects who name a large number of calculator attributes, without fully distinguishing among them (Scott 1962). Consequently, a subject's R score is used as a measure of familiarity in this investigation. Notice that the original formulation of this concept -- R -- required subjects to list and group objects rather than to list and group attributes. In other words, a high R score indicates that a subject is able to observe objects within a domain as distinct from one another. Under the procedure employed in this study, subjects place attributes into groups, and thus a high R score indicates that a subject observes product attributes as distinct from one another. The R measure, as

formulated here, is akin to Bieri, et al.s (1966) notion of cognitive complexity.

Behavioral intention is operationalized in a manner outlined by Thomas Juster (1966). Probability that a purchase may take place is measured both for the product class and for the individual brand. The behavioral intention measure for the product class of calculators is outlined in Exhibit 1.

Exhibit 1

Taking everything into account, what are the chances that you will buy a calculator sometime during the next year? Circle the appropriate answer.

- 10 - Certain, practically certain (99 in 100)
- 9 - Almost sure (9 in 10)
- 8 - Very probable (8 in 10)
- 7 - Probable (7 in 10)
- 6 - Good Possibility (6 in 10)
- 5 - Fairly good possibility (5 in 10)
- 4 - Fair possibility (4 in 10)
- 3 - Some possibility (3 in 10)
- 2 - Slight possibility (2 in 10)
- 1 - Very slight possibility (1 in 10)
- 0 - No chance, almost no chance (1 in 100)

Attitude toward the brand is measured using Fishbein's (1967) conceptualization of attitude-toward-the-act (A-act):

$$A\text{-act} = \sum_{i=1}^n B_i a_i,$$

Where A-act represents an individual's attitude toward (affect for or against) using a particular brand; B_i

is the individual's perceived likelihood (or belief) that using the brand will lead to some consequence i; a_i represents the importance of consequence i; and n is the number of salient consequences. Reviewing the attitude measurement equation above, we note that the term "attribute" is often substituted for the term "consequence" in consumer behavior research (Lutz 1975).

It is important that the component of beliefs in the expectancy-value model reflects the factors actually salient in the formation of attitudes. Consequently, pretests were conducted to isolate the important attributes associated with calculators. These attributes are represented in Exhibit 2. Five attributes are used to represent the product category. This is in line with an accepted rule-of-thumb stating that "a person's attitude toward an object is primarily determined by no more than five to nine beliefs about the object" (Fishbein and Ajzen 1975).

Exhibit 2

Important Calculator Attributes

- Price
- Range of Capabilities
- Degree of Programmability
- Operation Ease
- Memory Capacity

In sum, attitude is operationalized here by having subjects indicate how important 5 product attributes are and by having subjects indicate how much of an attribute a particular brand possesses. For example, subjects indicate, on a 7 point scale, how important a calculator's price is; in addition, subjects indicate how satisfactory a fictitious "new" brand's price is on a seven point scale.

Attitude is an important criterion variable here; but, where appropriate, attitude is decomposed into its two components -- beliefs and values -- to facilitate analysis. A single measure of values is formed by summing the five separate value ratings (price, range of capabilities, etc.) for calculators in general. Similarly, a single belief measure is formed by summing the five separate belief measures, for the "new" brand in particular.

Procedure

148 undergraduates from a major midwestern university were recruited to participate in the experiment. Students seem to be appropriate for the purposes of the present study since they are especially interested in calculators as a product class.

First, questionnaires designed to gauge the independent variables are administered in the following order: familiarity, interest, experience, and number of purchases. Next, the dependent variables -- attitude and behavioral intention -- are measured. The value component of attitude is measured for calculators in general; the belief component of attitude is measured for a fictitious brand--the Computron R-55. Behavioral intentions are measured both for the product class as a whole and for the Computron brand in particular. One half of the subjects rated attitudes first and behavioral intentions second; the remaining 74 subjects rated behavioral intentions first and attitude second. Analysis of variance results reveal no difference between these two halves of the sample with respect to attitude and behavioral intention scores.

Results

In order to investigate the first hypothesis, it makes sense to examine the belief component of attitude but it does not make sense to examine the value component. In other words, only the brand specific component of attitude is important when assessing the impact of new product names. The beliefs associated with using a Computron are measured on a 7 point scale. The scale is coded with +3 as the most positive rating, -3 as the most negative rating, and 0 as the midpoint. 95% confidence intervals for these belief scales are shown in Exhibit 3. Notice that these confidence intervals never contain the zero point. In addition, using the Bonferroni method for simultaneous inference, the mean belief ratings are all significantly different than zero. Four belief scales -- price, range of capabilities, operating ease, and memory -- are all shifted towards the positive end of the scale. Programmability is shifted towards the negative end of the rating scale. In this particular instance, the belief component of a new product attitude is shown to be shifted away from the neutral level. The first hypothesis is supported.

As shown in Exhibit 1, behavioral intention is measured on an 11 point scale; the zero point is equivalent to no chance or almost no chance of purchase. 95% confidence intervals for the behavioral intentions associated with calculators in general and the Computron brand in particular are represented in Exhibit 4. Notice that the confidence intervals do not contain zero. And yet, the brand specific confidence interval is less than one, which indicates a very slight possibility of purchase. For all practical purposes, there is little intention to buy a Computron calculator. This contrasts with the mostly positive beliefs associated with the Computron product and thus provides support for hypothesis two.

Ordinary least squares analysis supplies evidence to support hypotheses 3, 4, and 5 as shown in Exhibit 5. Hypothesis 5, which relates familiarity with attitude, is not supported. In order to investigate hypotheses 3-5, attitude is broken into its two components as defined here--

beliefs and values. Thus, three separate analyses are performed. In the first instance, beliefs about the brand is the dependent variable; in the second instance, importance of brand attributes is the dependent variable; and in the third instance, attitude is the dependent variable. In all 3 instances, the independent variables are interest, number of purchases, experience, and familiarity. Ordinary least squares regression, using standardized coefficients, is the method of analysis.

Exhibit 3

Confidence Intervals for Belief-Component of Attitude

Beliefs About the Computron	Mean	Std Dev	.9500 Confidence Interval	
Price	1.3469	1.3172	(1.1322,1.5616)	N = 147
Range of Capabilities	1.6939	1.3680	(1.4709,1.9169)	N = 147
Programmability	-.78912	1.6015	(-1.052,-.52806)	N = 147
Ease of Operation	1.9116	1.2764	(1.7035,2.1196)	N = 147
Memory	.96599	1.4449	(.73045,1.2015)	N = 147
Sum of Belief Ratings	6.1293	5.0359	(5.3084,6.9501)	N = 147

Exhibit 4

Confidence Intervals for Behavioral Intentions

	Mean	Std Dev	.9500 Confidence Interval	
Calculator Behavioral Intention	3.2270	3.4545	(2.6518,3.8021)	N = 141
Computron Behavioral Intention	.56028	1.0376	(.38752,.73305)	N = 141

On first examination, it may seem that multicollinearity may be a problem. The independent variables seem, conceptually, to be highly associated with one another. The main problem associated with multicollinearity is that an independent variable may not share enough unique variance with the dependent variable in order to assess the true impact of the independent variable on the dependent variable. In this particular case, however, the conceptual association between the independent variables does not appear to be a problem. Product experience and number of purchases are significant ($p < .05$) in all 3 regression equations represented in Exhibit 5. Product interest is significant ($p < .05$) in two out of the three equations. Familiarity is not significant in any of the regression equations; but this is due to low correlations between familiarity and the 3 criterion variables -- not due to a multicollinearity problem.

Notice that the amount of variance explained by the regression equations in Exhibit 5 is fairly substantial. For the criterion variables initial attitude, attribute importance, and brand rating the R^2 values equal .273, .419, and .210 respectively. In accordance with the Howard-Sheth model (1969), prior experience within a product class seems to explain a substantial amount of the variance associated with attitude formation. Not only are 3 of the predictor variables investigated here (interest, number of purchases, and experience) effective as a group, but the individual effect of each variable can be sorted out as indicated by the significance levels in Exhibit 5.

Exhibit 5

Results of Ordinary Least Squares Analyses

CRITERION VARIABLE = importance ratings for calculator ATTRIBUTES in general

N = 145 MULTR R = .647 R-SQR = .419 SE = .064

F-Stat = 25.42^C

PREDICTOR VARIABLE	Partial R	Beta Wt	Std Error	T-Stat
Number of Purchases	.238	.222	.076	2.922 ^B
Experience with Calculators	.285	.303	.085	3.534 ^C
Interest in Calculators	.286	.274	.077	3.548 ^C
Familiarity (Scott's R)	.008	.006	.065	.0995

CRITERION VARIABLE = BELIEFS about the Computron brand in particular

N = 145 MULT R = .457 R-SQR = .209 SE = .0751

F-Stat = 9.29^C

PREDICTOR VARIABLE	Partial R	Beta Wt	Std Error	T-Stat
Number of Purchases	.211	.229	.089	2.566 ^B
Experience with Calculators	.207	.251	.100	2.504 ^B
Interest in Calculators	.050	.054	.090	.6030
Familiarity (Scott's R)	-.057	-.052	.075	-.6860

CRITERION VARIABLE = Attitude

N = 145 MULT R = .522 R-SQR = .272 SE = .072

F-Stat = 13.12^C

PREDICTOR VARIABLE	Partial R	Beta Wt	Std Error	T-Stat
Number of Purchases	.159	.163	.085	1.910 ^A
Experience with Calculators	.245	.288	.096	3.000 ^B
Interest in Calculators	.168	.174	.086	2.020 ^A
Familiarity (Scott's R)	-.060	-.052	.072	-.7142

A $p < .05$ B $p < .01$ C $p < .001$

Implications

Evidence is found which supports the hierarchical model for high involvement products (Lastovicka and Gardner 1978). These findings are also consistent with some of the corollaries

of the Howard-Sheth model (1969) concerning extensive problem solving and limited problem solving. In addition, the findings reported here support Bagozzi's (1981) notion concerning the true relationship between prior experience and attitude towards the act.

The naming of a product is a difficult task. Others have pointed out that a new product name should be short, easy to pronounce, potentially memorable; and it should maximize product positioning (K. Feakins 1980). In brief, a new product name should be able to communicate messages that are important to consumers (William H. Doyle 1978). But in addition to this, the naming of a product can have immediate attitudinal implications. Based on a product name alone, customers form instant, non-neutral attitudes about the product that can prove difficult to change through the use of subsequent communications.

For behavioral researchers, the results of this investigation have interesting ramifications. When investigating advertising effects, for example, it seems imperative that attitude be measured before and after exposure to the advertising message. With respect to behavioral intentions, however, such before and after measures may not be necessary when a new product is under investigation. For all practical purposes, prior behavioral intentions are at or near the zero level. The same cannot be said with respect to prior attitude toward a new product.

Future research should examine a wide range of products and should investigate other sections of the hierarchical model. Low involvement products, especially, could be investigated. Or, to speak in the language of the Howard-Sheth model, routine response behavior needs to be investigated. The hierarchy of effects model of communication has come under some recent criticism (Palda 1966; Mindak 1956), but it still holds the promise of providing valuable insights into the nature of consumer behavior.

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INFLUENCES OF BRAND NAME AND PACKAGING ON PERCEIVED QUALITY

Benny Rigaux-Bricmont, Université Laval

Abstract

Using an experimental design on the Belgian coffee market, the present research investigates the combined effects of brand names and brand packaging on the consumers' perceptions of quality. As evidenced by the empirical results, both extrinsic cues do influence the consumers' quality evaluation, not only separately but also interactively. Managerial and consumer research implications are briefly described.

Introduction

Since quality perception seems to be strongly related to actual purchasing behavior, especially brand loyalty (Jacoby 1971), perceived quality has generated considerable experimental interest (cfr. Olson and Jacoby 1972). A better understanding of the quality perception process requires knowledge of the cues used by the consumer in his alternative quality evaluation. From an information theoretic perspective, products and brands themselves are conceived to consist of an array of cues (e.g., price, brand name, packaging, color, etc...), each of these cues providing a basis for developing various impressions of the product (Cox 1962, Jacoby, Olson and Haddock 1971). Among those extrinsic cues the relation between price and quality has been the most investigated during these last twenty years (Gabor and Granger 1964, McConnell 1968, Cooper 1970, Peterson 1970, Rao 1970, Monroe 1973, Woodside and Sims 1974, Olson 1977). This relation is now accepted as a positive non-linear one. Research has also shown the important role of brand names and brand packaging on quality perception. Brand reputation can be either a common surrogate indicator of product quality (Allison and Uhl 1964, Larzelere et al. 1965, Smith and Broome 1967, Myers 1967, Gardner 1971, Valenzi and Eldridge 1973, Freidman and Dipple 1978), or an effective strategy to reduce risk when ease of evaluation is low (Bauer 1960, Engel, Knapp and Knapp 1966, Lambert et al. 1980). Being almost a part of the product, packaging does not only act as a means of communication (Lincoln 1965, Gardner 1967) but may also interact closely with the evaluation of the product itself (Banks 1950, Brown 1958, McDaniel and Baker 1977, Miaoulis and d'Amato 1978).

When more than one extrinsic cue is investigated in studies, price and brand name are almost invariably included (Gardner 1970, Peterson and Jolibert 1976, Wheatley, Walton and Chiu 1977, Raju 1977). It is not the case in the present research which investigates through experimentation the combined effects of brand names and packaging on the perceived quality of coffee, a very popular food item daily consumed by 95% of the Belgian householders. The data used in this paper, were collected in an experiment conducted in June 1974 for one

¹ Olson and Jacoby (1972) refer to them as *extrinsic* cues for they are not parts of the physical product. They define *intrinsic* cues as product attributes which cannot be changed or experimentally manipulated without also changing the physical characteristics of the product itself (e.g. nature of the fiber, taste, special ingredients, etc...).

of the three most important firms competing in a particular variety submarket. At that time, the marketing managers were interested in determining the consumer attitudes for both their product and those of their two major competitors. Witnessing different patterns of market shares in the three typical regions of Belgium, they suspected the market to be heterogeneous in terms of attitudes.

The Experiment

The experimental design was a 3 x 3 x 3 factorial, consisting of three levels of packaging (i.e., blind test, brand disclosure, and regular retail presentation), three levels of regions (i.e., three representative cities of these regions), and three levels of product samples (i.e., three physically different samples of the product variety). Repeated measures were taken across the third factor. Thirty subjects were used in each of the nine experimental conditions.

The test group was composed of 270 variety users who agreed to participate in the study after having been randomly selected. After a brief interview on her consumption habits, each participant in the experiment was given free samples of the three brands, and a questionnaire to be picked up one week later.

Packaging information was manipulated by presenting the samples either in white bags with the variety name and a six-digit random number in place of the brand name, or in white bags with both the variety and the brand names, or in their regular retail packaging. A six-digit random number was selected in order to avoid any preference formation related to single figures (i.e. 7).

Brand perceived quality, the dependent variable for this study, was measured with a seven-point semantic differential scale using "good taste" and "bad taste" as pair of antonyms (similar to an "hedonic scale"). The selection of this measure was based on some findings in the field of multi-attributes attitude models, which show that the best way to find out what is a person's attitude toward a product or a brand, is to ask him a straightforward question about his overall satisfaction (Perry no date).

The effects of brand identification and brand packaging on these "overall perceived taste" ratings were investigated through an analysis of variance.

The appropriate model of analysis of variance (Three-factor experiment with repeated measures on only one of the three factors):

The form of the structural model which corresponds to the present experimental design is:

$$E(X_{ijkm}) = \mu + \alpha_i + \beta_j + \alpha\beta_{ij} + \pi_{m(ij)} + \gamma_k + \alpha\gamma_{ij} + \beta\gamma_{jk} + \alpha\beta\gamma_{ijk} + \gamma\pi_{km(ij)}$$

where:
 $E(X_{ijkm})$ = Expected value of overall perceived taste rating $i, j, k = 1, 2, 3$ (three-factor experiment with three levels for each factor)
 $m = 1, \dots, 30$ (replications on 30 subjects);
 $\alpha_i, \beta_j, \gamma_k$ = main effect terms respectively for regions (factor A), packaging (factor B) and brands (factor C);
 $\alpha\beta_{ij}, \alpha\gamma_{ik}, \beta\gamma_{jk}$ = first order interaction effect terms;
 $\alpha\beta\gamma_{ijk}$ = second order interaction effect term;
 $\pi_m(ij)$ = subjects within groups;
 $\gamma_{km}(ij)$ = Brands (repeated measures) x subjects within groups;
 μ = overall mean.

The model states that the total sum of squares can be partitioned in the 9 enumerated quantities. Since the subject factor is nested under both factor A and B, there can be no interaction between these latter factors and the subject factor. This model has implicit in it homogeneity assumptions on variance-covariance matrices associated with the repeated measures. The appropriate analysis of variance for this plan is described in Winer (1971). The expected values are computed according to the special case in which A, B and C are considered fixed factors. As complete assumptions about the variance-covariance matrices are not tested, the analysis uses the Greenhouse and Geisser procedure (1959) for all tests involving the brands factor. This procedure is negatively biased in that it uses conservative degrees of freedom² leading to errors in the direction of not rejecting false null hypotheses.

Data analysis of the overall perceived taste ratings

Before performing the described analysis of variance, a check was made on the importance of the bias due to the fact that some consumers found among the samples the brand they actually buy. In the blind test situation, the probabilities of having the highest score on a brand³, knowing this brand is frequently purchased in the household, were respectively 18% for Brand 1, 10% for Brand 2 and 0% for Brand 3. In the cases where the brands were revealed, these conditional probabilities became 31% for Brand 1, 25% for Brand 2 and 24% for Brand 3. While the loyalty of the participants toward "their" brands increased when positive brand identification was possible⁴, the observed bias appears to be very moderate.

The means and standard deviations of the overall perceived taste ratings for each experimental cell are presented in Table 1.

The normality assumption of the analysis of variance is challenged by the results: the information gathered along a discrete scale from 1 to 7 gives an overall mean of 5.56 and a variance of 2.03. Furthermore, a Bartlett test rejects the hypothesis of homoscedasticity. In such a case, it is recommended to consider a mathematical transformation on the scale of measurement which should improve equal variances and normality. Taking into account the shapes of the observed histograms, the following transformation was selected: $\ln(8-x)$, where \ln stands for natural logarithms and x for the individual taste ratings, 8 being the smallest number that assures values equal to or greater than 1. As shown in appendix 1, the transformation satisfies the hypothesis of homoscedasticity.

Table 1 - Means and Standard Deviation of Overall Perceived Taste Ratings

Cities (region)	City 1			City 2			City 3			
	Brand 1	Brand 2	Brand 3	Brand 1	Brand 2	Brand 3	Brand 1	Brand 2	Brand 3	
Identified variety										
Unidentified brand										
PACK 1	\bar{x}	5.43	4.70	5.53	5.13	5.57	5.20	5.57	5.23	4.87
	s_x	1.76	1.99	1.76	1.96	1.36	1.88	1.43	1.22	1.72
Identified variety										
Identified brand										
PACK 2	\bar{x}	5.90	5.87	5.33	5.77	5.67	4.60	5.59	6.55	5.14
	s_x	1.49	1.11	1.37	1.52	1.32	1.71	1.35	0.67	1.53
Regular packaging										
PACK 3	\bar{x}	6.20	6.37	5.47	6.33	5.20	5.00	6.14	6.18	5.57
	s_x	1.35	0.89	1.46	0.80	1.79	1.97	1.17	1.02	1.40

Note: 30 observations per cell.

² In this case, the degrees of freedom for numerator and denominator are each divided by 2.

³ Cases with ties were disregarded.

⁴ The same phenomenon is reported by Allison and Uhl (1964).

The analysis of variance was performed on both the original ratings and the transformed ones⁵. The results are respectively summarized in Table 2 and in appendix 2. Their similarity is not surprising if one remembers Green and Tull's statement (1978, p. 355) that "... research has indicated that moderate departures from normality and equality of variances (homoscedasticity) do not seriously affect the validity of the tests". For practical purposes of interpretation, the following development is based on the analysis of variance performed on the original ratings (Table 2).

Table 2 - Analysis of Variance of Overall Perceived Taste Ratings

SOURCE	S.S.	d.f.	M.S.	F
<u>Between subjects</u>	<u>706.54</u>	<u>269</u>		
Regions (cities)	11.93	2	5.96	2.44
Packaging	46.16	2	23.08	9.46 ^a
Regions x packaging	10.58	4	2.65	1.09
Subjects within groups (error (between))	637.87	261	2.44	
<u>Within subjects</u>	<u>1221.26</u>	<u>540</u>		
Brands	57.65	2	28.82	13.92 ^a
Regions x brands	13.86	4	3.46	1.67
Packaging x brands	29.02	4	7.25	3.50 ^b
Regions x packaging x brands	40.32	8	5.04	2.43 ^b
Brands x subjects within groups (error (within))	1080.41	522	2.07	
TOTAL		1927.80	809	

a) $p \leq .01$ b) $p \leq .05$
 (The critical values of the conservative tests involving the brands factor, have each of their associated degrees of freedom for numerator and denominator divided by 2).

A Brands main effect is obtained ($F = 13.80$, $df = 1,261$, $p < .01$) and a multiple comparisons "t" test indicates that among the differences between the pairs of means for the three brands ($\bar{X}_1 = 5.78$, $\bar{X}_2 = 5.71$, $\bar{X}_3 = 5.18$), the difference between \bar{X}_1 and \bar{X}_3 , and between \bar{X}_2 and \bar{X}_3 are significant beyond the .001 level. The analysis also indicates a packaging main effect ($F = 9.99$, $df = 2,261$, $p < .01$). The difference between the means for the PACK 1 ($\bar{X}_1 = 5.25$) and the PACK 3 ($\bar{X}_3 = 5.83$) conditions is significant beyond the .001 level, and the one between the means for the PACK 1 and the PACK 2 ($\bar{X}_2 = 5.59$) conditions, beyond the .01 level.

Furthermore, the analysis shows a significant first order interaction effect between Packaging and Brands ($F = 3.65$, $df = 4,522$, $p < .01$). Because of the large number of multiple comparisons involved (36), the differences between the pairs of the nine following means are LSD tested using Fisher's least significance difference procedure (Winer 1971, pp. 199-200).

⁵ Using the BMD08V program (Dixon 1968).

	Brand 1	Brand 2	Brand 3
<u>PACK 1</u>	5.38	5.19	5.18
<u>PACK 2</u>	5.73	6.03	5.01
<u>PACK 3</u>	6.22	5.91	5.36

At the .05 level, the critical lsd value is 0.42 in this case. Among the 36 differences, 19 appear to be significant.

Finally, the second order interaction effect term is significant beyond the .05 level. In the perspective of the previous effects, this result merely accentuates the importance of the Packaging x Brands interaction.

This implication of the main effect results can be summarized as follows:

- The taste of brand 1 or brand 2 is more popular than the one of brand 3.
- Brand name disclosure induces a psychological added value on the perceived quality. Knowledge that the free samples are from well known national brands probably reduces or suppresses the respondents' anxiety level associated with a blind test situation. Similar evidence is reported by Allison and Uhl (1964).
- Quality perception is homogeneous across the total market. Thus, the market segment shares and consumer attitudes do not seem to be related, at least for two of the three brands.

In order to grasp the complexity of the first order interaction effect between packaging and brands, table 3 is built. In the lower half-matrix, a star marks a significant difference between two means and an arrow points to the "winning combination".

In a first step, the intrabrands variations are considered across the packaging conditions. Brand 1 reveals itself as superior in its regular packaging than in the two other presentations. For Brand 2, the brand name image overcomes the blind test situation as does the regular packaging (See Fig. 1). For brand 3, no situation improves significantly its taste perception. Thus, Brands 1 and 2 differ from Brand 3 by improving themselves across the packaging levels. But, if for Brand 2 the main change is due to its brand name, for Brand 1 it appears to be due to its retail packaging. It seems that Brand 2 benefits from a better brand image than Brand 1, at least for this specific variety; but the converse being true in terms of retail packaging, the final situation places them at the same level of perceived quality.

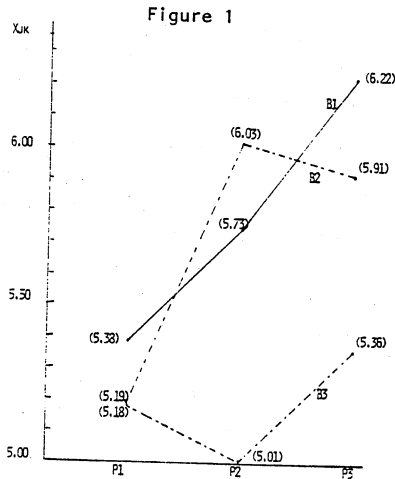
The second step considers the interbrands variations. If one looks just at Brands 1 and 2, one finds that their mean scores in the blind test are surpassed by the scores of the other in the remaining situations. As soon as the brand name of Brand 2 is revealed, it gets a better position than Brand 3. The same is true for Brand 1 except that its name alone has not enough impact for differentiating it from Brand 3 in its regular packaging⁶.

⁶ The analysis of the transformed ratings yields to the same results except that, in table 3, B1P1 is significantly greater than B3P2 and B1P2 significantly greater than B3P3.

Table 3 - First Order Interaction Effect Between Packaging and Brands ^a

Situation									
	B1P1	B1P2	B1P3	B2P1	B2P2	B2P3	B3P1	B3P2	B3P3
Means	5.38	5.73	6.22	5.19	6.03	5.91	5.18	5.01	5.36
B1P1	5.38	-							
B1P2	5.73	.	-						
B1P3	6.22	←*	←*	-					
B2P1	5.19	.	↑*	↑*	-				
B2P2	6.03	←*	.	.	←*	-			
B2P3	5.91	←*	.	.	←*	.	-		
B3P1	5.18	.	↑*	↑*	.	↑*	↑*	-	
B3P2	5.01	.	↑*	↑*	.	↑*	↑*	.	-
B3P3	5.36	.	.	↑*	.	↑*	↑*	.	.

^a B1, B2, B3: Brands
P1, P2, P3: Packaging



(The lines connecting the situations for each Brand are for visual clarification only)

Conclusions and implications

As evidenced by the present study, both brand names and brand packaging do influence the consumers' quality evaluations. These are certainly not the only extrinsic cues influencing the perception of coffee quality. For example, in a study conducted in Michigan, Roberts and Taylor (1975) investigated with mixed results the effects of the visual cue of granule size on ratings of various coffee types. But here, only the first two cues were suspected to be potential troublemakers for the client firm.

In a managerial perspective, the finding that brand and packaging images help the consumer in differentiating the

brands, accentuates the importance of the various firms' marketing efforts, and more particularly, their interdependence. Furthermore, such an experiment determines the relative performance of the major competitors' brand image and packaging on the market. The fact that, in this case, the performance is not directly associated with the market shares of two brands, can be explained by the high level of satisfaction they both develop. In a situation of equivalent perceived quality, the "elder" firm benefits from the consumer "inertia". Extended promotional sales are probably a potential strategy for switching brand loyalty, especially for a product in the maturity phase of its cycle. Finally, this kind of analysis is useful for evaluating either the effectiveness of the advertising programs, or the adequacy of the existing forms of packaging.

In a consumer research perspective, additional results on multiple cue effects are necessary for a better understanding of the chunking phenomenon. With the growing interest in information acquisition, the chunking process appears to be a promising avenue. By selecting a limited amount of informational cues (intrinsic and extrinsic), the consumer could infer a configuration which would suffice for making his decision. Such a conceptualization corresponds to Sam Becker's "mosaic" model of human communication (1968) where numerous message bits are organized into a unitary whole which is never "final". Moving within the informational environment, the consumer is constantly adding, deleting, strengthening, selecting, and substituting message bits comprising the mosaic (Fisher 1978). How many cues (relatively meaningless isolated pieces in the mosaic) does an "expert" consumer need to form an organized whole? The identification of those "anchor" cues could be crucial for advances in consumer information processing.

Appendix 1 - Means and Standard Deviations of the Transformed Taste Ratings^a

Packaging	Cities (region)	City 1			City 2			City 3			
		Brand 1	Brand 2	Brand 3	Brand 1	Brand 2	Brand 3	Brand 1	Brand 2	Brand 3	
Identified variety	Unidentified brand	\bar{X}	.72143	1.00602	.68265	.83156	.73468	.79561	.70236	.87546	1.01220
	PACK 1	s_x	.67742	.64122	.66247	.68084	.57470	.70862	.63731	.51289	.58851
Unidentified brand	Unidentified brand	\bar{X}	.54225	.63697	.84925	.60643	.69318	1.08979	.75857	.27726	.91993
	PACK 2	s_x	.61677	.49865	.53582	.62169	.57064	.54789	.55665	.39041	.57264
Regular Packaging	Regular Packaging	\bar{X}	.41022	.37360	.77507	.40456	.84156	.88656	.47388	.47739	.73762
	PACK 3	s_x	.55165	.46956	.57184	.46145	.62937	.67361	.53414	.50198	.52957

Note: 30 observations per cell.

a Homogeneity of variances is obtained: μ (Bartlett test) = 26.94 vs. $X^2_{.05,26} = 38.885$

Appendix 2 - Analysis of Variance of Transformed Overall Perceived Taste Ratings

References

$X' = \ln(8.-X)$

SOURCE	S.S.	D.F.	M.S.	F
<u>Between subjects</u>	<u>111.036</u>	<u>269</u>		
Regions (cities)	1.404	2	0.702	1.808
Packaging	6.544	2	3.272	8.429 ^a
Regions x packaging	1.774	4	0.443	1.141
Subjects within groups (error (between))	101.314	261	0.388	
<u>Within subjects</u>	<u>185.948</u>	<u>540</u>		
Brands	9.836	2	4.918	15.873 ^a
Regions x brands	2.214	4	0.553	1.785
Packaging x brands	5.695	4	1.424	4.596 ^a
Regions x packaging x brands	6.474	8	0.809	2.611 ^b
Brands x subjects within groups (error (within))	161.729	522	0.310	
TOTAL	296.984	809		

a) $p < .01$
 b) $p < .05$
 See footnote in Table 3.

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THE EFFECT OF BRAND NAMES

Ivan Ross, University of Minnesota

Abstract

The two papers composing this session are discussed. Neither study succeeds in addressing the issue of the importance of brand names. The Zinkhan and Martin paper intended to address this topic, but failed as a result of numerous conceptual and methodological problems. The paper by Rigaux-Bricmont did not address the issue of brand name, per se, because name was confounded with product. The discussant offers some comments on the importance of this topic.

Comments on Papers

The paper by Zinkhan and Martin, "The Attitudinal Implications of a New Brand Name," has severe conceptual and methodological problems.

The stated purpose was to study "methods used by consumers in responding to a new previously unknown, brand name." This is an important issue, and there has been previous research reported which has explored such methods (e.g. Peterson and Ross, 1972). However, the research reported here does not assess such methods, but rather deals with how subjects evaluated a new brand name in terms of perceived satisfaction along five product attributes.

The conceptual problem can be inferred from the authors' discussion of, "Theoretical Basis and Hypothesis Development," as well as from the, "Implications", sections of their paper. The gist of Hypothesis 1 and 2 appears to be that manufacturers or advertisers need not be concerned about the effect of brand name on behavioral intentions but should be concerned about the effect of brand names on attitudes. The conceptual problem, from this discussant's perspective, is that marketing or advertiser researchers would not apt recognize this distinction, and in fact, do not couch brand name selection in terms of this conceptualization at all. Rather, research will often be directed toward the "fittingness" of a hypothetical new brand name with the product category it is to "point to", as for example, in a free-association design. And, research may be directed toward whether or not a new brand name is perceived by prospects to aptly describe the attribute bundle embodied in the offering, both physical/sensory and/or as described in a "concept statement" or in advertising copy.

But, by definition, how can a new brand name evoke an "attitude" or a "behavioral intention", at least in terms of the way these terms are used in attitude/consumer research? Certainly, various expectations or beliefs may be evoked and measured, for example, does a brand name such as "Computron R-55" sound like a name which a "low price" brand would have? And, for whatever worth it might be, one could assess an "intention"; for example, assuming that price, programmability, etc. were "right", how likely is it that one would buy a Computron R-55? But it is obviously true that such an "intention" would be influenced by whether or not a person already owned a personal calculator, something not ascertained in this research.

There is no argument with the citations in this study concerning the importance of "personality" or "image" of a brand, but it is obvious that such attitudes are formed after experience (real or vicarious), advertising, word-of-mouth, and other such experiences occur. Brands do not have "images" when all that is known about them is the

name alone, except in the "fittingness" sense previously discussed.

Finally, a conceptual problem is associated with the notion of "shifting" (attitudes/intentions) away from the neutral level, as stated in Hypotheses 1 and 2. Any brand name or other stimulus which is part of the product/service offering, when exposed to consumers, will have some "meaning", the affective or intentional component of which may range from plus to minus (affect) or high to low (intentions). One may empirically determine that such a stimulus results in a "neutral" affective evaluation and in a "low" or "zero" intentions rating.

But the particular evaluation such a stimulus receives on either dimension is clearly the result of the way it is described to the respondent (presumably, such a description beyond the brand name alone was provided, else how could consumers indicate the satisfactoriness of this "new" brand's price and other attributes), and therefore, the design is conceptually flawed since the general question of the impact of a brand name, per se, is not being studied, but rather the impact of a specific brand name, and as confounded by other information in addition to brand name, is the subject of the research. The very hypothetical brand name, "Computron R-55", chosen for this research is a descriptive name (rather than "coined" or "nonsense") and hence "carries" meaning into the study. The name sounds like other "real" brand names in this product category. For all we know, subjects may have assumed it was "real", or if they were in fact instructed that it was hypothetical, they may still have transferred it to associations springing from attitudes they had toward like-sounding brand names. And, second, what is being "shifted" and why "away" from "neutral"? What "attitude" is it that was "neutral" before being exposed to the brand name? There was no prior attitude, so nothing can be "shifted"!

A final conceptual problem has to do with the authors' attempt to tie this research to the "attitude hierarchy" model. Of course, if the authors mean to say (and conclude) that it's true that an attitude change is more apt to occur after some intervening event than a behavioral change, then I would agree (but in so doing, setting aside passive learning issues), but this is no surprise, and in any event, is not a hierarchally relevant statement in the sense of "which comes first...attitude change or intentions change", since their research design has nothing to do with that question.

Given these conceptual concerns, the numerous methodological problems associated with the execution of the study may deserve little attention. Briefly, however, the following criticisms identify this discussant's major concerns.

With respect to the independent variables used to predict criterion measures (regarding Hypotheses 3, 4, 5 and 6), if it is true, as the authors suggest, that it was essential to the research that a product class be chosen that "fosters high levels of brand involvement or product interest", and if calculators do in fact satisfy that concern, then the four predictors, which really measure involvement and interest, would by definition generate range-curtailed scores. If one really believes these predictors are important in predicting attitudes and intentions, which is what the hypotheses specify, then one must

choose an object or object which a priori would substantially vary in these measures. In any event, the reported R^2 values of .27, .42, and .21 in Exhibit 5, are not "fairly substantial", and one should always try to cross-validate, shrink, or in some other way imbue one's correlated error variance with humility. And multicollinearity remains a problem if any of the pairwise correlations among predictors is greater than .8 or .9 or so, and we do not see a correlation matrix.

Further, the authors do not define how they measured, "experience levels", but however measured, it would appear closely related to "number of purchases." In any case, it is a peculiar thing to measure. If "experience" is at issue, why not measure how much or often a person uses the product, in how many different applications, and so on. And, their measure of familiarity is explicitly a measure of cognitive complexity, which may be a manifestation of familiarity but is not familiarity itself.

The attitude measurement procedures are either unclear specified or are incorrectly specified, at least according to Fishbein's model. First, behavioral intention is measured with respect to calculators in general while "A-act" is measured with respect to "a particular brand." I don't think you can do that and make sense out of results. Second, behavior intention is measured with respect to buying a calculator while "A-act" is measured with respect to using a particular brand. This is apples and oranges. Third, measuring attribute importance is not the same thing as measuring "consequences." The Fishbein measure of "consequence" has to do with the outcome of buying or using the calculator. Thus, little "a" in the model is not measured correctly. It should reflect an evaluation of how good or bad the consequence is of performing the behavior, for example, how good or bad is making computation easier? Fifth, B_1 should reflect whether an individual believes that performing the behavior (e.g. using the calculator) will lead to a particular consequence (e.g. making computation easier). Sixth, a_1 was measured in regard to calculators in general and B_1 regarding the specific new brand, "Computron R-55".

Further, as previously discussed, Figures 3 and 4 really don't fairly test Hypotheses 1 and 2, since beliefs, as the authors measure them, are really the subjects' perceived satisfaction with the new brand on the 5 attributes. That none of the 5 attributes contains zero (the neutral midpoint) does not demonstrate that attitudes have been shifted anywhere. First, attitudes were not measured, just beliefs were, and second, what shifted? What or who moved from what attitude level to what attitude level? Moreover, that "attitudes" average around plus 1 on a minus 3 to a plus 3 scale does not seem very "positive". Finally, how can any score on a balanced (plus-minus) scale be compared with a score on a zero-ten intentions scale, with respect to the contrast between Hypotheses 1 and 2?

In sum, it is unclear what the reported research has to do with attitudes or new brand names, whatever else it may shed light upon.

The second paper, "Influences of Brand Name and Packaging on Perceived Quality", by Benny Rigaux-Bricmont, is rather straightforward, but a few comments are in order.

First, the design was not a very powerful one with respect to identifying the impact of regional differences in regard to taste preferences; 90 subjects per region are probably too few. And in any event, it would be important to have developed a rationale for why regional differences might have been expected to play a role. For example, were sub-cultural issues of concern, language groups, age, rural/urban, or what? These factors would then have played a role in the sampling plan. And obviously, if regional differences in share was the major problem, a priori logic would cast more suspicion on "non-taste" factors such as

differences in distribution strategy by store/chain type, pricing and promotion differences, and so on.

Second, a bit more information on the task confronted by the subjects would have been helpful. Why only women? Were varietal differences identifiable even in the "blinded" treatment by color, granule size, or other observable factors? Were no instructions given in regard to order of use and manner of preparation? Did the samples provided permit multiple preparation? Was it just the female respondent's preferences that were reflected in the subsequent questionnaire or might other householders have had input? Did, in fact, all respondents even prepare and taste all three brands before rendering their evaluation?

Third, a more thorough diagnosis of taste and other sensory parameters might have been undertaken if these factors were seriously considered to play a role in overall evaluation, for example, appearance before and after brewing, bitterness, richness, aftertaste, the detection of additives, and so on.

Fourth, the rationale for the specific package manipulation employed is not clear. Why not just two levels, one with brand name on and one with brand name off an otherwise plain package? That would have sufficed to evaluate the role of brand names alone. And then, to address the role of alternative "full dress" (regular) packaging, various levels of that factor should have been crossed with the "name" factor.

Fifth, I don't think the author can flatly conclude that the taste of Brands 1 and 2 are more popular than the taste of Brand 3, because this was not the case in the unidentified treatment. It was only true in the two "brand identified" treatments. Incidentally, this finding seems to me sufficient to discard a "taste" explanation of share differences, whether regionally or nationally. Further confirmation of the lack of respondents' ability to identify varietal differences could have been accomplished by the addition of experimental groups who got each brand but in the "wrong" regular packages. Again, the hypothesis would be that one would discover a package main effect but no main effect or interaction with variety (brands).

Sixth, I was surprised that the data indicated that when brand name was known, and evaluations were related to brands actually bought, that the highest ratings for one's own brand were so low...31% for Brand 1, 25% for Brand 2, and 24% for Brand 3. Even given that ties were excluded, one might expect much higher preference levels for one's own brand, especially in a three-brand choice set. Does this suggest that some people had simply never tasted these other brands? Perhaps a product sampling strategy is called for.

Seventh, and a trivial point, I'm not sure that the least significant differences test employed in the analysis is appropriate since, as equivalent to a multiple t-test, the alpha levels have been inflated. Tukey or Sheffe tests may have indicated fewer differences of import.

In sum, although the study may have been useful in attempting to solve a "real world" problem confronting a coffee processor, it was designed to test primarily whether specific brands are more or less preferred, not whether specific brand names are more preferred. That is, names were confounded with actual product. To fully investigate the role of brand name, a design with names and products crossed would have been required.

The Importance of Brand Names

Although neither paper really succeeds in addressing the general question posed in this session, "Are brand names important?", the issue remains one worthy of future

research efforts.

Certainly, many product names serve to provide explicit positioning for the product (for example, Zest, Gleem, Clearasil, Handy Wrap, Excedrin, etc.) either by suggesting the identity of the product class/function, or by implying some more narrow point-of-difference or benefit. In these cases, the aptness of the brand name serves as an important anchor for other aspects of the product dress such as package design, performance statements on package or in advertising, product shape/style, and "actual" product (physical/sensory attributes). As the consumer learns these other attributes, the mere mention or sight of the brand name serves to evoke this constellation of other cognitions.

But most brand names are not "suggestive" at all and are initially without product-relevant meaning. Winston, Jantzen, and Granada, for example, come to have meaning as a result of marketing communications efforts of the firm. Whatever meaning they had initially bears little or no relationship to the meaning they come to have as products in the marketplace. In these cases it seems clear that no "name fittingness" research was done nor was any "positioning" intended by the brand name alone.

Research might well be directed at the question of whether the initial "meaning" or lack of it has any bearing upon the speed with which consumers come to learn that name as having "secondary meaning", that is, as being associated with a product/service from a particular source, or if source anonymous, being a "particular" thing with its own identity as separate from other products/services or from the "meaning" of the name before its marketplace existence. Measures of "meaning" might be taken before market introduction along parameters perhaps not yet well understood, but probably including "fittingness", "distinctiveness" (from other brand names in the product/service category), and "mood" (e.g. affect, intensity, etc.).

Measures beyond "speed of learning" (as a specific source) such as ultimate market success are apt to be difficult to relate to brand name "goodness", *per se*. *Post hoc* analysis is too easy, of course, but it is apt to be true that as many "good" as "bad" brand names succeed and fail in the marketplace. If there is any relationship with ultimate success, it is likely to be the result of the fact that companies which expend effort to select the "right" name are also more apt to put appropriate muscle behind the product than those who select "bad" brand names.

Yes, folks, even Edsel might have become a highly regarded brand name had that particular product offering been introduced at a better time and with a different constellation of product attributes.

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A SCRIPT THEORETIC APPROACH TO INFORMATION PROCESSING:
AN ENERGY CONSERVATION APPLICATION¹

Lorne Bozinoff, The Pennsylvania State University

Abstract

The paradox of how unconscious or routine response behavior can occur within an information processing paradigm is examined and resolved in terms of script theory. The empirical evidence concerning scripts is reviewed and an application in the area of energy conservation is suggested. An empirical study based on script theory yielded three findings. First, support for the existence of scripts is found. Second, scripts can be reliably measured. And third, scripts can provide insights into routine response behavior not available through traditional consumer research methods.

Introduction

It has long been held that the amount of information processing undertaken by consumers varies across product classes. Consumers in the process of buying either a new or expensive product are hypothesized to engage in more information processing than consumers who are engaged in the process of buying an inexpensive, frequently purchased good. For example, there is evidence that as the price of the product increases, the extent of information search increases (Dommermuth, 1965). Also, there is evidence that as product class familiarity decreases, the extent of information search increases (Bennett and Mandell, 1969). In contrast, it is posited that for frequently purchased consumer goods, little information processing will occur. In such instances, brand loyalty and routine response behavior (RRB) are likely to occur (Howard, 1977). Taken in the extreme, this type of behavior may tend to be unconscious and similar to a habit.

Routine or unconscious behavior appears to run counter to the more conscious extended problem solving (EPS) behavior studied by most consumer researchers (Howard, 1977). Although conscious decision making behavior is more widely studied than unconscious behavior, ironically, people are far more likely to engage in unconscious behavior than conscious behavior (Lachman, Lachman and Butterfield, 1979). A key issue then is how RRB can be explained within a more consciously oriented information processing paradigm.

Script Theory

A common meeting ground can be found in the notion of scripts (Abelson, 1980; Shank and Abelson, 1977; Shank, 1980). According to most current theories of cognitive structure, knowledge is stored in long term memory (LTM) as schemata (Lindsay and Norman, 1973). Schemata are the large sets of well structured cognitions that have been learned over time as experience accumulates (Norman and Bobrow, 1975). Schemata consist of a framework for organizing the information about a concept into a meaningful structure. A script can be thought of as a temporally ordered schema. That is, a script is a knowledge structure stored in LTM which contains a sequential ordering. Specifically, scripts contain a series of actions, each arranged in terms

of temporal order - hence the name "scripts." The most commonly cited script is the RESTAURANT script (Abelson, 1980). The RESTAURANT script contains a series of actions which are expected to occur when one goes to a restaurant, e.g., talking to the maitre'd, being shown to a table, reading the wine list and so forth. A restaurant schema on the other hand would not contain the information that these actions are expected to occur in a distinct temporal order.

Scripts which have been stored in memory are used to direct behavior when activated. Activation is believed to occur automatically by the situational context. When one enters a restaurant, the RESTAURANT script will be activated and thus begin to guide behavior. On the other hand, when one enters a dentist's office, the DENTAL VISIT script becomes activated. It might contain such actions as checking in with the receptionist, sitting down, waiting, looking at other people, reading magazines and so forth. An activated script will result in unconscious or routine response behavior because while the script is initially developed or constructed in a conscious learning context, once learned, no new conscious effort is required. The situation acts as a cue to automatically trigger the appropriate script. Using a computer analogy, the script would be like a stored subroutine called by the central processor from time to time.

Scripts are inherently useful because of their ability to conserve the individual's limited information processing capacity. By retaining actions or procedures learned from previous situations, new actions need not be learned for new, but relatively similar, situations. The RESTAURANT script saves the consumer the trouble of deciding what should be done or what is expected upon entering a different restaurant. This information is already available in LTM in the form of scripts.

A script need not specify all the actions in complete detail. As Abelson (1980) notes, "free behaviors" may be allowed to occur in certain scripts. For example, the DENTAL VISIT script may prescribe all the actions up until sitting in the dentist's chair. However, the course of the conversation between the patient and the dentist may not be scripted - any subject of conversation may be permitted. At this point, the script temporarily ceases to guide behavior which is now directed by more conscious processes. Once the conversation with the dentist has ended, the script is activated again. In terms of a computer analogy, this is similar to a subroutine which returns control of the program back to the main part of the program and then is called again by the main program at some later point.

Scripts may also differ in terms of strength. Strong scripts are very explicit and contain a great number of "scene" constraints. That is, these scripts specify many actions or scenes which must occur. Weak scripts are vague and have fewer scene constraints. These scripts contain many scenes which do not have high probabilities of occurring. For example, a strong RESTAURANT script would always include a maitre'd but a weak script would not.

¹The author is now Marketing Research Manager at Bell Canada, Toronto, Ontario. This research was supported by the Center for Research, College of Business Administration, The Pennsylvania State University. The author thanks Jerry Olson and Arno Rethans for their insightful comments on an earlier draft of this paper.

Empirical Evidence of Scripts

Most research concerning the nature of scripts is very recent. However, there is also some older evidence. Bartlett (1932), for example, found that subjects when given stories

to memorize tended to change the stories so that they conformed more to their own ideas or scripts. Brandsford, Barclay and Franks (1972) found that subjects in a memory task tend to "construct semantic descriptions of situations" rather than to remember the details of information presented. Baggett (1975) found also that subjects tend to fill in missing details in a memory task in order to form a coherent story. In all of these studies the implication is clear that subjects can and do draw upon their own scripts to fill in missing details of stories, and that they tend to store these stories in the form of scripts.

More recently, Bower, Black and Turner (1979) conducted a series of studies on scripts. They found five significant results concerning scripts. First, they showed that there are script norms. That is, when asked to describe familiar activities, subjects tend to write similar descriptions. The subjects tended to use the same characters, props, actions and order of events.

Second, subjects tended to agree on how a series of action sequences should be grouped into segments or "scenes." Third, in a recall task, subjects tended to confuse stated actions with unstated actions implied by a script. Fourth, they found that given a series of actions scrambled out of order, subjects tended to use a common "natural" or "canonical" order in unscrambling the actions.

Finally, it was shown that subjects tended to remember exceptional actions rather than scripted actions. This finding has been replicated in other studies (e.g., Graesser, Gordon and Sawyer, 1979; Graesser, Woll, Kowalski and Smith, 1980) and is very important because it is direct evidence of the unconscious nature of scripts. Subjects do not tend to notice or be conscious of scripted activities. Thus the use of scripts tends to be unconscious. However, it was shown that subjects can consciously draw upon their scripts when asked to describe familiar activities. The net result is an unconscious process--the initial development of scripts is conscious but over time, through overlearning, the use of scripts becomes unconscious.

An Application of Script Theory: Energy Conservation

Energy consumption can be viewed from a "scripts" perspective. The use of energy in some situations has become so routine that it is possible that energy use actions have become parts of strong scripts. For example, a consumer may have, at one point in time, decided that the best method of traveling to work each day was by private automobile. Once the consumer has purchased an automobile, he will seldom reconsider his daily use of the automobile for commuting purposes. His continued automobile usage is now a matter of unconscious or script-directed behavior. Little additional information processing will occur in this context. A commuter going to work may have a GOING TO WORK script which contains such activities as 'getting into a car,' 'driving to work alone' and 'parking the car.' It may not contain activities like 'turning off all the lights' and 'turning down the heat.' This script will be triggered by certain early morning cues such as the time of day and day of the week.

This does not mean that energy usage is totally unconscious. If questioned directly, the consumer could report his use of the automobile each morning. Rather, his behavior is script-directed. The initial behavior was conscious but over time a GOING TO WORK script has been constructed and stored in LTM. It is this script which now guides behavior. When the appropriate early morning situational cues are present, this script becomes activated and pre-empts any conscious consideration of how to get to the office.

Script-directed energy use may explain why several attempts to reduce consumers' energy consumption have failed. For example, McClelland and Cook (1980) tried to reduce energy

use by providing monetary rebates to consumers every two weeks. The amount of the rebate was determined by the amount of energy saved. It was found that the rebate plan did not significantly reduce energy consumption. In a similar study, Winett, Kagel, Battalis and Winkler (1978) found that neither monetary rewards nor energy use feedback information reduced energy consumption to any great extent. McNeill and Wilkie (1979) looked at the impact of energy labels upon appliance selection and found that consumers do not actively seek energy information. The failure of monetary incentives to affect energy consumption may be due to the fact that if energy use is script-directed, then incentives must be provided at the time that the energy scripts are being activated. A monthly electric bill rebate will not be effective in getting consumers to turn down the heat each morning if this action is not in the GOING TO WORK script. Again, scripts are activated automatically depending upon the situational context. The finding that consumers do not actively seek energy information when buying appliances indicates that a 'get energy information' action is not in consumers' BUYING APPLIANCE scripts.

Research Purpose

The study described below serves only as an initial, exploratory investigation of some of the ideas discussed above. The purpose of this study is to answer three questions. First, can scripts be measured for situations for interest to consumer researchers? In addition, what is the variability of scripts across consumers for the same situation? Second, how reliable are scripts? If scripts are to be of some use to consumer researchers, they must be reliably measured. Third, and most importantly, do scripts yield additional insights into consumer behavior which cannot be provided by traditional consumer research methods?

Method

Subjects

Forty-three subjects were recruited from two undergraduate marketing management classes. During regular class time, students were asked to participate in the study. Participation was voluntary, although all of the students agreed to participate. Approximately 60% of the sample were males. A convenience sample of students is defensible since the principal aim of the present research is exploratory in nature. In addition, Kruglanski (1975) has argued that homogeneous samples (such as students in particular classes at a given institution) are appropriate for theory-oriented research where individual differences are not of theoretical interest.

Measurement Instrument

The subjects were asked to generate a list of events or actions for each of three situations--getting up in the morning, preparing a Thanksgiving dinner and a day at the office. These situations were chosen because they each were hypothesized to contain several energy related activities. For example, a MORNING script might contain such activities as brushing teeth with an electric toothbrush, using an electric shaver, blow drying wet hair, turning off the lights, turning down the heat when leaving the house and so forth. Energy related activities for a THANKSGIVING DINNER script might include using an electric can-opener and an electric carving knife. The OFFICE script was hypothesized to include driving to work and using an elevator to get to the office. These energy related activities are particularly interesting because for each activity there is an alternative which uses little or no energy. The specific instructions for generating the scripts were the same as those used by Bower, Black and

Turner (1980). The instructions for the MORNING script were as follows:

"Write a list of actions describing what you normally do when you get up in the morning. We are interested in the common actions of a routine getting-up-in-the-morning stereotype. Start the list with waking up and end it with leaving the house. Include about 20 actions or events and put them in the order in which they would occur."

Because scripts are learned through experience with many similar situations, they contain information concerning a generalized or stereotypical situation. Consequently, this is the level at which they should be (and were) measured. It is not absolutely necessary that a subject may never have actually cooked a Thanksgiving dinner or gone to work in an office. A subject should still have had some indirect experience upon which to construct a THANKSGIVING DINNER script and an OFFICE script. In fact, over 75% of the respondents were able to write THANKSGIVING DINNER and OFFICE scripts and all subjects were able to construct GETTING UP scripts.

After writing the scripts, the respondents answered twelve Likert-type items drawn from Antil and Bennett's (1979) Socially Responsible Consumption Behavior Scale (SRCB). Some items dealt specifically with attitudes towards energy conservation and some items dealt with general ecological issues. The SRCB was chosen because of its high reliability and convergent validity with other energy conservation scales (Antil and Bennett, 1979). Finally, respondents completed some energy use self-report measures.

Results

Script Norms

The scripts were edited and tabulated according to frequency of citation of specific events and actions. Paraphrases and synonyms were lumped together. The first issue is whether respondents agree in the actions they mentioned. Because people draw on the same general experiences to construct scripts, it is hypothesized that there should be a core of actions common to all the respondents' scripts.

Tables 1, 2 and 3 report the frequency of occurrence for actions listed in the three scripts. As hypothesized, there was a common core of actions cited by the respondents. In the GETTING UP script, over 75% of the respondents mentioned taking a shower, getting dressed, brushing teeth, getting books together and leaving the house. In addition, over 50% of the respondents mentioned waking up, turning off the alarm clock, getting up, going to the bathroom, drying hair and having breakfast. Another 25% mentioned such things as combing hair, shaving and so forth.

Similar findings were found for the other two scripts. For the THANKSGIVING DINNER script, over 75% of the respondents mentioned stuffing the turkey, putting the turkey in the oven, and cooking the vegetables. In the OFFICE script, over 75% of the subjects mentioned driving to work, having coffee and having lunch.

Script Reliability

Given the nature of the script generation task, it is very difficult to conduct a test-retest reliability study. Respondents generating scripts on a second occasion may very well recall the scripts which they generated on the first occasion. Because of this, the reliability of the frequency with which a specific event or action is mentioned was calculated by dividing the sample in half and correlating the frequencies of actions mentioned by the two halves. The Pearson product moment correlation for the THANKSGIVING

scripts was .76 and for the OFFICE script it was .81. (The reliability was not calculated for the remaining script.) Thus, for a homogeneous group like undergraduate students, there is a fairly high degree of script action frequency reliability.

Script Versus Self-Report Measurement

The remaining issue concerns whether script measures provide any additional insights into consumer behavior which are not available through the more traditional consumer research methods. Although the scripts which were generated contain a considerable amount of detail, most energy related actions which were listed were not detailed enough to allow for an analysis of whether an energy saving alternative was used. For example, in the THANKSGIVING DINNER script, over 50% of the respondents mentioned carving the turkey. However, not one respondent mentioned whether an electric knife was used. In the GETTING UP

TABLE 1

Empirical GETTING UP Script Norms¹

Wake-up
Turn off alarm
Get up
Go to bathroom
TAKE SHOWER
Dry off
Dry Hair
Comb hair
Curl hair
Shave
GET DRESSED
Make bed
Drink coffee
Have breakfast
BRUSH TEETH
Turn stereo on
GET BOOKS
Get money, keys
Put coat on
LEAVE HOME

TABLE 2

Empirical THANKSGIVING DINNER Script Norm¹

Make stuffing
Clean turkey
STUFF TURKEY
PUT TURKEY IN OVEN
Bake pies
Peel potatoes
Cook potatoes
COOK VEGETABLES
Make salad
Baste turkey
Check on turkey
Remove turkey from oven
Make gravy
Mash potatoes
Put vegetables in dishes
Set table
Carry food to table
Call family
Carve turkey
Serve food
Pour drinks
Eat

TABLE 3
Empirical OFFICE Script Norms¹

Leave house
Get into car
DRIVE TO WORK
Park car
Enter building
Enter office
Say hello to secretary
Put coat away
Get messages
Check agenda
Open mail
HAVE COFFEE
Get to work
Make phone calls
Dictate letters
HAVE LUNCH
Return from lunch
Attend meetings
Leave office
Get into car
Drive home
Return home

¹Items in all capital letters were mentioned by the most subjects (75%), items in italics by fewer subjects (50%), and items in small case letters by the fewest subjects (25%).

script, over 50% of the respondents mentioned drying their hair although very few respondents mentioned whether a blow dryer was used. This is indirect evidence of the unconscious nature of many energy related activities. Many energy related activities are so routine or automatic that even the process of generating a script fails to make these behaviors conscious.

One energy related behavior which was specified in considerable detail was found in the OFFICE script. More than 75% of the respondents reported driving to work while the remainder reported taking the bus, walking or joining a carpool. No one failed to report how they traveled to work. The method of commuting listed in the scripts was cross-tabulated with the method of commuting reported in the self-report measure of energy use. Table 4 shows that self-reported methods of commuting were not related to the script generated methods of commuting. (Because of the low cell frequencies in Table 4, this result should be interpreted with some caution.)

TABLE 4
Frequencies of Script Generated Measures
by Self-Report Measures
for Commuting Methods

		Script Generated			Row Total
		Not Mentioned	Car	Carpool	
Self- Report	Carpool	0	3	0	3
	Bus	2	3	0	5
	Car	3	12	0	15
	Walk	<u>3</u>	<u>5</u>	<u>1</u>	<u>9</u>
Column Total	8	23	1	32	

$\chi^2 = 5.055$, d.f. = 6, p. = 0.54

In another comparison of self-report and script generated measures of energy related activities, respondents who mentioned turning off the lights when leaving the house in the morning (in the GETTING UP script) were cross-tabulated with those in the self-report who indicated that they turned off the lights when not in the house. Table 5 indicates that again self-reported and script generated measures are not significantly related to each other. One possible conclusion is that energy conservation activities as well as energy use activities are primarily unconscious. (Because of the low cell frequencies in Table 5, this result should be interpreted with some caution).

TABLE 5
Frequencies of Script Generated Measures
by Self-Report Measures
for Turning Off Lights

		Script Generated		Row Total
		No/Not Mentioned	Yes/ Mentioned	
Self- Report	No	2	0	2
	Yes	<u>36</u>	<u>5</u>	<u>41</u>
Column Total		38	5	43

$\chi^2 = .275$, d.f. = 1, p. = 0.60

Script Versus Attitude Measurement

Respondents who claim to be interested in energy conservation and general ecological issues should be more conscious of energy related activities. Presumably someone who feels energy conservation is important should put more conscious effort into energy use behaviors. In order to test this hypothesis, the sample was divided into two halves based on total energy conservation and ecological concern attitude scores. Respondents who score low in terms of energy conservation concern should mention fewer energy related activities in their scripts than respondents who claim a higher concern for energy conservation. Table 6 reports the results of this analysis.

The degree to which a respondent claims to be interested in energy or ecological issues had little impact upon the likelihood that an energy related activity would be reported. Respondents who are interested in energy issues did not in general report more energy related activities than the respondents who were less interested in energy issues. The most notable exception occurred with the OFFICE scripts. Respondents who are interested in energy issues have a significantly greater propensity to mention driving their car to work and using the elevator than do the uninterested respondents.

Discussion

The present study provides some tentative answers to the questions raised earlier. First, it has been shown that scripts can be generated by respondents for situations of interest to consumer researchers. Furthermore, there does appear to be a common core of activities found in the scripts. Second, the reliability of scripts appears to be well within an acceptable range.

More importantly, scripts do provide insights into

TABLE 6

Proportion of Respondents Who Mentioned
Energy Related Activities

	Energy Attitudes		Ecology Attitudes		Combined Attitudes	
	Low	High	Low	High	Low	High
<u>GETTING UP Script</u>						
Shaving	14.3%	22.7%	25.9%	6.3%*	19.2%	17.6%
Brushing teeth	71.4	68.2	74.1	62.5	73.1	64.7
Drying hair	47.6	31.8	37.0	43.8	38.5	41.2
- blow dry	9.5	9.1	11.1	6.3	11.5	5.9
Lights Off	19.0	4.5	11.1	12.5	15.4	5.9
Appliances Off	19.0	9.1	18.5	6.3	19.2	5.9
<u>THANKSGIVING DINNER Script</u>						
Can-opener	4.8	9.1	3.7	12.5	3.8	11.8
Carving meat	28.6	40.9	37.0	31.3	30.8	41.2
<u>OFFICE Script</u>						
Going to work -car	61.9	86.5*	63.0	93.8***	61.5	94.1***
-carpool	0.0	4.5	3.7	0.0	3.8	5.9
Take elevator up	4.8	13.6	3.7	18.8	0.0	23.5***
Take elevator down	0.0	13.6*	3.7	12.5	0.0	17.6**
Return Home -car	57.0	68.2	59.3	68.8	53.8	76.5
-carpool	0.0	4.5	3.7	0.0	3.8	0.0

*Significant at p. < .10

**Significant at p. < .05

***Significant at p. < .01

consumer behavior which are not available through the use of the more traditional consumer research methods. For example, it was shown that self-reported behavior differs considerably from script generated behavior. One obvious reason for this may be social desirability. It is relatively difficult for a respondent to provide socially desirable scripts because the goals of the research are not easily discernable to the respondent. This is not the case for self-report measures.

Finally, this study provides some support for the scripts conceptualization provided above. It was reported that a great number of energy related activities were not reported by the respondents. One reason for this may be that these behaviors are generally unconscious and hence not easily recalled by the respondent. As expected however, those respondents who were interested in energy issues did tend to report more energy related activities. In no instance did the less interested subjects report significantly more energy related activities.

Conclusions and Implications

As Bower, Black and Turner (1979) note, key issues remaining in script theory are how to access scripts, and how to learn new scripts. Script theory does offer some guidelines however. Because scripts are triggered by specific situational cues, efforts to change scripts must be aimed at these critical situations. For advertisers attempting to change existing scripts there are a couple of implications. First, in order to be effective, advertisements must be presented at the time that a script is being triggered. Second, in terms of ad copy, it is crucial to design ads which provide what Shank and Abelson (1977) call "interrupts" and act to make otherwise unconscious scripts conscious. By moving the consumers back to a conscious mode of thought, perhaps scripts can be altered. In order to do this, the consumer's scripts must be identified and new actions or scenes written into the scripts. A scripts

framework can provide an information processing approach to routine response behavior.

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REPRESENTATION OF PRODUCT HAZARDS IN CONSUMER MEMORY

Arno J. Rethans, The Pennsylvania State University
Manoj Hastak, The Pennsylvania State University

Abstract

Twenty consumer subjects were probed for their hazard-related knowledge structures. A sequential free-elicitation procedure attempted to differentiate between linguistic thoughts and image-based thoughts. These thoughts were next classified as episodic or semantic so as to provide some indication of the content of the knowledge structures. Findings suggest that research on information representation will almost always be incomplete if it focuses on linguistic information only and that the research should not exclusively focus on representation in semantic memory. Recommendations for future research are provided.

Introduction

Researchers in the area of hazard assessment, product safety and public policy formulation have recognized that any hazard management system developed to protect consumers from the risks associated with products and/or technologies must take into consideration both the technical and the psychological/social facets of risk assessment (Slovic et al. 1981, Slovic et al. 1977; Otway 1973; Rethans and Albaum 1980; Rowe 1977). The technical facet involves the identification of hazards and the measurement of their probability and consequences; whereas the psychological/social facet involves the public perceptions of the risks and the acceptability of these perceived risks.

The recognition of the psychological facets of hazard management is crucial to the success of public policy programs (Thomas et al. 1980). As Slovic, Fischhoff and Lichtenstein (1979) warn; "People respond to hazards they perceive. If their perceptions are faulty, efforts at public and environmental protection which do not consider these perceptions are likely to be misdirected." In the area of consumer product hazard management, Rethans (1980) and Rethans and Albaum (1981) have argued similarly for the introduction of consumer hazard perceptions into both private (i.e. company) and public product hazard management programs.

Studies of the validity of risk perceptions have obtained some mixed results. Indeed, the empirical work has culminated in the identification of some interesting "lay foibles and expert fables" in judgments about risks (Fischhoff et al. 1980). In some cases, people are quite attuned to risk information; in other cases, however, their judgments show strong and systematic biases (Lichtenstein et al. 1978; Fischhoff et al. 1979; Combs and Slovic 1979; Rethans 1980). Of the variety of explanations offered for the observed biases, the more intriguing one is the notion of the availability heuristic (Tversky and Kahneman 1973). When employing this heuristic risk judgments are based on information that is easily activatable. Biased judgments under this perspective, then, are a function of biased information representation and/or activation.

From an information processing perspective these empirical results stimulate some interesting questions about public or consumers' hazard related cognitive structures and cognitive processes. What is the content and structure hazard knowledge representations in memory? What factors influence the activation and further processing of stored information? Could understanding of hazard information

representation and activation lead to a better description of the cognitive processes underlying availability and other observed heuristics? Answers to these and similar questions will have both theoretical and practical implications for the study of judgmental processes in general and for research in risk assessment in particular.

The study reported here represents an initial attempt to characterize the content of consumer representation of product and technological hazard information in memory.

Theoretical Framework for Study

Knowledge Structures

The theoretical framework underlying the study presented here is based on the associative network representation of knowledge (Anderson and Bower 1973) and the spreading activation theory of processing (Collins and Loftus 1975).

In the associative network model, individual concepts are represented as nodes in a network and collectively shape the content of the knowledge structure. On the other hand, the links between the nodes represent the associations between the concepts and account for the organization of the knowledge structure. Activation of the resulting network is initiated by an internal or external cue starting at a single concept node and spreading along the arcs linking the activated concept to other nodes at a decreasing gradient. This decrease in gradient is hypothesized to be inversely proportional to the accessibility or strength of the links in the path. Thus, the theory suggests that concepts that are strongly linked to the initially activated concepts are likely to be activated, while the decreasing gradient allows the activation to "die out" over time without activating more than a small subgraph of the entire associative network (Ortony 1978).

The distinction between content and organization has been introduced as a vehicle to characterize existing research on consumer's knowledge structures. Johnson and Russo (1978) illustrate research emphasizing the organizational aspects of knowledge structures. Chronometric analysis as well as analysis of recall order led these authors to speculate about the organization or product information in memory. In contrast, the 1980 Russo and Johnson study reflects interest in both contentual and structural aspects. The coding scheme developed to classify consumers' knowledge about common products incorporates one content-based variable (the inferential levels of knowledge) and one structure based variable (brand-based versus attributed based organization). Finally, Kanwar, Olson and Sims (1981) propose and provide empirical indicators for three content-based measures of knowledge structure--dimensionality, abstraction and articulation--which provide more generalized, more abstract descriptions of memory content. Interest in content measures of knowledge structures is based on the assumption that they may provide additional, if not better, explanations of subsequent consumer information processing activities (Brucks and Mitchell 1981). In the study reported here we continue the interest in the content of knowledge structures by examining the content of consumer hazard knowledge structures.

Content Typology

The content typology to be employed in the classification of activated hazard-related knowledge is based on the findings of research in the area of risk assessment. Specifically, research findings related to the role of experiential knowledge and findings related to the role of image based hazard representations in the formation of risk judgments led to the selection of the content typology. Before describing the content typology, we first briefly outline the relevant research findings.

Experiential versus Inferential Knowledge. Researchers in the area of risk assessment have suggested the importance of individual experiences in the formation of risk judgments. For example, Kates (1962) observed that residents of flood plains appeared to be "prisoners of their experience," unable to conceptualize floods that never occurred or to see the future as anything but a mirror of the recent past. Lichtenstein et. al (1978) show a strong correlation between extent of experience (both direct and indirect) with death and injury events and the subjective estimates of levels of risk associated with these events. Finally, Abelson in reviewing Slovic, Fischhoff, and Lichtenstein (1976) seems to suggest that episodic script processing may be responsible for the observed distortion of probability judgments. These findings and speculations imply that hazard information is represented as encoded records of experienced episodes rather than generalized inferences derived from such episodes.

In an attempt to capture the experiential versus inferential basis of knowledge representation in our content typology, we turned to the distinction between episodic and semantic memory introduced by Tulving (1972). Episodic memory receives and stores information about temporally dated episodes or events, and the temporal-spatial relations among these events. Episodic memory is a more or less faithful record of a person's experience. Examples of episodic hazard memory would be the following statements made by two of our subjects. "I remember, in third grade, I was riding my bike with no shoes on and my foot caught in the spokes and I cut my toe really bad." "I had a hair dryer some time ago that shocked me everytime I used it, so my husband had to tear it apart to see what the cause was." Each of these statements refers to a personal experience; they are autobiographic in nature. Semantic memory on the other hand contains one's general abstracted knowledge about facts and principles. It preserves people's general conceptual information, world knowledge, and linguistic abilities (Lachman, Lachman and Butterfield 1979). Illustration of hazard information contained in semantic memory include: (a) ammonia should not be mixed with chlorox, it will create deathly fumes, (b) some of the hair dryers on the market contain asbestos, and (c) children should be kept in the house when you mow the lawn because the lawnmower will kick out rocks and twigs that will hurt the kids.

The semantic-episodic distinction is employed here as a conceptual tool rather than as a functional distinction in human memory. Although there is an interesting controversy regarding the psychological reality of these two memories (Anderson and Ross 1980; Hermann and Harwood 1980), of greater value to this paper is the realization that semantic and episodic memories are not always cleanly separable. They may be considered instead as end points on a continuum ranging from completely context-dependent episodes to truly general knowledge (Olson 1980; Kintsch 1980). This perspective does not impair the usefulness of the distinction, however, as will be shown later.

Linguistic versus Imagery Based Representation. The idea that people code events both linguistically and perceptually seems to be accepted by most psychologists (Paivio 1971; Posner 1973; Rossiter 1976; Shepard 1978; Wickelgren 1981). Indeed, mental images and their vividness are perceived to affect subjective risk assessments. For example, Slovic, Fischhoff and Lichtenstein (1981) find nuclear power

hazard perceptions to be influenced by vivid mental images of a nuclear accident. Similarly, in the area of consumer behavior, Rossiter (1980) has argued that episodic images of past consumption or usage situations may form important components of product memory that may be activated in choice situation. Hence, for purpose of this study we further classify memory content into linguistic versus visual representations and focus once more on the content of these representations, i.e., the content of the reported hazard images.

Method

Study Procedures

Subjects were run individually through a single study session which was comprised of two segments. In the first segment of the study a free elicitation procedure (Olson and Muderrisoglu 1979) was employed to identify the hazard knowledge that consumers have stored in memory. Subjects were directed to verbalize all of the hazard-related thoughts, sensations, feelings and/or images that were generated in response to several hazard cues. Their verbal protocols were unobtrusively tape recorded for later analysis. Upon completion of this segment, the respondent completed a short questionnaire containing a 7-point scale designed to measure the extent to which pictures or images had entered their thoughts, as well as a series of scales evaluating the vividness of the evoked imagery for each of the stimuli (Marks 1973). The latter set of scales have previously been found to be both reliable and valid (White, Sheehan and Ashton 1977).

In the second segment, the respondent was asked to elaborate on the pictures and/or mental images reported in the early part of the interview. Respondents were instructed to refer back to the images they had experienced and describe them in more detail. Verbalizations were again tape recorded for later analysis. No respondent reported any difficulty in executing this task.

This image elicitation procedure does not completely rule out the possibility that respondents constructed images during the second verbalizing task rather than merely elaborating upon images actually experienced during the first part of the study. Several precautions were taken to minimize the effect of this possible demand characteristic. First, protocols obtained during the second segment of the study were matched with those obtained during the first segment so as to ensure that subjects were indeed elaborating upon previously reported images. Secondly, as illustrated later in Table 2, a very conservative coding scheme was used to identify image based responses present in the protocols obtained in the second segment. Only responses containing such clear phrases as "I saw..." or "I had this picture..." were coded as image responses. Lastly, the combined results of the two sets of protocols and the use of multiple scales to measure the extent of mental imagery elicited provide some degree of confidence in the results to be reported.

Finally, the subject completed a questionnaire which incorporated the 15-item Visualizer-Verbalizer Questionnaire (VVQ) developed by Richardson (1977), perceived personal and societal hazardousness scales, indicators of use and injury behavior data as well as the more standard demographic measures. Included also were items designed to elicit subjects' reaction to the tasks. Most subjects indicated that they found the tasks to be relatively easy, just right in terms of length, and natural rather than artificial. Furthermore, the participants felt that the information they provided was both accurate and representative.

Protocol Coding

The free elicitation protocols for both parts of the study were first divided into short segments representing a com-

plete thought or a complete image respectively. Both authors served as independent judges for this part of the coding process in which 1044 thoughts and 307 images were identified. The two coders initially agreed on 875 of the thoughts and 285 of the images.

Elements for the coding scheme to be employed in the classification of the thoughts and the images were developed on the basis of the theoretical frameworks discussed earlier and by scanning part of the actual protocol data. The resulting coding scheme for the thought protocols is shown in Table 1, which the coding scheme for the image protocols is shown in Table 2.

TABLE 1
Protocol Coding Scheme for Thought Content

Category	Description and Examples
Personal Episodic	Autobiographic reference involving personal experience of hazardous event: "I remember cutting off the tip of my fingers." "I once got my foot caught in the spokes of my bicycle."
Episodic	Autobiographical reference involving experience of hazardous event by significant other: "I know of a woman who accidentally ran into her small child (with lawn mower) and the child lost one leg;" "Todd grabbed one (a knife) one day and that scared me because you can't tell him to release it;" "My husband was riding our mower, it got stuck in reverse, backed into our car."
Personal Semantic	Knowledge reference based on inference from cognitive reference involving personal commitment: "...we never leave our daughter near the (Christmas) lights;" "I think about always buying containers with the hard-to-remove lids, the child proof lids." "I don't think because of hearing about the asbestos that I am gonna stop (hairdryer)."
Semantic	Cognitive reference with respect to hazard: "Before use Christmas lights should be checked for shorts;" "Gasoline should be poured into the mower not when it is running and outside the garage;" "Hair dryers should not be used in the bathtub because of electrocution "danger."
Affect	Simple overall evaluative statement about hazard: "I really worry about bicycles;" "Power lawn mowers really scare me;" "It is sad to think about those accidents."

TABLE 2
Protocol Coding Scheme for Image Content

Category	Example
Personal	I can still see myself cutting one of those icicle things that you squeeze the bottom and the knife just cut off part of my finger.
Significant others	I see my neighbor going head first over the bars of the bike. That just plays back and forth in my mind.
Neutral	I have images of people mowing their lawns.
Neutral-media	I have image of the crashes they have publicized on T.V.

The basic structure of the hazard thoughts coding scheme is derived from Tulving's (1972) notion of episodic and semantic memory, but interpreted as a continuum as suggested by Kintsch (1980). The episodic endpoint of the continuum suggests knowledge stored in memory that can best be characterized as the encoded representation of the consumer's personal

experience of a hazardous event often involving negative consequences; we have labeled this segment personal episodic. Autobiographical references can also be made to events in which the negative consequences accrued to significant others; these have been labeled episodic. The semantic knowledge, i.e., the general abstracted knowledge about hazards associated with products, was also classified in two categories. The personal semantic category involves semantic knowledge to personal and significant others' behavior. The semantic category the more abstract representation of hazards reported by the subject; the more general knowledge. The final category, the affect category, initially came out the protocol scan and is of theoretical interest as shown by the works of Zajonc (1980) and Bower (1981). Affect expressions often occurred as an initial reaction to the product cues. (The same five categories were employed to code the non-hazard related events.)

The imagery protocol coding scheme, shown in Table 2 indicates that hazard related images were first classified as involving a single image or apparently involving a chain of vignettes. Within each of these classes, four subcategories were developed based on a scanning of all the images reported. The first two subcategories predominantly contain the imagery associated with the personal episodic and episodic knowledge categories. Images were also reported without the personal reference of "my," such as my son Todd, my neighbor, my Christmas tree, etc. These images were coded as neutral; if the image was reported as having been induced by newspaper or television reporting or a commercial, the image was coded as neutral-media. This last category was created to investigate the extent to which vivid visual portrayal of accidents by the media has an impact on representation of hazard knowledge.

Hazard Cues

The product stimuli used as probe cues in the elicitations were to be highly familiar so that a typical consumer would be able to verbalize the knowledge structure associated with the probe concept. In addition, the products were to represent the range of frequency and severity of actual product hazards as determined from the data maintained by the Consumer Product Safety Commission. The products chosen on the basis of these criteria were power lawn mower, hair dryers, knives, bicycle, Christmas lights and household ammonia. The familiarity ratings on these products provided by the respondents on the typical 7-point scale ranged from 4.52 (ammonia) to 5.81 (knives). Practically all respondents indicated that they had used the products.

In addition to these product stimuli, two technologies were also used as cues, namely commercial aviation and atomic power. These two technologies have been included in many of the hazard and risk assessment studies referred to in the introduction. They were included to enable interesting comparative analyses.

Subjects

The participating respondents constitute a convenience sample of 20 women staff members of a major Eastern university. Sixteen were married, while three were single; 17 had children. Their educational experience was quite varied. Of the subjects that had finished college and/or had done post graduate work, eight of them had finished high school and the remaining seven completed some college. Total household income showed a distribution ranging from less than \$7500 to over \$30000, with the modal class being \$20000-\$30000. Each participant was paid \$5 for completing the one-hour session.

Results and Discussion

Thoughts and Images

The sample total number of thoughts as well as the average number of thoughts per subject generated in the first part of the study are reported in Table 3. For the six consumer products a total of 777 statements were recorded which translates into an average of 38.85 thoughts per subject. The two technologies, commercial aviation and atomic power, generated a total of 267 thoughts or an average of 13.35 thoughts per subject. Hazard related thoughts accounted for about 80% of the total thoughts in the case of the consumer products and for 67% of the total thoughts involving the technologies suggesting that indeed the subjects tended to the instructions of the study and activated their hazard knowledge stored in memory.

TABLE 3
Frequency of Thought Statements by Type of Stimuli

Category	N	Sample		\bar{x}	Subject	
		Hazard	Non hazard		Hazard	Non hazard
Products	777	625	152	38.85	31.25	7.60
Technologies	267	178	89	13.35	8.90	4.45
Combined	1022	803	241	52.20	40.15	12.05

The prototypical analysis of verbal protocols would now proceed to classify the reported thoughts without much attention given to the possibility of mental images having occurred during the generation of the protocols (Rossiter 1980). The information provided in Table 4, however, shows the potential seriousness of the neglect of imagery. It suggests that about 25-30% of the thoughts may have resulted from describing imagery occurred during the verbalizing task. On the average, every subject reported two images for the products and at least one image for the technologies.

TABLE 4
Frequency of Image Statements by Type of Stimuli

Category	N	Sample		\bar{x}	Subject	
		Hazard	Non hazard		Hazard	Non hazard
Products	243	155	88	12.15	7.75	4.40
Technologies	64	29	35	3.20	1.45	1.75
Combined	307	184	123	15.35	9.20	6.15

The occurrence of imagery was further substantiated by the extent of imagery and vividness of imagery scales administered after the thought protocols, but before the directed image protocols. Subjects rated the extent to which images had entered their thoughts on a 7 point scale anchored by the descriptors "virtually none of my thoughts were in picture or image form" and "virtually all of my thoughts were in picture or image form." The average score across the consumer products was 5.40, with a low of 3.81 for household ammonia and a high of 5.91 for power lawn mower. The average for the two technologies was 4.10. Apparently, subjects at least think that some product knowledge is experienced in an image form. The vividness of the images experienced was rated on a 5 point categorical scale ranging from "perfectly clear and as vivid as actual experience" to "no images occurred, you only know you are thinking about hazard." The average vividness score for the reported images was 1.984 for the product images and 2.691 for the technology images. The most vivid images were associated with bicycles (\bar{x} = 1.28), power lawn mowers (1.62) and knives (1.71).

In summary, these data indicate that research on information representation may indeed be incomplete if it focuses exclusively on linguistic information. Images and the information contained in them are being activated by the subjects when considering the product and technology cues.

Content of Knowledge Structures

Table 5 explores the content of the hazard related thought generated in the thought protocols. The information indicates the predominant semanticity of the hazard related knowledge structures. Sixty nine percent of the thoughts could be characterized as semantic, i.e., as generic knowledge void of a personal reference. A significant portion, however, namely 25% of the thoughts did have some degree of personal reference. Personal episodic and episodic thoughts did account for 5 percent of the thoughts.

TABLE 5
Average Number of Hazard Thoughts by Category

Stimulus	Affect	Personal Episodic	Episodic	Personal Semantic	Semantic	Total Hazard
Lawnmower	0.25	0.00	0.35	0.95	4.30	5.85
Hair dryer	0.15	0.35	0.15	0.90	2.40	3.95
Knives	0.25	0.20	0.15	1.45	3.55	5.60
Bicycle	0.40	0.25	0.15	0.90	5.00	6.70
Xmas lights	0.05	0.10	0.05	0.90	3.40	4.50
Ammonia	0.20	0.10	0.10	1.60	2.65	4.65
Aviation	0.45	0.00	0.00	0.35	3.00	3.80
Atomic Power	0.85	0.05	0.05	0.80	3.35	5.10
	2.60	1.05	1.00	7.85	27.65	40.15

One aspect of the personal episodic and episodic thoughts not evidenced in the table should be reported. These two types of thoughts were typically extensively elaborated upon, far more so than in the case of the semantic thoughts. Sometimes entire paragraphs in the transcribed protocols were devoted to a description of a single episode in which the subject was a victim in an accident situation or a witness to such a situation. Semantic thoughts on the other hand were typically briefly stated and often expressed in terms of a listing of behaviors which people should not engage in so as to avoid specific hazards. In some cases this listing was quite long. Thus, the high percent of semantic thoughts should not be construed to indicate that attention to semantic memory to the exclusion of episodic memory is justified. On the contrary, the mere fact that subjects reported past episodes in considerable detail may be thought of evidence of their importance. Indeed several of the episodes described had occurred in the distant past, such as childhood experience which further substantiates their importance.

The nature of the content of the reported images is portrayed in Table 6. For the consumer products the images are shown to be more personal experience based rather than neutral or induced by media report. The exception to this pattern is formed by Christmas light. A review of the protocols reveals that the image of a housefire as a result of faulty Christmas lights as shown on the nightly news was a frequent media induced image which helps to explain this exception to the pattern. In contrast, the pattern in the images activated by the two technologies reveals a predominance of neutral and/or media induced images. These results seem to corroborate the findings by Combs and Slovic and Slovic et al. (1981).

TABLE 6
Average Number of Hazard Images by Category

Stimulus	Personal/ Sig. Other	Neutral/ Media	Total Hazard
Lawnmower	1.10	0.65	1.75
Hair dryer	0.75	0.25	1.00
Knives	1.15	0.70	1.85
Bicycle	0.80	0.40	1.20
Xmas lights	0.25	0.50	0.75
Ammonia	0.75	0.45	1.20
Aviation	0.10	0.65	0.75
Atomic Power	<u>0.10</u>	<u>0.60</u>	<u>0.70</u>
	5.00	4.20	9.20

Table 5 also indicates the spontaneous activation of what can best be characterized as affect thoughts. As noted earlier the affect thoughts frequently occurred as an initial reaction to the hazard cues. These data might very tentatively be interpreted as some support for Bower's (1981) associative network theory of memory and emotion.

In summary, the information provided in Tables 5 and 6 suggests that focus on hazard representations in "semantic memory" is justified on the one hand by the sheer volume of thoughts characterized as semantic. On the other hand, exclusive study of semantic memory would ignore a smaller but important content of memory. The data provide some indication that episodic thoughts and images of past hazard events are stored in memory and are being activated by a subject when required.

Conclusions and Recommendations

This exploratory study of representations of product hazards in consumer memory has generated as much speculation as confirmation.

The protocols generated by the elicitation procedure do show the importance of visual information in consumer hazard knowledge structures. This finding provides empirical evidence for Rossiter's (1980) admonishment of consumer researchers about the existing bias in consumer memory and research procedures toward linguistic information and verbally oriented measures. Indeed, some information has been provided to suggest the importance of visual information in such information processing activities as perception and inference drawing.

The exploration of the content of both the verbal and imagery protocols argues against the exclusive study of semantic memory. Episodically oriented thoughts and images have been shown to be stored in memory and may be influencing hazard perceptions. Indeed one of the more striking results of the study was that "personal episodic" and "episodic" verbal statements were recalled in extensive detail. Though a far greater number of semantic statements were reported, episodes relevant to the self or a significant other seemed to be very well recalled and highly integrated. The content of the mental images seemed to be even more dominated by experiences in which the subject was either a participant or a personally involved witness. These results may be viewed as being directly opposite to Tulving's initial intent of showing weaker episodic memory than memory for abstract knowledge.

Much work remains to be done in the area of specifying how knowledge structures influence the processes of comprehension, perception, retrieval and storage. For example, for some of the products such as power lawn mowers and household

ammonia as well as for atomic power a positive relationship was found between the number of images and perceived hazard-ousness. Interestingly, in the case of atomic power, the number of neutral/media induced images also showed significant correlation with the perceived hazard-ousness scales hinting at the role of the media in presenting the hazards associated with atomic power. Further empirical work on these relationship would have both theoretic and practical implications.

The examination of the content of the thoughts also raise auxiliary questions about structure or organization. The content and organization of knowledge structure are inter-related in as much as the strengths of the structural links between nodes are based upon the meaning of the concepts themselves. Further work on the exact nature of the inter-relation between content and structure would help in refining the conceptual and operational definitions of schemata and their application in consumer research.

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FAMILIARITY AND THE STRUCTURE OF PRODUCT KNOWLEDGE

Jerry N. Conover, University of Arizona

Abstract

The relationship between product familiarity and cognitive structure was assessed for two common consumer products. Responses to a modified repertory grid test indicated that more familiar consumers maintain relatively more complex knowledge structures, in contrast to theoretical predictions. Variable effects of familiarity on knowledge abstractness were observed. Implications of these findings for theories of product knowledge are discussed.

Introduction

The notion that consumers approach their decisions in different ways as they gain familiarity through experience with a product has long been popular with consumer researchers (e.g., Bettman, 1979; Howard & Sheth, 1969). The processes by which information is acquired, interpreted, and utilized in consumer decisions should reflect the quantity and nature of relevant information already gained through previous experience. Recent empirical evidence confirms the influential role of product familiarity in information processing (Bettman & Park, 1980; Johnson & Russo, 1981; Raju & Reilly, 1980).

A Cognitive Structure View of Familiarity

Noting the need for a theoretical framework within which to understand the mechanism whereby familiarity exerts its influence, Marks and Olson (1981) suggested that researchers adopt a cognitive structure perspective. From this point of view, the information that a consumer gains from using or learning about a product is stored in a permanent memory which maintains that knowledge for future use. A basic characteristic of the consumer's permanent memory is that the information contained therein is highly organized for efficient retrieval. The structure of this organized product knowledge is subject to change as the consumer acquires new information to be integrated with the old. The effect of familiarity, then, is to modify the structure of the consumer's product knowledge.

The nature of the changes that familiarity causes in product knowledge structures warrants further investigation. In exploring this question, Marks and Olson (1981) reported evidence consistent with a "unitization" theory of knowledge development proposed by Hayes-Roth (1977). According to this theory, knowledge structures begin with the development and strengthening of lower-order knowledge units (concepts), each of which is activated in an all-or-none fashion. For example, at the earliest stages of familiarity with a product, a consumer learns isolated pieces of information about it -- perhaps such things as physical features, price, etc. With further product experience, however, these isolated concepts become associated with each other, as the consumer learns which pieces of product information "go together". With sufficient learning, related pieces of information may come to be activated as a unit ("unitized", in Hayes-Roth's terms), so that an appropriate stimulus elicits recall of an entire configuration of product information. Thus, after a period of increasing complexity of product knowledge (in the sense of comprising multiple separate concepts), further increments in familiarity lead to knowledge structures that are actually simpler (i.e., they contain relatively few, higher-order units, each of which comprises numerous related pieces of information). A corollary to the process of unitization, or decreasing complexity, of product knowledge at

high levels of familiarity is the notion that well-learned knowledge is maintained at higher levels of abstraction. That is, each higher-order memory unit represents a relatively general notion subsuming the more concrete, detailed concepts of which it is comprised. Thus, knowledge complexity is hypothesized to be an inverted-U shaped function of familiarity. Abstractness of knowledge should increase at higher levels of familiarity; but from very low to moderate levels of familiarity, the addition of new, concrete, concepts should offset increases in the abstractness of concepts already acquired.

By way of example, consider the situation of a consumer learning about automobiles. When he first starts learning about the product, he may form isolated concepts corresponding to such concrete features as "rack and pinion steering", "McPherson struts", and "anti-sway bars". As the consumer's learning progresses, additional, isolated concepts are accumulated in his knowledge structure. At first, these concepts are relatively low in meaning to the consumer, but with experience, he comes to realize that these features are related to each other. They "go together" in that they all contribute to the "handling" characteristics of a car. That is, they form a higher order memory unit ("handling"). Although they may continue to be accessed as separate features, the more familiar consumer will likely consider them as a unitized, abstract characteristic. Such utilization of isolated bits of knowledge, of course, serves the useful function of simplifying the processing of vast amounts of automobile-related information.

Measuring Cognitive Structures

A challenging problem in research on product knowledge structures is how best to measure them. One approach relies on verbal protocols generated by subjects in a free elicitation procedure (Kanwar, Olson, & Sims, 1981; Olson & Muderrisoglu, 1979). Subjects' protocols are scored to index the "dimensionality" of their knowledge (i.e., the number of unique concepts in the protocol) and the abstractness or concreteness of the elicited concepts; this approach thus yields both quantitative and qualitative descriptions of product knowledge.

Marks and Olson (1981), employing this procedure, reported that business students (relatively low familiarity) had more highly dimensional knowledge about office chairs than secretaries (relatively high familiarity), consistent with the unitization theory. Contrary to theoretical predictions, however, the two groups did not differ significantly in the abstractness of their product knowledge (as rated by judgments of concepts in the protocol).

A different approach to assessing the structure of consumers' knowledge derives from the psychological literature on cognitive complexity (Bieri et al., 1966; Goldstein & Blackman, 1978; Kelly, 1955). Consumer researchers have studied the complexity of product knowledge with a modification of the role construct repertory test (also known as the repertory grid, or "rep" test; e.g., Mazis, 1973; Tan & Dolich, 1981). This approach basically requires subjects to make judgments about certain stimuli (e.g., various brands) on each of several self-generated dimensions (product characteristics). The judgments are then mathematically analyzed for indices of the degree to which the product characteristics are used in a differentiated manner. The generated product dimensions may also be assessed in terms of relative abstractness. Unfortunately, very little research using this standard measure of cognitive complexity has been reported with

respect to product familiarity. Tan and Dolich (1980) found no correlation between product familiarity and cognitive complexity as measured by tied ratings in a rep test. However, as explained in a subsequent section of the present paper, this approach to scoring the rep test has significant limitations; the Tan and Dolich findings, therefore, should be weighed accordingly.

Purpose of the Present Study

The present research was designed to help elucidate the role of knowledge structures as mediators of product familiarity effects. The only previous study directly addressing this issue (Marks & Olson, 1981) was rather limited in scope and sensitivity to the theoretical relationships outlined above. A major shortcoming of that study was its use of only two levels of product familiarity. Since the unitization theory predicts an initial increase in dimensionality (along with little or no increase in abstraction), followed by a drop in dimensionality (and an increase in abstraction) at higher levels of familiarity, at least three levels of product familiarity are required to test these predictions. The present research investigated knowledge structures of consumers varying widely in familiarity. Moreover, to explore the generality of any familiarity/structure effects, research was conducted with two different consumer products. Thus, this study represents a more extensive exploration of the relationship between familiarity and product knowledge.

METHOD

Subjects and Products

Product knowledge and familiarity data were collected from 128 upperclass students enrolled in a course in Consumer Behavior at the University of Missouri-Columbia, who were given extra credit for their participation. About six weeks prior to the collection of the primary data of the study, these subjects completed questionnaires concerning their familiarity and experiences with 21 different classes of

products. Based on responses to this preliminary questionnaire, two products (automobiles and athletic shoes) were selected for use in the present study. The preliminary data indicated that these two products were known well enough that many brand names would be familiar to the subjects, and also that subjects varied considerably in their overall familiarity with the products.

Instruments and Procedure

Each subject provided information about only one of the two products (automobiles; 57 subjects; athletic shoes; 63 subjects)¹. Product familiarity was assessed with a seven-point scale of the subject's knowledge about how to select the best brand within the product class. A rating of "7" indicated the subject thought she/he knew everything that was pertinent; a rating of "4" indicated as much knowledge as the average person; a rating of "1" meant the subject had no relevant product knowledge.²

The structure of subjects' knowledge about the products was assessed from their responses to a modified rep test (Bieri et al., 1966); a completed example of the test is shown in Figure 1. This test consisted of a 10x10 matrix, whose columns were labeled with the names of 10 brands within the product class; these brands were among the most commonly identified brands in each product class on the earlier product familiarity questionnaire. To the right of each row of the matrix, two blank lines appeared. Within each row, three cells were marked with circles. Subjects were instructed to complete one row at a time. The subject was to

¹Eight subjects failed to properly complete the task; their data were excluded from all analyses.

²While this operationalization of product familiarity reflects the subject's self perception, the reader should note that other, more objective, measures might be defined. The author is currently conducting research to assess the correspondence of subjective familiarity with indices of product usage and knowledge.

	AUTOMOBILES									
	VOLVO 264	TOYOTA COROLLA	DATSUN 280ZX	CHRYSLER LEBARON	VOLKSWAGEN RABBIT	CHEVROLET CITATION	CADILLAC SEVILLE	FORD MUSTANG	OLDSMOBILE CUTLASS	MERCEDES-BENZ
	6	2	5	5	2	3	6	3	4	6
	3	4	2	2	5	5	1	4	3	1
	1	1	1	6	4	6	6	6	6	1
	5	4	4	3	4	1	3	1	2	5
	6	6	6	6	1	1	6	6	6	6
	4	2	3	5	2	4	6	3	5	4
	5	2	2	5	2	6	5	3	5	6
	2	6	5	2	5	1	2	4	2	2
	3	4	4	5	2	3	3	5	5	1
	5	4	1	5	4	6	6	2	5	5

FIGURE 1
Example of Completed Rep Test

	PRODUCT CHARACTERISTICS					
	1	2	3	4	5	6
A	inexpensive			expensive		
B	luxurious			plain		
C	imported			domestic		
D	convenient service			scarce service facilities		
E	front wheel drive			rear wheel drive		
F	harsh ride			smooth ride		
G	cramped			roomy		
H	long wheelbase			short wheelbase		
I	good resale value			poor resale value		
J	sporty			not sporty		
	1	2	3	4	5	6

think of a characteristic in terms of which any two of the three circled brands differed from the third brand. This characteristic describing the two similar brands was then written into the leftmost blank at the end of the row, while the way in which the third brand differed from the other two was described in the right-hand blank. Thus, the subject filled in the blanks with words or phrases describing a dimension along which the brands were perceived to vary. Thus, after defining a product dimension for the row, the subject assessed each of the ten brands in terms of that dimension. A rating scale with values from 1 to 6 was employed for this purpose, with smaller values (1 through 3) representing the left-hand (similarity) end of the dimension, and larger values (4 through 6) representing the right-hand (contrast) end of the dimension. The subject first rated the three circled brands, and then the remaining brands in the row.

Upon completing each row, the subject proceeded to the next row, which had three different brands circled. The same procedure was followed until all ten rows were completed. Subjects were not allowed to repeat a product characteristic that they had already identified on an earlier row.

RESULTS

Familiarity Ratings

Ratings of familiarity varied from 2 to 7 for automobiles, with a mean rating of 3.75, and from 1 to 7 for athletic shoes, with a mean of 3.68. Thus, a considerable range of familiarity with each product was present, permitting subsequent assessment of the relationship between familiarity and product knowledge structure variables.

Reliability assessments of the familiarity measure were obtained by correlating the ratings provided during the rep test session with identical measures taken six weeks earlier in the preliminary questionnaire. The test-retest reliability coefficients were 0.69 for automobiles, and 0.65 for athletic shoes ($p < .0001$), which indicate a moderately reliable subjective index of product familiarity.

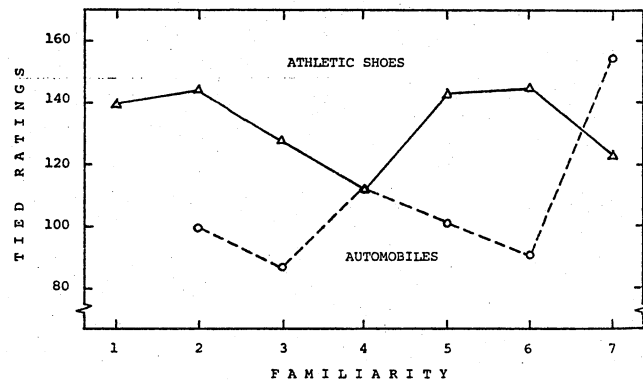
Dimensionality Measures

Tie-based Scores. As originally developed, the rep test provides a measure of cognitive complexity based on the number of tied scores within each column of the grid (Bieri et al., 1966). This measure is grounded on the assumption that a subject who rates the brands on one characteristic in an identical fashion to the way he rates the brands on another characteristic is actually using two different names or descriptions for a single underlying product dimension. Thus, the more ties that occur within the ten ratings for each brand, the lower the dimensionality of the subject's knowledge structure underlying those ratings. That is, high tie-scores reflect low cognitive complexity, and vice versa.

Using this measure, the complexity of knowledge reflected in each subject's rep test responses was computed. With a 10x10 grid, this score may range from 40 to 450. The mean complexity score for athletic shoes was 130.7, and for automobiles, 98.7. Thus, automobiles were construed in a more complex fashion than athletic shoes, $t(119)=4.89$, $p < .0001$.

The more interesting question, however, is whether the complexity of product knowledge varies systematically with familiarity. Plots of tie scores versus familiarity ratings (from the rep test session) are shown for the two products in Figure 2. These plots reveal no systematic linear relationship between complexity scores and familiarity for athletic shoes ($r=.059$, $p=.65$), and only a marginal inverse linear relationship between complexity (i.e., low tie scores) and familiarity for automobiles ($r=.263$, $p < .06$). Nor is a curvilinear relationship (as predicted by the

FIGURE 2
Mean Number of Tied Ratings on Rep Test
as a Function of Familiarity



unitization hypothesis) evident in either plot. Thus, on the basis of the traditional tie-score measure of knowledge complexity, the relationship between product familiarity and the dimensionality of product knowledge appears very slight.

Factor Analysis Measure. Before concluding that no relationship exists between familiarity and knowledge complexity, one may legitimately question the validity of the tie-score approach to assessing rep test responses. A significant problem with this approach is that much information potentially available in non-tied scores is ignored by such a measure. The degree of covariation between ratings on two product characteristics will be influenced to some extent by the number of tied scores (if the relationship is positive). But two highly correlated characteristics need not have any pairs of scores that are exactly tied, in which case the traditional complexity index would consider the characteristics totally differentiated. Moreover, the tie-score approach would be biased against recognizing as similar two product characteristics which were negatively correlated (e.g., characteristics G and H in Figure 1). Few ties would be counted in comparisons of such characteristics, yet they clearly reflect different versions of a common underlying product dimension. Thus, a better measure is needed for scoring the rep test responses.

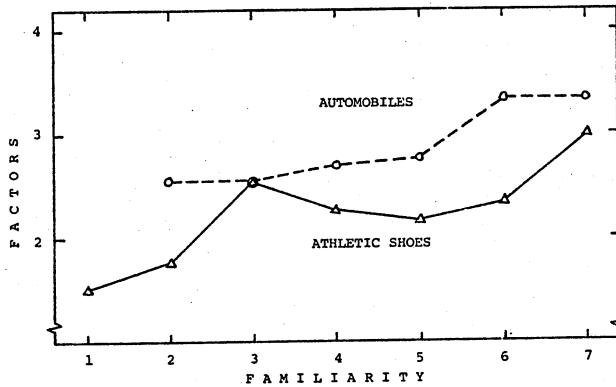
Factor analysis is ideally suited to this problem. The rep test responses of each subject were subjected to principal components factor analysis, with the various brands representing ten different sets of responses to the ten identified product characteristics. For each subject, the number of "true" factors underlying his or her 10 product characteristics was estimated by counting all factors with eigenvalues greater than 1.0. The number of factors thus determined represents the dependent variable indicating the dimensionality of the subject's product ratings.

With this index of dimensionality, automobiles were again perceived in a more complex fashion (mean factors = 2.70) than athletic shoes (2.21 factors), $t(118) = 3.96$, $p < .0001$. Figure 3 provides evidence of a positive relationship between familiarity and dimensionality for both products ($r=.302$, $p < .02$, for athletic shoes; $r=.368$, $p < .01$, for automobiles). No curvilinear relationship was evident for either product. Hence, this more sensitive measure indicates that more familiar subjects had more dimensional knowledge structures.

Abstractness

Each product characteristic was classified as either concrete or abstract by two independent judges (Geistfeld, Sproles, & Badenhop, 1977). Characteristics that described

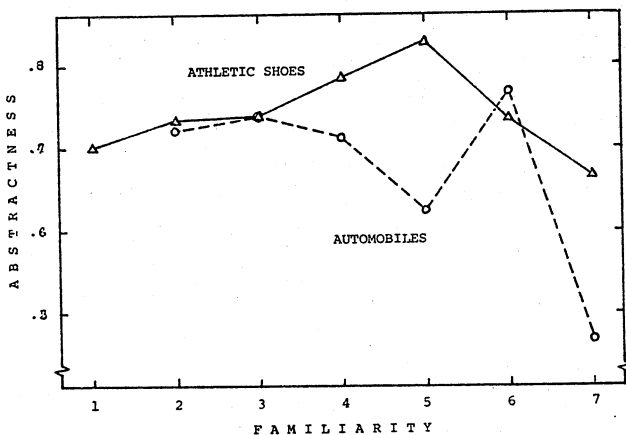
FIGURE 3
Mean Number of Factors Underlying Rep Test Responses
as a Function of Familiarity



specific, physical features of the product were considered concrete, as were non-product features (e.g., such marketing variables as price) which could be measured easily and precisely. More general product characteristics, especially those that were functions of more specific features, were rated as abstract. A rating of 0 was given to concrete characteristics, and 1 to abstract characteristics. The two judges agreed at first rating in about three-fourths of the cases; discrepancies were resolved through discussion of specific characteristics.

Characteristics describing automobiles were judged slightly less abstract (mean 0.70) than those describing athletic shoes (0.76), $t(118)=2.10$, $p<.05$). As indicated in Figure 4, more familiar subjects tended to use more concrete automobile descriptions than did less familiar subjects, $r=.302$, $p<.03$; this relationship was not found with athletic shoes, $r=-.087$, $p=.50$.

FIGURE 4
Mean Abstractness of Product Characteristics
as a Function of Familiarity



The plot for athletic shoes, though generally flat, suggests the possibility of an inverted U-shaped relationship between familiarity and abstractness (which would be opposite the hypothesis). To assess this possibility, an analysis was made of the quadratic component of the variance among familiarity levels, following an initial analysis of variance on abstractness scores. This trend analysis revealed the quadratic component to be nonsignificant, $F(1,55)=0.290$; familiarity did not influence the abstractness of knowledge about athletic shoes.

The relationships predicted from the unitization theory of knowledge development were not observed in the present data. The theory predicted an inverted U-shaped relationship between the dimensionality of product knowledge and the consumer's familiarity with the product; instead, dimensionality was found to increase monotonically with familiarity. Moreover, the predicted U-shaped relationship between abstractness and familiarity did not obtain; instead, subjects more familiar with automobiles tended to use more concrete characteristics to describe them, while familiarity with athletic shoes did not influence the degree of abstractness or concreteness of subjects' responses.

These findings are rather surprising, in light of theoretical expectations and Marks and Olson's (1981) findings reported above. Several potential explanations for the present observations can be considered. One possibility is that the subjects actually ranged only from low to moderate in familiarity, without any truly "high familiarity" subjects in the sample. If this were the case, then the data would be consistent with the unitization theory, as they would represent points on the first half of the U-shaped functions. This explanation seems rather unlikely, however, given the descriptions of the familiarity scale endpoints, and the fact that most subjects rated their familiarity at moderate levels, with relatively fewer ratings of 1, 6 or 7. It is also possible that the single measure of product familiarity, which was not perfectly reliable (and thus not perfectly valid), may not have fully assessed familiarity. Further research is needed into this possibility.

It is conceivable that the measures of dimensionality and abstractness employed did not provide valid indices of the underlying constructs. However, the logic for preferring a factor analysis measure of rep test dimensionality over one based on tied scores, explained above, seems particularly compelling, given the quantity of data that the latter measure ignores. Tan and Dolich's (1980) results are consistent with those of the present study when tie scores are used, but they differ from the results counting number of factors. Further research is needed to clarify the best means for measuring knowledge dimensionality with the rep test. Other approaches to assessing knowledge dimensionality should be explored, too, in light of the admittedly crude and limited nature of rep test scores. Moreover, the present measure of abstractness is also relatively crude, since there were several responses that were difficult to classify readily as abstract or concrete. Further work is needed to refine measurement of the abstractness of product knowledge.

Aside from concluding that the unitization theory is incorrect, at least one additional explanation for the present results may be offered. According to Hayes-Roth (1977), the more familiar person, who has learned to chunk together related pieces of knowledge into higher-order units, does not lose the ability to decompose those relatively abstract chunks into their more concrete constituent parts as needed. If the present task required subjects to produce relatively concrete, detailed information about the products, then the most familiar subjects would not necessarily reveal their abilities to generalize from simpler knowledge structures. It is possible that this task did not encourage the use of high-level abstractions that the more familiar subjects were capable of, in which case the unitization theory would not be disconfirmed. As this possibility can not be ruled out, the present data may fall within the explanatory power of this theory.

Future Research

This study is clearly exploratory in nature, and additional research is needed to understand the role of cognitive structure as a mediator of product familiarity effects. As suggested in the preceding discussion, future research

should attempt to explore the best means for measuring product knowledge structures. Replication of this basic design with multiple measures, using both the same and additional products, will help refine measurement techniques, as well as establish the generality of any familiarity - structure relationship.

Once such research has established the scope of the familiarity - structure relationship, additional research will be useful to assess the impact of product knowledge structures on information processing, attitudes, intentions, and actual behavior. The most direct tests of these relationships would involve actual manipulation of product familiarity (through controlled exposure to product use and information), with longitudinal assessment of various indices of processing, attitudes, and behaviors.

To fully understand the role of product familiarity, an extensive program of research along these lines will be required. It is hoped that the present study will serve to stimulate further work on the challenging question of what customers know about products.

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THE REPRESENTATION OF CONSUMER INFORMATION
IN MEMORY

Thomas K. Srull, University of Illinois

Abstract

After briefly discussing several individual experiments, the current state of consumer research related to the representation of information in memory is assessed. It is suggested that the field is currently characterized by a series of isolated experiments and is largely phenomenon-driven rather than theory-driven. It is argued that future progress will heavily depend on the development of systematic programs of research that are logically directed toward narrowing down the range of plausible alternative explanations that exist for any single array of data.

Discussion

Bozinoff, Conover, and Rethans and Hastak have each provided provocative papers. I will begin by discussing some of the factors that need to be considered in evaluating each of these three papers separately. Then I will turn my attention to the topic of the session--The Representation of Information in Memory--more generally, and provide a few caveats from the perspective of an experimental psychologist who also happens to be interested in consumer behavior.

The paper by Bozinoff applying script theory to the study of energy conservation is, in my opinion, a very interesting approach to an important problem. It seems to me there are at least three conceptual reasons for why consumer researchers should consider Bozinoff's paper quite carefully. First, it at least addresses the fact that there are very important unconscious determinants of behavior. This is something that is sometimes lost in investigations of consumer behavior, despite the fact that more and more theoretical weight is being placed on underlying cognitive processes in our attempt to understand consumer behavior.

Perhaps the most succinct general definition of cognition is "any computational activity that operates on some input to produce some output." It is important to realize, however, that most of this computational activity is extremely rapid and performed below the level of conscious awareness. George Mandler has cogently made this point by noting that, despite our intuitions, consciousness does not represent the process of cognition but the result of a long line of prior cognitive activity.

It might also be noted that this sort of unconscious computational activity operates at all levels of information processing. It operates at the featural level, it operates at the perceptual level, it operates at the conceptual level; in fact, it operates all the way up to the so-called "higher-order" inference processes. In general, this is one aspect of consumer information processing that has not received the attention it deserves, and the Bozinoff paper should help to correct that.

The second aspect of the paper that is worth emphasizing is that it addresses the issue of automaticity in behavior. There was a time not too long ago when most psychologists were very skeptical that the research on automatic and controlled processing would generalize to

very much beyond a letter identification task. However, recent research has convincingly demonstrated that automatic processes can also operate at the level of semantic categorization and in category search tasks. The possibility has also been suggested that such automatic processes can be cascaded into "unboundedly complex" systems. All of these issues are likely to become very important in the consumer domain where there are many repetitive, routine sorts of behaviors that are easily classified.

Finally, although the author does not explicitly discuss this aspect of his work, his conceptualization is theoretically quite compatible with the notion of production systems, and this should allow the research to make contact with the more general principles of "if, then" relations. That is, if conditions X, Y, and Z hold, then certain behaviors (or thoughts) will be automatically elicited. This should be quite appealing to those researchers interested in building formal models of consumer information processing.

Briefly, there are also two cautionary notes that need to be considered in evaluating Bozinoff's paper. First, like most schema theorists, Bozinoff tends to define the schema (in this case, a script) in terms of the effects it is postulated to produce, rather than in terms of its structural properties, as assessed independently of these effects. There is a strong precedent for proceeding in this way in the psychological literature as well, but there may be a great danger in doing so. For example, the author writes, "The finding that consumers do not actively seek energy information when buying appliances indicates that a 'get energy information' action is not in consumers' BUYING APPLIANCES SCRIPTS." What evidential basis is there for making such a statement? Presumably, the only answer is that consumers don't actually seek such information. Or, to take another example, consumers tend to seek price information when purchasing large appliances. Why? Because they have a "get price information" action in their script. How do we know this? Because they tend to ask for such information. Obviously, this line of reasoning is entirely circular because the same behavior that is initially meant to be explained is also used to validate the theoretical construct that is used to explain it. One could easily substitute "habit" or "drive" or "motive" or even "instinct" into the theory with no apparent loss of explanatory power. Needless to say, one can get into some very serious logical problems by proceeding in this way.

The final issue of concern with the Bozinoff paper is related to the level of abstraction at which the scripts were assessed and activated. This also tends to be a problem with all schema or script theories. Briefly, one could only expect to find a relationship between self-reported scripted activities and actual behavior if indeed the scripts were assessed at the appropriate level of abstraction. Bozinoff found that these relationships were generally weak, but there is no guarantee that this was done in the study. It is quite possible that an assessment of more abstract or generalized scripts, combined with a series of criterion measures, would have led to much better prediction. This is similar to what Fishbein is getting at when he discusses his Multiple Act Criterion. At any rate, it would seem

that this possibility also needs to be investigated, and energy conservation would appear to provide an ideal context for it.

Rethans and Hastak argue in their paper that it may be dangerous for memory researchers to continue to concentrate on linguistic information (as opposed to visual images). That may be so, but their case is far less convincing. Again, several factors need to be considered when evaluating their arguments. First, even though Rethans and Hastak criticize the majority of researchers in the field for relying on "linguistic information," they appear to do exactly the same thing. That is, even though they have the subject "read off" a particular image, the subject still needs to perform some linguistic translation of the (possibly verbal) code before it can be reported to the experimenter. Thus, subjects are not operating on the visual image directly, but (at best) on a linguistic translation of something that is stored in a visual code.

It is also important to make a distinction between the content and format of any particular mental representation. In particular, such visual images need not correspond to some sensory information that is picked up at an earlier time, even though the authors seem to assume that they must. For example, subjects asked to close their eyes and walk down a long hallway often report visual images. However, these images tend to be of themselves walking down the hallway. It turns out that many images have this quality of us seeing ourselves engaged in a particular activity, and it's obvious that they are not simply a reflection of previously acquired sensory information. Rather than being "snapshots" of episodic events, these images tend to have a very large semantic (or real-world knowledge) component to them.

Rethans and Hastak suggest that because it took longer to report personal episodes than semantic information, the former can be thought of as more important than the latter. I personally would find that a very difficult position to defend. It simply will take a person more time to describe the one instance in which he/she almost cut off a foot with a power lawnmower than it will to make the general statement that power lawnmowers can be dangerous. This does not necessarily mean that one is more important than the other, and simply counting the number of words spoken seems to be an extremely crude method of determining the importance of these types of thoughts.

There is, of course, a related problem. And that is importance for what? A critically important oversight of the paper is that the authors never discuss what these thoughts are supposed to be important for. What exactly is their functional significance? It seems to me that most of their empirical questions should have been directed at precisely this issue. If the frequency, or proportion, or vividness of these thoughts could be shown to have an effect on judgments, or purchasing decisions, or use, or attitudes, or anything of psychological or behavioral significance, the research would have been much more impressive from both a conceptual and practical point of view.

There is one final point that needs to be considered, and this is one on which the authors and I simply disagree. Rethans and Hastak suggest that episodic memory is basically a veridical account of past events. I would submit that this is potentially a very misleading view. This is particularly true in the area of product hazards, because here there are going to be very important motivational factors that are likely to affect either a participant's or observer's memory for any given event. One need only observe a heated argument (or any affect-

ively arousing event) to realize that people often have very different recollections of what was said (or done) in any given context.

Ironically, I agree with the authors that personal experiences with a product are very important in making judgments about potential hazards, but I think this has more to do with the nature of the judgment process (and the fact that people may think their memories are veridical) than the likelihood that they are in fact veridical in the sense of there being consensual validation.

Conover has also asked several interesting questions, but has obtained results that are difficult to account for with his conceptualization. I have only two comments to make about Conover's study. First, his finding that greater degrees of product familiarity are associated with more dimensional knowledge structures does not strike me as at all surprising. Although he predicts a curvilinear relationship on the basis of the Hayes-Roth theory, I believe he has misinterpreted the empirical implications of the theory. She does not suggest (at least to me) that product familiarity will be associated with simplicity in the knowledge structures but, rather, with a more systematic organization. In fact, Conover has found some modest support for this.

The only surprising thing to me is that Conover was able to find such support with the type of paradigm employed. In general, the most sensitive methodology for examining pre-existing structures is some type of reaction time procedure. In fact, Hayes-Roth has used reaction time procedures extensively in her own work, and others interested in this area might consider doing so as well.

It might also be noted that many of these same points have been made in the literature on the so-called "paradox of the expert." In general, the more facts there are associated with a given node, the more interference there is and the more time it will take to access any one (in a reaction time paradigm) or the less likely it is to retrieve any one (in a free recall paradigm). There comes a point, however, when the person is able to organize and integrate previously disparate facts into higher-order units. This, in large part, is what allows one to become expert in a given area.

A nice illustration related to this is found in a paper presented by Johnson and Russo at the 1980 ACR meetings. These investigators found the type of curvilinear relationship between product familiarity and free recall that would be predicted by Conover when subjects were asked to choose between various products. However, they also found a linear relationship between product familiarity and free recall when subjects rated each product independently. High familiarity subjects appeared to have more complex knowledge structures than low familiarity subjects, and the curvilinear relationship that was found in the choice task appeared to be a byproduct of the high familiarity subjects simply knowing which attributes were irrelevant and/or nondiscriminating. This allowed them to selectively attend to the most relevant attributes (a fact confirmed in supplementary analyses). Conover's analysis, however, seems to confuse simplicity with increased organization, and this is a distinction that should be considered in future empirical and theoretical work.

Perhaps it would be useful to make a few final observations. This was, after all, a session on the Representation of Information in Memory and one would expect to find a few common threads woven throughout the three

papers. I would like to mention only two of these threads. Although these are not the types of things that are normally discussed, I would like to do so in the spirit of constructive criticism and with an eye toward the future. First, all three papers report investigations that might gratuitously be referred to as single experiments (with the emphasis on "single" as much as on "experiment"). Given this fact, it is not terribly surprising that they have all produced largely uninterpretable results. That is, in fact, why I have concentrated in my discussion on the conceptual aspects of the papers rather than on the data.

Bozinoff, for example, cannot be sure whether there really is no relationship between self-reports of behavior and inclusion of those same activities in a script or whether he simply measured the scripts at the wrong level of abstraction.

Rethans and Hastak do not know whether product hazard information is truly represented in a visual code or whether their results are an artifact of subjects forming images after the fact and/or responding to the demand characteristics of the study.

Conover, as he acknowledges, cannot determine whether there simply is not a curvilinear relationship between product familiarity and dimensionality or whether truly "high familiarity" subjects were not represented in the study. All of these very basic questions remain unanswered.

I would suggest it is time we honestly begin to examine the utility of such isolated experiments. Many discussants of past ACR sessions have commented on the lack of coherence between the various papers and the fact is that very few of these studies are ever followed up. Before we really begin to make progress in understanding the Representation of Information in Memory (or any other content domain within the field of consumer behavior), we are going to need systematic programs of research that seriously begin to narrow down the range of plausible alternative explanations that exist.

Despite what we might like to believe, and what we often imply to our students, contemporary philosophers of science are continually reminding us that there really is very little we can learn from a single experiment. On the other hand, the type of "research programs" that have been discussed by Lakatos and Laudan, as well as other philosophers of science, can be extremely powerful methods for answering many of the theoretical questions that are important in contemporary investigations of consumer behavior.

The second common theme is that all three papers appear to contain an implicit apology for not leading to any important advance. Interestingly, all three authors end up sounding amazingly similar. Conover writes, "This study is clearly exploratory in nature...." Rethans and Hastak write, "This exploratory study...." Bozinoff continues with the same theme by writing, "The study described below serves only as an initial exploratory investigation...." One wonders whether there has ever been an ACR paper that has not contained such a disclaimer.

Although exploratory investigations can be criticized on a variety of grounds, I generally try to remain sympathetic to such endeavors, as they are clearly necessary for the development of the field. The fact that they tend to produce uninterpretable results does not particularly concern me, as long as they are recognized to be so. The three papers presented at the present session are a good example of this. All three sets of data are

ambiguous in the sense that there are multiple interpretations of them but all three authors appear to recognize this and (generally) offer the appropriate caveats.

The fact that exploratory investigations tend never to be followed up concerns me only to a minor degree. As noted above, I am convinced that notable advances will only be attained with systematic programs of research rather than isolated experiments on various topics. On the other hand, generating a large number of ideas is not always as important as being able to quickly reject the bad ones. A quick glance through past volumes of the ACR proceedings will produce many examples of exploratory investigations that have apparently never been followed up, and probably never deserved to be.

The one thing that concerns me a great deal is that by calling a particular study "exploratory" in nature allows one to avoid addressing the very difficult issue of why that particular question is an important one in the first place. There are phrases like, "I was interested in...", "It would be interesting to discover whether...", or "I was curious about..." that we are beginning to hear with an alarming frequency. The problem with such an approach is that it implicitly assumes that all ideas are created equal and one hypothesis is as good as another. The potential result of such a situation is a disjointed, disorganized, and utterly chaotic discipline where "anything goes."

I would like to argue that it is in choosing the right question to investigate, rather than even the technical sophistication with which the study is conducted (since that will surely be improved upon), that the major advances in consumer behavior will take place. This is particularly true in an area like The Representation of Information in Memory, but it is doubtless true in other areas as well.

As noted above, all of these comments are offered in the spirit of constructive criticism. Although the three papers presented in the present session score fairly high along these dimensions, they are issues that are well worth considering in general. In particular, it is hoped that future investigators will begin to give very serious consideration to the formulation of the questions that are going to be investigated because, I believe anyway, that the ultimate progress of the field is going to depend on it.

A final possibility worth considering is that one is able to learn a great deal about the expectations of a discipline by examining the type of questions it chooses to investigate. Of course, a discipline like consumer behavior simply does not exist outside of the realm of its individual investigators. In this regard, it may be instructive for each of us to quietly reflect on our own research questions, where we honestly expect them to lead, and whether our own research programs have truly progressed or simply "changed directions" over the years.

AN INVESTIGATION OF CONSUMERS' ATTITUDES TOWARD COMPLAINING

Marsha L. Richins, Portland State University

Abstract

Several researchers have documented the value of the consumer complaint mechanism. No study, however, has systematically investigated consumer attitudes toward complaining about unsatisfactory products. This paper reports exploratory and descriptive research to determine the domain of consumers' attitudes toward complaining and the relationship between these attitudes and actual complaint behavior. In empirical analysis, three attitude domains emerged. Different groups of consumers were shown to differ in their attitudes, and attitudes were significantly related both to propensity to complain and self-reported complaint behavior.

Introduction

Recent research has indicated that dissatisfactions with products and services are relatively common among consumers, and these dissatisfactions frequently cause considerable expense and inconvenience. A relatively small percentage of these dissatisfactions, however, result in actual complaints to the business involved in the transaction (Thomas and Shuptrine 1975). While customer complaints can be a headache for retailers and producers, they do provide companies with a chance to remedy the dissatisfaction and ultimately please the customer. Unvoiced complaints may have more serious consequences, especially in competitive markets where consumers may switch their loyalty to rival products or outlets (Hirschman 1970). Dissatisfied consumers also seem quick to tell others of their unpleasant experiences, magnifying the chances of lost sales. In addition, frequent experiences of consumer dissatisfaction may culminate in a negative attitude toward business, which is correlated with demands for more government regulation and intervention in the marketplace. Thus, it is in the interest of business to improve customer feedback.

One area which seems particularly relevant in the understanding of complaint behavior consists of consumers' attitudes toward complaining. It is now well accepted in the consumer behavior and psychology literatures that attitudes correlate with behavior. While some studies have examined indirect attitudinal correlates of complaining such as attitudes toward business and consumerism (Robinson 1977; Warland, Herrmann, and Willits 1975), at this time no study has systematically examined the relationships between actual attitudes toward complaining and complaint behavior.

The preponderance of work in attitudes toward complaining has been carried out by Bearden and his colleagues. In these studies, attitudes toward complaining were measured rather narrowly on three bipolar scales in response to the statement, "Complaining directly to the people responsible for unsatisfactory automobile repairs or service is" The three adjective pairs were wise-foolish, good-bad, and beneficial-harmful. Respondents were also asked about attitudes toward interactions with service personnel; psychosocial risk in complaining due to conflicts, worry, or embarrassment; two items concerning moral and social norms about complaining; and other variables.

In the work reported by Bearden and Teel (1980), the three-item attitudes toward complaining scale was used as the dependent variable. In other reports, the three-item attitudes toward complaining scale was used as an independent variable. In an exploratory study, Bearden, Crockett, and Teel (1979) found this scale, the moral norm item, and

psychosocial risks significantly related to self-reported intention to complain. In larger studies (Bearden, Crockett, and Graham 1980; Bearden, Teel, and Crockett 1980), path analyses were conducted with the dependent variable a propensity to complain scale. Of the variables in the proposed causal chain, the three-item attitude scale bore the strongest relationship to propensity to complain. These studies by Bearden and his colleagues suggest that attitudes toward complaining do indeed bear a relationship to consumer complaints.

This study is a further investigation of attitudes toward complaining and has two goals:

1. To determine the nature of attitudes toward complaining. The literature cited shows some confusion concerning what should be included in the domain of attitudes toward complaining: Robinson used a measure of attitudes toward business, while Bearden measured direct perceptions of the complaining experience. In addition, Bearden's measure was limited in scope and its derivation was not reported.
2. To examine the relationship between attitudes toward complaining and behaviors. Previous studies correlated attitudes with intention to complain and propensity to complain rather than actual complaint behavior. This study assesses behavioral relationships by examining the relationship of attitudes with (1) propensity to complain, (2) actual complaint behavior, and (3) known group membership.

In addition to these major objectives, demographic correlates of attitudes toward complaining were investigated.

Methodology

Research to meet the goals described above was carried out in two stages. The first involved establishing a domain for attitudes toward complaining. The only published measure of attitudes toward complaining concerned only the wisdom, goodness, and beneficiality of complaining (Bearden and Teel 1980). The various definitions of attitude in the social psychology literature, however, suggest that such an approach is unnecessarily limited. Thurstone (1928), for instance, suggested that attitude denotes:

the sum total of a man's inclinations and feelings, prejudice or bias, preconceived notions, ideas, fears, threats, and convictions about any specified topic ... (p. 530).

More recently, Fishbein (see Fishbein and Ajzen 1975) has characterized attitude or affect toward an attitude object as resulting from cognitions or beliefs about an attitude object. In fact, many researchers have measured attitudes by measuring beliefs (e.g., Lundstrom and Lamont 1976; Rositer 1977) and that perspective is followed here. Thus, the important task in establishing a domain for attitudes toward complaining involves determining consumer cognitions about the act of making complaints to businesses. This was done through a review of literature on complaining behavior and depth interviews with adult consumers.

During depth interviews conducted by trained interviewers in the respondents' homes, 16 consumers (9 women and 7 men) were asked about their own complaint behavior and their perceptions of the complaint experience. Six areas were consistently mentioned by these individuals as affecting their

feelings toward the complaint act. Two of these appear to bear a negative relationship with complaint behavior with the remaining areas positively related.

1. The affect, usually negative, experienced when one complains. Most respondents indicated that making a complaint may involve unpleasant conflicts, embarrassment, and annoyance. A few mentioned, however, that under some circumstances complaining can be a pleasurable, or at least cathartic, experience. It should be noted that such individuals were a distinct minority. The literature provides some treatment of this dimension. Bearden et al. (1979) measured psychosocial risk and Richins (1980) showed a negative correlation between perceived psychological costs of complaining and actual complaint behavior.

2. The extent of objective costs or trouble involved in complaining. Many consumers mentioned that making complaints is, quite simply, a lot of trouble and involves time, and occasionally, monetary costs. The greater the perceived costs, the lower the likelihood of complaining. This aspect of complaint perceptions was also addressed by Richins (1980).

3. Business responsiveness. A major concern on the part of consumers interviewed was the efficacy of complaining and retailers' willingness to adjust complaints. Some believed complaining rarely resulted in remedying the dissatisfaction, while others generally considered complaints effective. One may hypothesize a positive relationship between perceptions of business responsiveness and complaint behavior.

4. Expectation of societal benefits. This variable also appears to bear a positive relationship with complaining. Several respondents felt that registering complaints has societal as well as personal benefits. These individuals were quick to point out that if enough people complained about a particular product, it would eventually be improved or removed from the marketplace. When queried, however, other individuals did not agree with this perspective.

5. Personal norms concerning complaining. Many consumers were concerned whether complaining is appropriate behavior, some stating they did not like to be seen or see themselves as complainers or trouble-makers and that this sometimes inhibited them from requesting remedy for their dissatisfactions. Another group had a distinctly opposite point of view, that people should complain when dissatisfied and in fact had a moral obligation to do so. This aspect of attitude was addressed in Bearden's studies by his normative variables.

6. Situational variables. During the interviews, a number of other issues were brought up by consumers, including blame for a particular dissatisfaction's occurrence, the role of the item's cost and importance to the consumer in determining whether a complaint would be registered, and the frequency with which the consumer patronized the business where the unsatisfactory product or service was purchased. Since these variables are situational in nature and refer to specific dissatisfaction instances rather than complaining in general, they were omitted from further study.

This first phase of the study provided insight into the nature of attitudes toward complaining and revealed a broader scope than encompassed by earlier exploratory work. Five general dimensions of attitudes toward complaining emerged: the extent and nature of affect associated with complaining, objective costs, perceptions of business responsiveness, expectations of societal benefits from complaining, and norms concerning complaining.

Based on the work described above, 31 attitude statements tapping the five domains were developed and administered in a pretest to a convenience sample of 43 student and 14

adult consumers. Redundant items and those with low variance were removed, and a few ambiguous statements were reworded. The remaining 15 items, scaled on a five-point Likert scale from strongly agree to strongly disagree, are shown in Table 1.

TABLE 1
Attitudes Toward Complaining

Item	Domain	
1	3	Most stores are willing to adjust reasonable complaints.
2	3	Many stores say they want their customers satisfied, but they aren't willing to stand behind their word.
3	1	Store employees are often quite unpleasant to customers who return unsatisfactory products.
4	1	I often find it embarrassing to return or exchange products I am dissatisfied with.
5	5	Most people don't make enough complaints to businesses about unsatisfactory products.
6	4	A consumer who complains to a store about a defective product may prevent other consumers from experiencing the same problem.
7	5	Many people think ill of those who make complaints to stores, even when the complaint is reasonable.
8	1	I feel a sense of accomplishment when I have managed to get a complaint to a store taken care of satisfactorily.
9	5	People are bound to end up with unsatisfactory products once in a while, so they shouldn't complain about them.
10	2	When a customer returns a defective product, he usually has to go through a lot of annoying paperwork.
11	5	It bothers me quite a bit if I don't complain about an unsatisfactory product when I know I should.
12	2	Making a complaint about a defective product usually takes a lot of time.
13	4	People have a responsibility to society to tell stores when a product they purchase is defective.
14	1	I sometimes enjoy making complaints to store employees or service people.
15	4	By making complaints about unsatisfactory products to stores, in the long run the quality of products will improve.

In the second phase of the study, this questionnaire was mailed in fall, 1980, under the auspices of a state university to three groups which received identical cover letters and questionnaires. Four hundred were mailed to a random sample of residents of a western urbanized area (including the suburban and rural fringe) with a population greater than 1 million. Questionnaires were also mailed to 212 consumer members of a consumer protection group who resided in the same area and to 198 individuals in the area who had, within the last year, registered a complaint with a government agency or a private consumer protection group. This mailing and a reminder postcard resulted in the response rates listed in Table 2. The overall response rate

TABLE 2
Response Rates for the Sample

Group	Number Mailed	Number Returned by Post Office	Number Completed	Usable N	Usable Response Rate
General Population	400	33	126	122	30.5%
Consumer Group Members	212	1	143	141	66.5%
Third-Party Complainers	198	8	96	93	47.0%
Overall Sample	810	42	365	356	44.0%

of 44.0 percent was higher than typical of consumer surveys and was due to greater than average responses from the consumer group members and third party complainers. It is plausible that these two groups have greater interest in consumer issues and would thus be more likely than the population at large to respond to such a survey (Suchman 1962).

Results and Discussion

Structure of Attitudes

To determine whether attitudes toward complaining are structured into the five domains hypothesized, a principal components analysis was conducted. Since five domains were pre-specified, five factors were rotated for the initial analysis. Using a varimax solution, the last two factors each had only one item with high loadings, and the

eigenvalue for the fifth factor was less than 1.00. Two additional rotations were carried out for three and four factors. The three-factor solution appeared to be most interpretable and is presented in Table 3. The three factors

TABLE 3
Principal Components Analysis of Attitude Items*

Item	Factor 1	Factor 2	Factor 3
1	<u>-.50</u>	-.14	.28
2	<u>.67</u>	.18	-.17
3	<u>.70</u>	.10	-.06
4	<u>.40</u>	-.24	-.22
5	<u>.36</u>	<u>.48</u>	.20
6	-.04	.18	<u>.70</u>
7	<u>.43</u>	.19	-.10
8	<u>.05</u>	<u>.64</u>	.21
9	.13	-.75	-.04
10	<u>.74</u>	-.08	.20
11	.23	<u>.57</u>	.18
12	<u>.74</u>	.07	.13
13	.03	.34	<u>.59</u>
14	-.10	.37	-.16
15	-.13	-.11	<u>.73</u>

*Factor loadings greater than .40 are underlined.

bear resemblance, but not exact similarity, to the expected domains. No single dimension for affect emerged. Rather, affective items were spread across two of the three factors. Factor one reflects a combination of domains 2 and 3 and part of domain 1 concerning objective costs, business responsiveness, and negative affect, respectively. Essentially, this factor seems to represent consumers' answers to the question, "Is complaining worth the trouble?" The fact that these domains loaded together suggests that instead of examining the costs of complaining separately from the likelihood of remedy, or business responsiveness, the consumer weighs them together in forming an attitude. The second factor reflects norms concerning complaining and follows very closely the hypothesized domain 5. The third factor corresponds to domain 4, societal benefits of complaining.

While the results of this analysis provide some support for the structure of attitudes proposed, a note of caution is in order. From this type of study it is impossible to determine whether the listed domains are exhaustive of attitudes toward complaining and adequately represent attitude structure. Although accepted methods for determining domains were followed (see Bohrnstedt 1970; Churchill 1979), it is still possible that important cognitions affecting complaint attitudes and behavior have been omitted.

Attitude/Behavior Relations

The first analysis to assess the usefulness of attitudes toward complaining was a known-groups comparison similar to that performed by Lundstrom and Lamont (1976) in assessing consumer discontent. Factor scores on the attitude scale for the three groups in the sample -- third-party complainers, consumer activists, and the general population -- were compared using one-way analysis of variance. Results shown in Table 4 indicate that significant differences exist among the three groups for the first and second factors

TABLE 4
Means of Three Groups on
Attitude Factor Scores

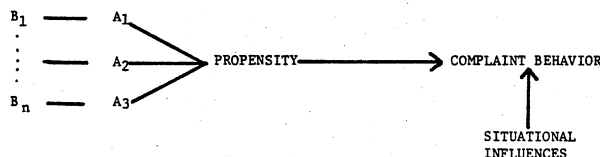
Factor	A General Population	B Consumer Group	C Third-Party Complainers	F (2, 353)
1	.06	.16	-.32	7.17*
2	.18	-.02	-.21	4.20**
3	.01	-.07	.08	.65

*p < .001; A and B greater than C, Scheffe's test, p < .05
**p < .01; A greater than C, Scheffe's test, p < .05

but not the third. For both of the significant analyses, Scheffe tests were performed to determine the nature of these differences. At p < .05, for the first factor the third-party complainer group was significantly different from the other two groups, which were not significantly different from each other. Thus, third-party complainers tend to see the costs of complaining as higher and business responsiveness lower than do other consumers. Given their recent experiences in complaining to businesses, this is not surprising. On the second factor, norms concerning complaining, the general population subsample was significantly more likely to believe that people should not complain when dissatisfied than were the third-party complainers. Members of the consumer protection group were midway between these two groups on the norm factor but did not differ significantly from either. These analyses indicate that different population subgroups do indeed differ in attitudes toward complaining.

Fishbein (see Fishbein and Ajzen 1975) and others have proposed that beliefs influence attitudes which in turn affect intentions concerning the attitude object. Intentions then affect behaviors. While this formulation is appropriate for examining specific behaviors (e.g., making a complaint in response to a specific dissatisfaction), it requires a slight modification when dealing at the general level (e.g., examining the number or type of complaints a person might make over a period of time). As illustrated in Figure 1, the causal flow for the general case may be

FIGURE 1
Relationships Among
Complaint Behavior Constructs



B = beliefs about complaining
A = attitudes toward complaining

defined as follows: beliefs influence attitudes which in turn affect a general tendency (or propensity) to behave in a certain way toward the attitude object. This general tendency further affects actual behaviors, but in any specific instance is moderated by situational variables such as the nature of the specific dissatisfaction, dependence on the product, and difficulty of making a complaint. This framework is used in this study to examine the relationship between complaint attitudes and behaviors.

Before presenting the analysis of the relationships described in Figure 1, an elaboration of measures of propensity to complain and complaint behavior used in the study is necessary. Propensity to complain was measured using a six-item scale similar to those used by Bearden et al. (1980) and Robinson (1977), and included such items as, "I am probably more likely to return an unsatisfactory product than most people I know," and "I would attempt to notify store management if I thought service in a store was particularly bad." An earlier administration of the scale to 177 college students yielded acceptable levels of internal consistency (alpha = .79). Alpha for this administration was .74.

To measure complaint behavior, respondents were asked to indicate whether they had performed any of eight complaint behaviors ranging from mild (not leaving a tip at a restaurant when the service was poor) to more extreme (writing a letter of complaint to a business). An interval

level Guttman scale was created out of four of these dichotomous items relating to complaints to retailers. The coefficients of reproducibility and scalability were .87 and .58, respectively, meeting the requirements for a scalogram analysis by Guttman (1944) and others (see Edwards 1957).

The relationship between attitudes toward complaining and actual complaint behavior was analyzed using the framework described in Figure 1. First, the association between attitudes and propensity to complain was examined using a multiple regression analysis with propensity as the dependent variable and the three attitude factor scores as independent variables. A significant R of .50 was obtained with all betas significant at the $p < .01$ level (see Table 5). Thus, individuals who see complaining costs as rela-

TABLE 5
Multiple Regression Results¹

Predictors	Propensity to Complain ²		Complaint Behavior Full Sample ³		Complaint Behavior Reduced Sample ³	
	Beta	F	Beta	F	Beta	F
Factor 1	.18	15.8	-.12	6.3*	-.09	2.6**
Factor 2	-.40	74.5	-.33	44.4	-.36	40.8
Factor 3	-.23	24.9	-.14	8.6	-.19	10.7
Multiple R	.50		.38		.42	
R ²	.25		.14		.18	
F Ratio	38.4		19.8		18.5	

¹For all F, $p < .01$, unless otherwise noted.

²n = 356

³n = 263

* $p < .05$

** N.S.

tively low and businesses willing to remedy the complaint (worth the effort), who possess a norm positive toward complaining, and who believe that complaining is beneficial for society are more likely to complain than those who do not share these views. The strongest relationship between attitudes and propensity was found for the norms component of attitudes.

The relationship between attitudes and actual behavior, as measured by the Guttman scale, was also examined. Because of situational variables intervening between propensity and actual behavior (as noted in Figure 1), this relationship was expected to be weaker than the association between attitudes and propensity. A multiple regression analysis yielded a significant R of .38. All betas were significant at the $p < .01$ level (see Table 5), except one significant at $p < .05$. Consistent with the findings pertaining to propensity to complain, factor 2 relating to norms clearly bore the strongest relationship with actual behavior.

Unlike the findings of the preceding analysis, however, factor 1 bore a negative relationship to actual complaint behavior. Those scoring higher on the Guttman complaining scale were more likely to perceive complaint costs as high and business responsiveness lower. This seems to be due to the nature of the study sample; namely, the presence of third-party complainers in the sample influenced this result. When a second regression analysis using only general population and consumer protection group member subgroups was performed, results shown in the two right-hand columns of Table 5 were obtained. A test for equality between the two sets of coefficients (Chow 1960) confirms that third-party complainers should be treated as a separate population for this analysis ($F_{3,350} = 4.76, p < .01$). The analysis excluding this group shows no significant relationship between factor 1 and actual complaint behavior. Previous research examining situation-specific variables (Richins 1980), however, has shown that perceptions of costs and benefits of making a complaint about a particular dissatisfaction (situational influences as illustrated at the bottom right of Figure 1) do correlate with complaint behavior. Thus, it appears that for consumer

complaints, situation-specific perceptions of costs associated with making the complaint are more potent predictors than are generally held attitudes about complaint efficacy as measured by factor 1 of this data set.

In a final analysis to determine the relationship between propensity to complain and actual behavior as indicated by the arrow at the right of Figure 1, the propensity scale was correlated with the Guttman scale of complaint behaviors. The resulting correlation of .41 was significant ($p < .01$) and accounted for about 17 percent of the variance. Unexplained variance is probably due to a number of factors. Measurement error, for one, reduces the size of correlation coefficients. A correction for attenuation (Nunnally 1967) due to imperfect reliability of the propensity scale raises r and r^2 to .48 and .23, respectively, though measurement error in the behavioral variable is still not accounted for. The remaining unexplained variance may be due to situation-specific variables described above.

Demographic Correlates of Attitudes Toward Complaining

The survey form included five standard demographic items: sex, marital status, education, age, and income. Few of these showed significant relationships with attitudes toward complaining factors, and those relationships which did emerge were rather weak. Men scored higher on factor 3, believing that complaining has greater benefits to society. This relationship accounted for a very small proportion of variance in attitudes, however ($\omega^2 = .014$). Age showed a positive relationship with norms concerning complaining ($\omega^2 = .08$), and education was related to factor 1 such that those with higher education levels were more likely to believe complaining is worth the effort ($\omega^2 = .035$).

Conclusions

This study has examined the nature of attitudes toward complaining. Three dimensions emerged: whether complaining tends to be worth the trouble involved (a balancing of objective and psychological costs with perceptions of business responsiveness to complaints), the individual's norms concerning complaining, and perceptions of societal benefits likely to result from complaining.

The relationship between these attitudes and actual complaint behavior was demonstrated. In general, individuals with more positive attitudes toward complaining were shown to possess a greater propensity to complain and reported undertaking more complaint actions. Results of this study combined with previous research (Richins 1980) also suggest that perceptions of some aspects of specific complaint situations may overpower nonspecific attitudes in determining actual complaint behavior.

In reviewing correlational studies such as these, the causal direction of the variables involved may be questioned. It is not clear whether people are more likely to complain because of their pro-complaining attitudes or that people develop their complaining attitudes to maintain consistency with their behaviors, as self-perception theorists would propose. With respect to complaining behavior, it is likely that both cases are operative. Certainly people with unfortunate complaint experiences (such as the third-party complainers in this sample) are likely to develop negative attitudes toward complaining while those who have greater success in registering complaints will tend to have more positive attitudes. Longitudinal research monitoring consumers' attitudes and behaviors over time would help clarify these causal relations as well as reduce the effects of potential self-report bias, which is difficult to control in cross-sectional studies.

Business has much to benefit from customer feedback, both positive and negative. Complaints provide a dual benefit:

they may alert the distribution channel that an ongoing problem exists which needs correction, and they provide businesses a second chance to satisfy a customer who will continue patronizing their stores and buying their products. Of the attitudes examined in this study, personal norms about complaining bore the strongest relationship to complaint behavior. This suggests that by improving customers' perceptions of the social acceptability of providing negative feedback to businesses, feedback can be increased. While most businesses are neither equipped nor motivated to undertake large scale efforts to influence such attitudes, efforts on a more limited scale would be relatively inexpensive and easily undertaken.

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PERCEPTIONS OF CONSUMER CONCERN BY BUSINESSES, LEGISLATORS
AND SERVICES: A MULTIVARIATE LINEAR MODEL

William R. Darden, University of Arkansas
Thomas J. Stanley, Georgia State University
Roy Howell, University of Illinois

Abstract

This article presents the results of a study of consumer perceptions of "consumer concern" by selected industries. The major thrust of the paper focuses on the idea that different kinds of consumers have differing perceptions as to the "consumer concern" of different businesses, services and agencies.

Introduction

With the rapid growth of the consumerist movement, much research has been undertaken to develop a better understanding of major consumer issues and how various groups perceive them (Barksdale and Darden, 1972; Hustad and Pessimier, 1973; Landon, 1977). One aspect of these undertakings is explaining the relationship between the discontent of consumers and their personal characteristics (Aaker and Day, 1974; Barksdale and Darden, 1972; Hustad and Pessimier, 1973; Landon, 1977; Hill and Garner, 1974). This study will introduce two new concepts which would seem to be important in the study of consumer activism and present the results of research designed to test their role in the process.

Previous Research

A recent study for the Sentry Insurance Company, Consumerism at the Crossroads (1977) has made a valuable contribution. As a part of that study 1,510 consumers evaluated how well different industries served the consumer. The results show that consumers as a group perceive major differences between industries on how well they serve the consumer.

Throughout the Sentry study, evidence documents consumer concern about lack of sensitivity by members of the business community. Senior-level business managers were found to be "... out of touch with what consumers find most worrisome in their dealings with business" (p.iv).

Determinants of Consumerism

One weakness of Sentry's study is that it did not study the characteristics of consumers who are most dissatisfied with their treatments by particular industries. Previous studies do provide some interesting findings of a general nature. Barksdale and Darden (1972) found age and political predisposition relevant. A study of Canadian consumers who complained about business practices found "... the average consumer complainer... a middle aged, well-educated, affluent, managerial-professional man or woman" (Liefeld, et. al., 1972).

Hustad and Pessimier indicate that anti-business (pro consumerism) consumers were more often liberal in their political views and had higher educational and occupational status levels (1973). Those becoming upset with business and marketing practices and taking action, "... were better educated, earned high incomes and were frequently in the top social class...and were more liberal" (Hustad and Pessimier, 1973, p. 323).

Lundstrom and Kerin (1976) found that consumers discontented with business tend to be older males with high

incomes and education, and more professional in occupation. Others (Liefeld, et al., 1973; Miller, 1973; Pfaff and Blivice, 1977) have noted the positive relationship between income, education, and occupational status and consumer discontent with business.

Miller (1973) indicates that, in contrast to previously cited studies, discontented consumers are likely to be younger, more mobile, more educated, and in an earlier stage of the family life cycle. This view of the discontent consumer as younger is supported by Warland, et al., (1972), who find that the contented consumer "appears to be the oldest and the most politically conservative group." Pfaff and Blivice (1977) also indicate that "satisfaction increases with age, activism decreases with age."

Previous research would thus tend to support the conclusion that the discontented consumer is likely to be more educated and to have a higher income and higher occupational status (in essence, of a higher social class). The evidence with regard to age and stage in the family life cycle is less clear, with some studies indicating that the typical discontented consumer is of middle age (Liefeld, et al., 1955, p. 79), while others characterize the discontented consumer as younger (Warland, et al., pp. 153-155; Pfaff and Blivice, 1977, pp. 119-112).

Perceived Consumer Concern and Price

Reasonableness Constructs

This paper proposes that two constructs - (1) perceptions of an industry's "concern toward consumers" and (2) "price reasonableness" of an industry, as internalized by consumers - are variables that are largely neglected in the study of consumerism. The concern, which consumers feel is held for them by the different business and public institutions, and the perceptions of price reasonableness, held also by consumers, would seem to be two sets of variables which may moderate between satisfaction and the choice of actions taken in the case of initial satisfaction. Thus, in the framework of the model of Postpurchase Consumer Processes (Andreasen 1977), the concerns of industries toward consumers and the reasonableness of their pricing policies (as perceived by a consumer) could be expected to influence his/her purchase expectations. When the process of comparing product or service performance to expectation yields dissatisfaction, levels of perceived consumer concern and price reasonableness exert an influence on the choice of action taken by the consumer.

These two constructs (perceived consumer concern and price reasonableness) are consistent with the orientation of the consumer discontent scale developed by Lundstrom and Lamont (1976). A substantial number of items in the scale that measures their construct deal with the degree to which consumers feel that business (in general) is concerned about their welfare and is practicing reasonable pricing policies.

Hypotheses

1. It is hypothesized that the demands of particular stages of the consumer life cycle (Wells and Gubar 1966) color how people perceive the concern for consumers on the part of those offering products and services to households.

This should be reflected in their attitudes about the consumer concern and price reasonableness for those businesses they seek to have serve them.

2. Income is suggested to be positively related to how consumers perceive the consumer concern and price reasonableness held by particular business and public sectors. Those with higher incomes are more likely to be experienced in purchasing products and thus to know better their options within a particular business or public service.

3. Political Predisposition is hypothesized to relate both to the perceived consumer concern and to the price reasonableness constructs. Warland, et al., (1975) suggest that conservative consumers are less likely to be "upset" in the marketplace. Conservatives generally place responsibility within the individual, rather than with outside forces (Williamson, et al., 1977).

4. Occupation is hypothesized in this study to relate to both the perceived consumer concern and price reasonableness constructs. It seems logical that executives have empathy with those executives who also provide them with products and services. Skilled and non-skilled workers may not understand the motivations of managers who provide their products and services.

The Model

Based on the findings of the Sentry study (1977) and Andreassen's work (1977), it seems appropriate to examine simultaneously the individual perceptions that a consumer holds toward several businesses and related institutions. In this case, we are dealing with a multivariate dependent vector variable, rather than a generalized consumerist attitude toward "business" (with the concomitant unrealistic univariate analysis). As suggested by Wind and Denny (1974), multivariate analysis of variance (MANOVA) may be used to examine such dependent response surfaces for possible association with predictor factors.

The objective of this paper is to construct and to test such a model. We propose that such a model is more isomorphic to reality and is less likely to lead to contradictions in research findings (Bock and Haggard, 1968). If MANOVA gives overall significant results, then univariate analysis is appropriate in determining the nature of the relations. The symbolic model tested is a General Linear Model (referred to as Model I in this study), and is represented by (Bock and Haggard, 1968):

$$(1) Y_{ijkl} = \mu \dots + \tau_j + \beta_k + \phi_1 + \tau_j \beta_k + \tau_j \phi_1 + \beta_k \phi_1 + \tau_j \beta_k \phi_1 + \gamma_{ijkl} + \epsilon_{ijkl}$$

where,

(a) Y_{ijkl} is a three element vector containing measures of the i th consumer's perceptions of the concern held first by business (1), second by legislators (2), and third by professional services (3). The i th consumer holds the j th political predisposition, is in the k th stage of the family life cycle, and works in the l th occupation.

(b) $\mu \dots$ is the grand mean vector of Y_{ijkl} . τ_j , β_k and ϕ_1 are each three elements vectors that represent the independent effects on Y_{ijkl} due to consumer holding the j th political predisposition (PP), being in the k th stage of the family life cycle (FLC) and employed in the l th occupation.

(c) $\tau_j \beta_k \phi_1$, $\tau_j \beta_k$, $\tau_j \phi_1$, $\beta_k \phi_1$ are three element vectors that represent all possible interactions among the main effects.

(d) Z_{ijkl} is income (treated as a covariate and centered to mean-zero).

(e) ϵ_{ijkl} is a three element vector variable that is assumed to be random and to have a null vector as its expected value.

This somewhat complicated model allows the exploration of the complex relationships between patterns of consumer characteristics and patterns of consumer perceptions of the concern for consumers on the part of several businesses (in this case private and public services). Thus many of the problems inherent in successive univariate tests of relationship are not encountered (see Cooley and Lohnes, 1971; Bock, 1963; and Darden and Rao, 1980).

The approach involves modeling the response surface (in this case consumer perceptions of consumer concern held by managements of selected businesses and public services) in a sequential fashion with "effect coding" for the effects of each factor (see Cramer 1967). The significance of the last factor is found by testing the reduction in the sum of squares and cross-products matrix found with the introduction of the last factor into the full linear model.¹ The multiple regression approach to multivariate analysis of variance also allows the researcher to address problems inherent in designs with unequal cell sizes (Perreault and Darden, 1975).

Price Reasonableness Model

The same modeling approach can be used to test yet another response surface of consumers, one that reflects their appraisal of the performance of private and public services. In this case, the price reasonableness of the selected services, as perceived by respondents, is the surface to be modeled. Andreassen notes that, "... it was found that when the type of problem was investigated, the sole problem in fourteen percent of the purchases was that it 'cost too much.'" (1977, p. 18). Andreassen (1977) also indicates that the perception of prices as unreasonable may be a surrogate for poor performance.

As suggested by the literature (Andreson, et al., 1976; Barksdale and Darden, 1972; and Lundstrom and Kerin, 1976), demographic characteristics would appear to explain some of the variation in price reasonableness attitudes. Earlier work in social psychology (Hollingshead and Redlich, 1958) suggests that social class is also a significant causative factor. In fact, stage in family life cycle, income, occupation and political predisposition are again viewed as the explanatory factors. Thus "price reasonableness" can be modeled in the same fashion as was the "consumer concern" model. Equation 2 reflects the same predictors, but with a different response surface

$$(2) \hat{Y}_{ijkl} = \hat{\mu} \dots + \hat{\tau}_j + \hat{\beta}_k + \hat{\phi}_1 + \hat{\tau}_j \hat{\beta}_k + \hat{\tau}_j \hat{\phi}_1 + \hat{\beta}_k \hat{\phi}_1 + \hat{\tau}_j \hat{\beta}_k \hat{\phi}_1 + \hat{\gamma}_{ijkl} + \hat{\epsilon}_{ijkl}$$

respondent attitudes about the "price reasonableness" of (1) retailers, (2) professional services, and (3) utilities. We refer to this as Model II.

Methodology

Analysis Approach

Exploration of these ideas proceeded through two stages:

1. First, a sample of consumers from the State of New York was obtained and analyzed to determine the applicability of the two models.

2. Responses from a sample of top executives from Fortune's 500 was gathered.

Since the Fortune's 500 top executives all tended to be high on social class, and were at later stages of the family life cycle, their attitudes toward consumer discontent in both domains were compared with those of the consumer sample. The purpose of this analysis is to compare how those instrumental in shaping business policy differ from a cross-section of consumers with respect to consumer discontent.

Consumer Data

The consumer data were obtained by questionnaires mailed during the summer of 1976. Respondents were randomly selected from New York State telephone directories. The sample represented all consumers throughout the state who had listed phone numbers. Selection of consumer respondents was made in proportion to the population within every directory area of the state.

Twelve hundred consumers were mailed questionnaires. A postcard was also mailed to each potential respondent approximately three weeks after the initial mailing of the questionnaire. Three hundred and eighty-five, approximately 32 percent, of those mailed were returned and were usable.

Prior studies suggest that late responders to mail surveys have characteristics that are similar to non-responders.² Thus a comparison of the responses of those replying early with those replying late should give one basis for evaluating the extent of non-response bias. This was accomplished in two ways. First, the responses of those in the first wave (262 questionnaires) were compared with those received after mailing the reminder post card (123 questionnaires). Second, the time required for the receipt of each questionnaire was checked for relation with the questionnaire response profile. Both tests suggest little differences between early and late responders. Thus some support is provided for the representativeness of the data.

Consumer respondents were representative of the New York State head-of-household population; the age and income characteristics of this consumer sample were highly congruent with the latest census data. (Table 1)

Fortune's 500 Executives

Four hundred top executives were randomly selected from the Fortune 500 Companies. Each was sent a self-administered questionnaire and a cover letter requesting that they fill out the instrument; 185 returned fully completed and usable questionnaires, in a response rate of approximately 46%. Three kinds of top executives returned the questionnaire:

1. Corporate Presidents. Fifty-seven respondents were top executive officer within the corporation.
2. Marketing Vice-President. These executives are in direct control of corporate and product advertising, product planning, dealer relations, pricing of products, and managing product services. 111 of the executives were in this category.
3. Vice-President for Advertising and/or Public Relations. Seventeen respondents held positions with primary responsibility for advertising and/or public relations for the firm.

Fortune's 500 Executives filled out the same questionnaire as did the random sample of consumers from the state of New York.

Questionnaire

Respondents were asked their opinions about the general

TABLE 1
SELECT CHARACTERISTICS OF
NEW YORK STATE CONSUMERS

Characteristic	Frequency	Percent
I. Income		
Less than \$5,000	29	7.8
\$5,001 - 10,000	49	13.2
10,001 - 15,000	74	19.9
15,001 - 20,000	76	20.2
20,001 - 25,000	59	15.8
25,001 - 30,000	26	7.0
30,001 - 35,000	20	5.3
Over \$35,001	40	10.8
TOTAL	373	100.0
II. Political Predisposition		
Conservative	162	43.3
Liberal	114	30.6
Moderate	97	26.1
III. Age		
Less than 26	29	7.8
26-35	68	18.3
36-45	64	17.2
46-54	79	21.2
56-65	82	21.8
Over 65	51	13.7
TOTAL	373	100.0
IV. Sex		
Male	256	68.6
Female	117	31.4
TOTAL	373	100.0
V. Occupation		
Non-Manual	117	31.2
Managerial	93	25.0
Professional	68	18.3
Student/other	95	25.5
TOTAL	373	100.0

TABLE 2

DESCRIPTIVE STATISTICS OF
FORTUNE'S 500 EXECUTIVE GROUP

Characteristic	Frequency	Percent
I. Income		
\$15,000 - 20,000	2	1.1
20,001 - 25,000	7	4.0
25,001 - 30,000	8	4.6
30,001 - 35,000	14	8.0
Over 35,001	144	82.3
II. Political Predisposition		
Conservative	107	61.1
Liberal	29	16.6
Moderate	39	22.3
III. Age		
Less than 26	3	1.7
26-35	10	5.7
36-45	35	20.0
46-54	79	45.1
55-65	48	27.4
IV. Sex		
Male	165	94.3
Female	10	5.7
TOTAL	175	100.0

concern for consumer needs and desires shown by supermarkets, oil companies, automobile manufacturers, utility companies, telephone companies, state legislators, U.S. legislators, medical doctors, hospitals, and attorneys (Table 3-A). Respondents were also asked to indicate their feelings about the prices generally charged consumers by supermarkets, department stores, automotive dealers, medical doctors, attorneys, hospitals, telephone companies, and utility companies (Table 3-B). Those responding also provided information about their political predisposition (conservative, moderate, or liberal), stage in family life

TABLE 3-A

SCALE ANALYSIS OF CONSUMER PERCEPTIONS: HOW CONCERNED ARE SERVICE AND PRODUCT SUPPLIERS TOWARD CONSUMER PROBLEMS?

Variable	Factor loadings for factor:			Cronbach's alpha ¹
	I	II	III	
Supermarkets ^{2,3,4} . . . . .	.608	.090	-.008	.9
Oil Companies . . . . .	.706	.055	.171	
Auto Manufacturers . . . . .	.788	.051	.196	
Utility Companies . . . . .	.747	.100	.231	
Telephone Companies . . . . .	.754	.081	.141	
State legislators . . . . .	.104	.904	.101	.85
U.S. legislators . . . . .	.146	.900	.137	
Medical doctors . . . . .	.146	.021	.839	.67
Hospitals . . . . .	.251	.110	.741	
Attorneys . . . . .	.192	.393	.584	

¹ Cronbach's alpha (1951) measures the reliability or "equivalence" of items in a scale (Cronbach, 1951, pp. 298-305.)

² . . . indicate your opinion about the general concern for consumer needs and desires shown by the following:

³ Each "business type" was rated on a 5-point scale ranging from "very concerned" (Code = 1) to "very unconcerned" (Code = 5).

⁴ The three factors for consumer concern are termed: (1) Factor I, Businesses; (2) Factor II, Government representatives; and (3) Factor III, Professional services.

Responses to the price items and to the concern items were factor analyzed by Hotelling's method of Principal Axes with varimax rotation (Cooley and Lohnes, 1971). Factor loadings were used to categorize specific industries into broader industry classifications. The concern for consumer items followed the hypothesized factor patterns; (1) business, (2) government representatives, and (3) professional services. The loadings on the sectors in the "price reasonableness" domain suggested, also as hypothesized, three patterns of factors falling under the general heading of (1) retailers, (2) professional services, and (3) utilities (Table 3-A). All businesses had factor loading that exceeded .57 on some one factor, illustrating convergent validity, while those same items loaded low on all other factors, indicating reasonable discriminant validity.

The loadings from each of the two factor analyses appeared to provide evidence of sufficient construct validity, and the Cronbach Alpha coefficients for the sectors grouped under each factor demonstrated strong item reliability (Tables 3-A and 3-B). These scaling results are considered very good (Cronbach, 1953) and lead us to summate sectors grouped under a factor to obtain "summated" perceptions for each domain (first, creating a "consumer concern" response surface, and second creating a "price reasonableness" response surface). A score for each dimension was obtained by summing the corresponding ratings of items that were suggested as being basically the same dimension by factor analysis (Tables 3-A and 3-B). For example, the price reasonableness of utilities was constructed by adding each respondent's judgments of price reasonableness toward telephone companies to that of utility companies. The summated scores for each respondent are then divided by the number of items for that construct to place the score back into the range of the original verbal rating scale.

SCALE ANALYSIS OF HOW "REASONABLE" ARE THE PRICING POLICIES OF SELECT BUSINESSES AND SERVICES

Variable	Factor loadings for factor:			Cronbach's alpha ¹
	I	II	III	
Supermarkets ^{2,3,4} . . . . .	.767	.067	.276	.78
Department Stores . . . . .	.844	.004	.135	
Auto Dealers . . . . .	.613	.239	.280	
Medical doctors . . . . .	.060	.694	.249	.64
Attorneys . . . . .	.201	.771	.019	
Hospitals . . . . .	.130	.654	.350	
Telephone companies . . . . .	.231	.213	.829	.76
Utility companies . . . . .	.230	.131	.834	

¹ Cronbach's alpha (1951) measures the reliability or "equivalence" of items in a scale (Cronbach, 1951, pp. 298-305).

² Indicate your opinions about the PRICES generally charged consumers by the following:

³ Each "business" or "service" type was rated on a 5-point scale ranging from "very reasonable" (Code = 1) to "very unreasonable" (Code = 5).

⁴ The three factors for price reasonableness are: (1) Factor I, Retailers, (2) Factor II, Professional Services, and Factor III, Utilities.

Analysis: Consumer Sample

Model I: Consumer Concern by Businesses and Services

Table 4 contains the statistics that result from testing the "consumer concern" model (symbolically depicted in equation 1). The analysis proceeds by first considering the covariate and interactions among the main effects. Then the significance of each main effect is considered in turn.

Income. We see that income (the covariate in this model) does relate significantly to the "consumer concern" of select services as perceived by New York consumer ($P < .05$). Section I of Table 6 contains discriminant analysis loadings that suggest the nature of this relationship. In general, consumers with higher incomes tend to perceive greater concern for consumers on the part of businesses (supermarkets, oil companies, automobile manufacturers, and utilities) and professional services (medical doctors, hospitals, attorneys).

These results appear to conflict with the findings of prior research. For example, Liefeld, Edgecombe and Wolfe (1975), Warland, Hermann, and Willits (1975), Pfaff and Blivice (1977) and Miller (1973) all find higher incomes are associated with higher levels of consumer activism. Yet it is not necessarily true that those most active in the consumerist sphere cannot perceive higher levels of concern on the part of private and public services. In fact, it seems quite likely that those making higher incomes are more involved in business affairs, and therefore are more knowledgeable in this area. These same persons may simultaneously be likely to have empathy for the viewpoint of those offering services (with whom they mix) and yet likely to know their rights in business and stand up for them. It may be a matter, in this case, of knowing one's options and not being intimidated by nonpersonal business institutions.

As related to Andreasen's Postpurchase Consumer Process (1977), this finding may indicate that the individuals' choice of action upon being dissatisfied may be affected by the degree of concern for the consumer perceived as being held by the business or institution. If the consumer

TABLE 4
MODEL I: PERCEPTIONS OF
CONSUMER CONCERN
OF SELECT SERVICES AND BUSINESSES

Model Test	F-ratio	d.f. Y ₁ :Y ₁	p ≤	Canonical Correlation
I. Covariate Analyses (Income)	2.58	3;334	.05	.15
II. Interactions (adjusted MANOVAs) ^{1,3}				
1. PP x FLC x OC	.73	36;988	.88	.20
2. FLC x OC	1.43	18;945	.11	.22
3. PP x OC	.79	18;945	.71	.15
4. PP x FLC	1.19	12;884	.29	.16
III. Political Predisposition (PP) Adjusted MANOVA ¹	6.39	6;668	.00 ²	.33
Univariate Statistics				
1. Business	11.63	2;336	.00 ²	
2. Legislators	1.86	2;336	.16	
3. Professional Services	.13	2;336	.88	
IV. Family Life Cycle (FLC) Adjusted MANOVA ^{1,3}	2.66	6;668	.01	.19
Univariate Statistics				
1. Business	.83	2;336	.44	
2. Legislators	3.47	2;336	.03	
3. Professional Services	1.94	2;336	.15	
V. Occupation (Oc) Adjusted MANOVA ^{1,3}	1.49	9;813	.15	.18
Univariate Statistics				
1. Business	1.26	3;336	.29	
2. Legislators	2.10	3;336	.10	
3. Professional Services	.33	3;336	.81	

¹Main and interaction effects are tested after adjustment of the response surface (3-dimensional perceived consumer concern space) for effects that covary with income.

²p ≤ .001.

³Rao's approximate multivariate F-ratio. For computational formula, see Cooley and Lohnes (1971).

perceived as being held by the business or institution. If the consumer perceives little concern for his or her well-being on the part of the business or institution, the consumer may not take action, as this would be useless if the business doesn't "care." On the other hand, if business is perceived as concerned, action on the consumer's part may be perceived as being a more effective response to dissatisfaction.

Interactions. One of the most interesting findings in the study is that political predisposition (PP), family life cycle (FLC), and occupation (OC) does not significantly interact with each other to create independent effects on the "consumer concern" response function (Section II of Table 4.)

Political Predisposition. By far the most interesting finding of the study is the high overall association between political predisposition and perceptions of "consumer concern" on the part of select private and public institutions (P < .001). Examination of the univariate F-ratios in section III of Table 4 suggests that most of this relationship is with the "business" factor; that is, political predisposition appears to relate strongly with respondent perceptions of "consumer concern" by private companies.

It comes as no great shock that "conservative" respondents report higher levels of concern than do "liberals" (Section II, Table 6.) Nevertheless, the finding provides some construct validity for the study and suggests that political orientation has a greater role in determining consumerist attitudes than had been previously reported by Barksdale and Darden (1972). In this case, the study provides a *raison d'etre* for the findings of Warland, Herrmann and Willits (1975). If conservative consumers perceive greater concern on the part of businesses and

public service bodies (as suggested in the test of our model), it seems likely that they will not perceive "mis-treatment" in the marketplace - or when they do, they will be less likely to take "action."

This finding, when compared to the finding of greater perceived concern among those with higher income in this study and previous findings of higher levels of activism among those with higher income (Liefeld, Edgecombe and Wolfe, 1975; Warland, Hermann and Willits, 1975; Pfaff and Blivice, 1977; Miller, 1973) would seem to indicate that the interaction between income and political predisposition may be an important factor in the consumer's choice of action, while (as noted previously) not affecting perceived concern.

Family Life Cycle. Table 4 shows that the three stages of the family life cycle³ are indeed strongly related to "consumer concern" by businesses. Examination of the univariate F-ratios (see Section IV of Table 4) shows, however, that only the "Legislators" consumer concern factor contributes significantly to this association (p < .03). Thus those in the middle stages of the family life cycle perceive higher levels of consumer concern or the part of state and national legislators than do those in earlier or later stages (Table 6). This finding helps document the origins of the "Grey Power" movement across the United States.

Occupation. Studies of consumer activism (behavior) have consistently reported that occupation is an important determinant of complaint behavior (Liefeld, et al., 1975; Pfaff and Blivice, 1977; Diamond, et al., 1976). However, when the response surface being studied is respondent perceptions of "consumer concern on the part of businesses," less evidence is available. The model in this study shows little contribution by occupation to the explanation of "consumer concern" of businesses as perceived by New York consumers, when considered with the effects of income adjusted for as a covariate.

Model II: "Price Reasonableness" of Business and Services.

Since the "price reasonableness" response surface (Model II) is within the same interest area as is "perceived consumer concern" (Model I), we expect that the same set of household characteristics to be related to this second response surface in a similar fashion. The statistics testing the estimates of factor effects for Model II are contained in Table 5. We note immediately that the hypothesized interaction effects (Section II) are not significant.

Income. As in Model I, income is strongly related to how respondents rated the "reasonableness" of the pricing policies of the three dimensional business response surface (F-ratio = 3.2; p < .02). Again, those consumers with higher incomes perceive businesses and services as having more reasonable pricing policies. Thus the pricing policies of retailers, professionals, and utilities are viewed as more reasonable by high income consumers and, conversely, viewed as less reasonable by low income respondents.

Political Predisposition. Political predisposition also shows strong overall relationship with respondent perceptions of how reasonable are the pricing policies of businesses. Rao's multivariate F-ratio is significant at the .01 level, indicating that at least one of the three response factors is also significant in a meaningful fashion (Section III of Table 5).

Table 6 reinforces our image of those respondents that reflect favorable perceived attitudes toward the motives of businesses toward consumers. Table 5 suggests that political predisposition is related to perceptions of "price reasonableness" of retailers (p < .05) and of utilities (p < .001), and Table 6 shows that politically conservative

TABLE 5
MODEL II: CONSUMER PERCEPTIONS
OF THE REASONABLENESS OF PRICES
CHARGED BY SELECT SECTORS

Model Test	F-Ratio	d.f. Y ₁ :Y ₂	P ≤	Canonical Correlation
I. Covariate Analyses (Income)	3.23	3;334	.02	.17
II. Interactions (Adjusted MANOVAs) ¹				
1. PP x FLC x OC	1.22	36;988	.18	.28
2. FLC x OC	.94	18;945	.53	.17
3. PP x OC	1.15	18;945	.29	.18
4. PP x FLC	.40	12;884	.97	.09
III. Political Predisposition (PP) Adjusted MANOVA ¹	2.83	6;668	.01	.21
1. Retailers	3.00	2;336	.05	
2. Professional Services	.95	2;336	.39	
3. Utilities	7.07	2;336	.00 ²	
IV. Family Life Cycle (FLC) Adjusted MANOVA ¹ Univariate Statistics	.91	6;668	.49	.12
1. Retailers	.78	2;336	.46	
2. Professional Services	1.50	2;336	.23	
3. Utilities	1.43	2;336	.24	
V. Occupation (OC), Adjusted MANOVA ¹ Univariate Statistics	1.22	9;813	.28	.15
1. Retailers	1.24	3;336	.29	
2. Professional Services	.24	3;336	.87	
3. Utilities	1.68	3;336	.17	

¹Main and interaction effects are tested after adjustment of the response surface (3-dimensional perceived consumer concern space) for effects that covary with income.

²p ≤ .001

³Rao's approximate multivariate F-ratio. For computational formula, see Cooley and Lohnes (1971).

respondents perceive the pricing policies of both retailers and utilities as being more reasonable than do their liberal counterparts.

FLC and OC. Both family life cycle and occupation do not show overall relationship with consumer perceptions of the reasonableness of retailers, professional services and utilities. Even without the overall test of Model II, univariate analysis would have strongly indicated no relation on all three dimensions of the response surface.

Consumers Vs. Executives

One of the more interesting issues explored in this study is the hypothesis that top executives - with more experience in businesses and with a more global view of the intentions and objectives of administrative policies - have more favorable perceptions of the "consumer concern" and the "reasonableness of pricing policies" of administrators of businesses, elected representatives and public services. In an attempt to provide support for this thesis, the perceptions of New York consumers and Fortune's 500 executives were compared in both these response areas.

The data in Table 7 support this hypothesis to a considerable degree. Multivariate analysis of variance - for both response surfaces - is significant at the .001 level. The Fortune's 500 executives view the "consumer concern" of businesses, elected representatives and professional persons (doctors, lawyers, etc.) as much higher than do the New York consumers. The canonical correlation produced by the general linear model (Cramer, 1967; Perreault and Darden, 1975) suggests the linear relationship to be strong (R_c = .52). In the same fashion, executives perceive the pricing policies of retailers, professionals, and public services to be more reasonable than do New York state consumers (R_c = .52).

Some specific conclusions include the following:

1. Stage in family life cycle, political predisposition and occupation do not appear to interact to create inde-

TABLE 6

MEANS OF CONSUMER PERCEPTIONS:
ADJUSTED FOR EFFECTS ON INCOME

Loadings and Means for Model Main Effects	Sample Size	Consumer Perceptions of: ^{1,4}					
		Concern for Consumers by: ²			Reasonable Pricing by: ³		
		A	B	C	D	E	F
I. Income (covariate) Discriminant Loadings	372	.88	-.14	.31	-.66	-.55	-.87
II. Political Predisposition							
1. Conservative	162	3.20	3.61	3.25	3.06	3.88	3.38
2. Liberal	114	3.66	3.36	3.31	3.36	4.03	3.70
3. Moderate	97	3.40	3.41	3.20	3.27	3.96	3.83
III. Stage in Family Life Cycle (FLC)							
1. Prior to Full Nest I	53	3.31	3.56	3.07	3.20	3.80	3.44
2. Full Nest Stages I, II	163	3.44	3.31	3.30	3.28	4.02	3.69
3. Empty Nest I, II and Solitary Survivors	157	3.34	3.63	3.35	3.08	3.92	3.55
IV. Occupation							
1. Non-managerial	117	3.31	3.34	3.34	3.38	4.00	3.58
2. Managerial	93	3.46	3.67	3.22	3.20	4.00	3.79
3. Professional	68	3.39	3.29	3.37	3.01	3.96	3.50
4. Student/other	95	3.50	3.46	3.27	3.21	3.91	3.60

¹For businesses, services, and agencies comprising each of the sectors below, see Table 3.

²A, B, and C are, respectively, (1) Business, (2) Legislators and (3) Professionals.

³D, E, and F are, respectively, (1) Retailers, (2) Professionals and (3) Utilities.

⁴Each respondent's summated rating scores for a construct were divided by the number of items to transform that score back into the range of the original rating scale. Thus the means of these new scores are interpretable in terms of the original verbal cues (e.g., a mean of 2.0 is equivalent to "reasonable").

TABLE 7
NEW YORK CONSUMERS VERSUS
FORTUNE'S 500 EXECUTIVES

Respondent Perceptions of:	F-Ratio	d. f. Y ₁ :Y ₂	P s	Canonical Correlation	Means	
					Executives	Consumer
I. Consumer Concern MANOVA	67.03	3;543	.001	.52		
Univariate Statistics						
1. Business	193.28	1;545	.001		2.40	3.39
2. Legislators	15.98	1;545	.001		3.08	3.48
3. Professional services	11.11	1;545	.001		3.00	3.29
II. Price Concern MANOVA	67.11	3;543	.001	.52		
Univariate Statistics						
1. Retailers	95.98	1;545	.001		2.37	3.20
2. Professional services	36.91	1;545	.001		3.46	3.95
3. Utilities	161.42	1;545	.001		2.41	3.69

pendent effects on perceptions of "consumer concern" and reasonableness of pricing policies" by the businesses and services in this study.

2. Fortune's 500 executives have uniformly more favorable perceptions of the "consumer concern" and the "reasonableness of pricing policies" of the businesses than do their New York State consumer counterparts.

3. Income and political predisposition of consumers significantly relate to the response surfaces in both Model I and Model II.

4. Stage in family life cycle is significantly related to perceptions of "consumer concern" as analyzed in Model I. It is interesting that these are most favorable for those families who have children at home.

5. Respondents uniformly have a more unfavorable perception of the "consumer concern" held by legislators (state and national); the exceptions include "liberals" and "professionals" (medical doctors, lawyers, etc.)

6. "Professionals" (doctors, lawyers, etc.) are perceived in general as having less concern for consumers. This finding is somewhat unexpected; however, it probably is tied to the soaring costs of medical services and professional fees in general.

7. Respondents in general perceive "retailers" as having more reasonable pricing policies than do "professionals" and "utilities" (Table 6). Consumers have personal contact with retailing establishments through sales clerks and other personnel. The producing firm is probably viewed as setting prices, ameliorating consumer attitudes toward retailers.

8. The mean scores in Table 6 in general support the findings of the Sentry study. Means for all categories either approach "unconcerned" for consumer concern or "unreasonable" for pricing policies - and for all businesses, services and agencies. Thus consumer perceptions of the "consumer concern" of businesses - and its elected representatives - is not high. The same kind of judgment can be tentatively made with respect to how "reasonable" consumers view the pricing policies of similar agencies.

Footnotes

1. For a discussion of the use of multiple regression in MANOVA, when non-orthogonal designs are encountered, see Woodward and Overall, 1977.

2. See for example A. N. Oppenheim (1966, p. 34).

3. Wells and Gubar's original classification of the family life cycle is based on (1) marital status, (2) age, and

(3) age of youngest child. They include: (1) Bachelor, (2) newly married, (3) Full Nest Stage I, (4) Full Nest Stage II, (5) Empty Nest I, (6) Empty Nest II, and (7) Solitary Survivors. In this study, we use three stages in the FLC: (1) under 40, single or married without children; (2) under or over 40, married with children at home; and (3) over 40, married or single, and no children at home.

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CORRELATES OF DEFICIENT CONSUMER INFORMATION ENVIRONMENTS: THE CASE OF THE ELDERLY¹

Rohit Deshpande, University of Texas at Austin
S. Krishnan, Pennsylvania State University

Abstract

Although much research attention has been given to the format of consumer information environments, there has been little study of the effects of consumer environments lacking in information. This paper describes an empirical study of elderly consumers functioning in information deficient environments. The relationship of lack of information and bad purchase experiences are discussed along with future research implications in public policy.

Introduction

The concept of a consumer information environment has been developed some years ago. As Bettman (1975) describes it, the term "denotes the entire array of product-related data available to the consumer. Some important characteristics of information environments are type of information available, amount of information available, modes of presentation, and modes of organization of information." As understood in a public policy setting, the purpose of a consumer information environment is to enable individuals to make improved decisions based on better information made available to them at the right time. (Thorelli, Becker, and Engledow 1975, McEwen 1978). Issues relating to the optimal structure of a consumer information environment have been discussed elsewhere (for e.g., Jacoby et al. 1977, Russo et al. 1975, Bettman 1979). The objective of this paper is to look at what occurs when the information environment is lacking in some regard, and to examine this problem in the context of consumer behavior of the elderly.

The reasons for focusing on elderly consumers are simple. This market segment has received extremely little empirical attention from consumer researchers despite demographic trends which indicate that the over-64 age group is growing more rapidly than several younger market segments. The limited discussions of the consumption patterns of the elderly indicate that this segment is quite substantial in purchasing power (Phillips and Sternthal 1977). More critically, however, studies of the elderly in the U.S. describe an extremely disadvantaged set of individuals. Medical fraud is estimated to be highest among the elderly (Butler 1975). Waddell (1975) indicates that elderly consumers are particularly susceptible to all kinds of fraud because of relatively lower education, a more trusting nature, and lower self-esteem than the rest of the population. Social isolation is a major problem with the elderly (Schiffman 1971), perhaps the reason that Zaltman, Srivastava and Deshpande (1978) found these consumers to be less likely to complain and ask for restitution when encountering unfair marketing practices. Due to all of these reasons, it is likely that the information environments of the elderly are seriously deficient thereby preventing them from making optimal purchase decisions. If this is correct, then both from a humanistic and a public policy perspective it is necessary to take some remedial action. The following sections describe a conceptual methodology designed to examine consumer information environments for deficiencies and an empirical study based on a nationwide cross-sectional survey of elderly consumers.

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Present Research

Data used in this paper come from a larger research program investigating the consumer problems of the elderly. Preliminary focus group discussions with elderly consumers revealed that the most critical aspects of product and service related information were accessibility of needed information. That is, how difficult was it to obtain information that was required to make a product choice decision? This is clearly a critical area in public policy program development. Several information programs have been developed without first ascertaining whether the target audience desired the information to be provided (Capon and Lutz 1979). After the marketing concept has been applied and the desired information product developed, it is still necessary to make a distribution decision, i.e., make the information available to consumers so that they can make use of it. These two information environment components may be referred to as "relative information demand" (perceived need for product related information) and "information availability" (accessibility of information by consumers). The two components can be conceptualized in terms of a 2x2 matrix described in Figure 1. This figure describes the conceptual scheme known as an Information Deficiency Matrix (Deshpande and Krishnan 1981) and can be used to determine the adequacy of information environments of elderly consumers. It is clear that the Northwest cell (i.e., information needed and difficult to obtain) is the key one in terms of a deficient consumer information environment. Conversely, the Southeast cell is of no importance except perhaps in comparison with its diagonally opposite cell. Further discussion in this paper will focus on the most critical, that is, the Northwest cell. Individuals will be referred to as having deficient consumer information environments when the conditions of information-need and information-unavailability coexist.

FIGURE 1

An Information Deficiency Matrix

		Perceived Need For Information	
		Yes	No
Information Difficult to Obtain	Yes	Most critical area	
	No		Least critical area

Sample

Two structured mail questionnaires were developed based on focus group discussions with elderly consumers. The discussions related to issues on susceptibility to fraud, perceptions of unfair marketing practices, dissatisfaction with products purchased, and complaint actions. Questionnaires were mailed two months apart to a national Market Facts panel of 4,000 persons aged 25 to 80. Response rates for each wave of the survey were extremely good (71.3% and 89.4%). Comparing the surveyed sample characteristics with

- those of the U.S. population revealed the following:
- (1) a (intended) disproportionate number of individuals over age 64 (61% to 11% nationally),
 - (2) a lower representation of blacks and hispanics (3% and 0.1% versus 8% and 4%, respectively),
 - (3) A moderate under-representation of high school graduates and a slight over-representation of college graduates, and
 - (4) fewer individuals whose spouses were deceased.

Analyses in this paper deal with 1,747 usable responses from the elderly (over 64) subsample or 68% of the final sample. Space constraints do not permit a fuller description of the larger sample. Additional information and analyses can be found in Deshpande and Krishnan (1981), Lawther (1978), Zaltman et al. (1978).

Variables

The two components of the Information Deficiency Index, relative information demand and information availability were posed as part of one question in the second wave of the mail survey. The question is shown below:

I've listed below some different types of products or services. In Column A, "X" all those where you feel that you, personally, need information. In Column B, "X" the products or services where you feel the information you need is difficult to get.

	<u>Column A</u>	<u>Column B</u>
	Need Information	Information Difficult To Get
Auto repair	<input type="checkbox"/> 1	<input type="checkbox"/> 1
An auto purchase	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Home repair/improvement	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Utility services	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Insurance	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Health care (Med. care in hospital)	<input type="checkbox"/> 6	<input type="checkbox"/> 6
Non-medical professional	<input type="checkbox"/> 7	<input type="checkbox"/> 7
services		
Appliances, purchase	<input type="checkbox"/> 8	<input type="checkbox"/> 8
Appliances, repair	<input type="checkbox"/> 9	<input type="checkbox"/> 9

The nine product/service categories represent those most frequently mentioned by elderly consumers as areas where they had felt cheated or taken advantage of during recent purchase experiences. Further, in the first wave instrument, a question asked respondents to indicate with which products and services they had felt cheated or bad about their buying experience. This question listed 33 products and services but the data used here come from the top nine most frequently cited categories which are identical to those shown above. This question can therefore be thought of as measuring the incidence of bad buying experiences.

Finally, a separate question in the second wave of the survey asked respondents to indicate the extent of general dissatisfaction perceived (4-item scale from Generally Very Satisfied to Generally Very Dissatisfied) with a listed set of products and services. The question was worded:

"Several products and services are listed below. We are interested in how satisfied you generally are with the items you occasionally or frequently buy or use. If you do not buy or use a product or service, "X" the box 'Rarely or Never Use.' "

Once again this analysis deals with the 9 most critical product categories.

Analysis

The first part of the analysis was to examine the extent of information deficiency. How is the consumer information environment deficient across product categories? In order to answer this question the number of product categories for which each respondent had answered "Yes/Yes" (i.e., the Northwest cell of the Information Deficiency matrix) were counted. Frequency data are reported in Table 1.

TABLE 1

Extent of Information Deficiency

<u>No. of Product Categories Mentioned</u>	<u>Freq.</u>	<u>Percentage</u>
0	211	12.1
1	385	22.0
2	432	24.7
3	348	19.9
4	204	11.7
5	105	6.0
6	39	2.2
7	10	0.6
8	1	0.1
9	<u>12</u>	<u>0.7</u>
	1747	100

Mean number of categories mentioned = 2.321
Standard deviation = 0.039

As Table 1 indicates, the majority (58.8%) of elderly consumers perceived an information deficiency on two or fewer product categories. The mean response for this "Information Deficiency Index" was 2.32 with a standard deviation of 0.039. This is valuable information in that it appears that very few elderly consumers perceive information deficiencies across all 9 product categories (only 12 people or 0.7% of the sample). Yet further analysis is necessary to determine whether it should concern us at all whether or not elderly consumers perceive both a need for, and an unavailability of product-related information. This is indeed the crux of the issue initially proposed in the introduction of this paper. What are the correlates of deficiencies in the consumer information environment?

To respond to this query, it is necessary to look at the relationship between information deficiencies and both general dissatisfaction with products and reports of bad buying experiences. Simple cumulative indices were formed of consumers' responses to the dissatisfaction, bad buying experience, and information deficiency measures described earlier. In the case of the dissatisfaction question, the index was formed by first eliminating cases where "Rarely or Never Use" the product category had been checked by the respondent. Next, responses were standardized by dividing the aggregate dissatisfaction score by the number of product categories mentioned (thereby ensuring comparability of respondents in terms of participation in the marketplace). This standardized score then represented the Dissatisfaction index score for each respondent. Similarly, the bad buying experience index was formed by first including those respondents who had checked one or more of the 9 product categories, and aggregating their responses to form a Bad Buying Experience score for each respondent. In an analogous manner, an Information Deficiency index was

computed by counting the number of different product categories that a respondent had indicated where both information was needed and unavailable.

In order to test for associative relationships, zero-order Pearson correlations were computed between the Information Deficiency score and each of the Dissatisfaction and Bad Buying Experience indices. These correlation coefficients are reported in Table 2.

TABLE 2

Pearson Correlates of Information Deficiency

	<u>Correlation</u>	<u>Significance</u>
Information Deficiency with Dissatisfaction (n = 1478)	0.571	p < .001
Information Deficiency with Bad Buying Experience (n = 1507)	0.567	p < .001

Table 2 shows evidence of positive and highly significant relationships. It appears that as the information environment of elderly consumers becomes more deficient in product-related information, consumers' general dissatisfaction with those products increases. This result is shown by a Pearson coefficient of 0.571 (significant at p < .001). Additionally (and perhaps explaining the above result), as the information environment of elderly consumers becomes more deficient in product-related information, consumers' reports of buying experiences where they felt cheated or bad, increases. The latter relationship shown by a Pearson coefficient of 0.567 (significant at p < .001).

Before any further conclusions are drawn from these results, however, it is important to turn again to the distribution of Information Deficiency responses reported in Table 1. It is true that general dissatisfaction and bad buying experiences seem to be associated with a deficient consumer information environment. But if, on the average, only two product categories are thus affected, then perhaps the problems are more localized, or at least can be isolated.

In order to shed light on this issue, a more micro level of analysis was conducted. Cross-classifications were performed investigating the reports of bad buying experiences on a product by product basis. The results of these cross-classification analyses are displayed in Table 3.

TABLE 3
Information Deficiency and Bad Buying Experiences
(n = 1747)

	<u>Auto Repair</u> Info. Def.		<u>Auto Purchase</u> Info. Def.	
	No	Yes	No	Yes
	Bad Buying Exp.	1114	404	1412	168
	116	113	152	100

$x^2 = 49.3, df 1$
p < .001

$x^2 = 12.4, df 1$
p < .001

TABLE 3 (cont.)

	<u>Home Rep./Imp.</u> Info. Def.		<u>Utilities</u> Info. Def.	
	No	Yes	No	Yes
	Bad Buying Exp.	1003	492	1209	357
	152	100	107	74

$x^2 = 4.11, df 1$
p < .04

$x^2 = 27.6, df 1$
p < .001

	<u>Insurance</u> Info. Def.		<u>Health Care</u> Info. Def.	
	No	Yes	No	Yes
	Bad Buying Exp.	1270	228	830	234
	180	69	545	138

$x^2 = 23.6, df 1$
p < .001

$x^2 = .79, df 1$
p < .37

	<u>Non-Med. Prof. Serv.</u> Info. Def.		<u>Appl. Purch.</u> Info. Def.	
	No	Yes	No	Yes
	Bad Buying Exp.	1012	521	1289	123
	129	85	292	43

$x^2 = 2.73, df 1$
p < .09

$x^2 = 5.35, df 1$
p < .02

	<u>Appl. Repair</u> Info. Def.	
	No	Yes
	Bad Buying Exp.	735	679
	142	193

$x^2 = 9.8, df 1$
p < .002

Let us examine the first cross-tabulation in Table 3 describing reports on Automobile Repair services. As can be seen a substantial number of consumers had encountered problematic purchase experiences (229 out of 1747 respondents or 13% of the elderly sample). Looking now at reports of information deficiencies: Out of 404 respondents reporting lack of needed information on automobile repair, 113 (or 28%) also reported encountering a bad buying experience. This compares with only 10.4% (116/114) of consumers who claimed to have a bad buying experience when no information deficiency existed. These results are statistically significant at less than the 0.001 level (chisquare of 49.3 with 1 degree of freedom). Clearly a strong relationship exists between lack of relevant automobile repair service information and the encountering of negative purchase experiences in this product category.

Similar results of significant relationships between information deficient consumer environments and reports of bad buying experiences can be seen in other product categories in Table 3. This is particularly true for automobile purchases, utility services, insurance, appliance repair, and to a lesser extent in home repair and improvements, non-medical professional services, appliance purchases and health care services.

Discussion

Briefly summarizing the results of the above analyses, it appears that when elderly consumers perceive a deficiency in their information environment (defined here as an unavailability of product-related information needed for making purchase decisions), there exists also a general dissatisfaction with those product categories. Additionally, there is a strong positive relationship between information deficiencies and reports of bad buying experiences (where consumers felt cheated or bad about their purchases). At a more micro level, the latter relationship holds across almost all product categories. For instance, those elderly consumers who indicate an information deficiency concerning automobile repair services are also more likely to have encountered bad buying experiences with these services (when compared with individuals who did not perceive an information deficiency).

Given the cross-sectional nature of the survey research design used for data-collection in this study, it is not possible to impute causality based on this data alone. However, by referring to other related consumer research, some inferences can be made.² All nine product/service categories are those where consumer information processing follows the traditional hierarchy of effects suggested by a non-routinized buying situation (Howard and Sheth 1969). The product categories are characterized by a high price, relatively long purchase cycle, and generally high functional and psychosocial risk. Purchasing repair services for one's automobile and buying a new car or insurance would classify as high rather than low involvement decision situations (Krugman 1965, Rothschild 1979, Kassarjian 1981, Ray et al. 1973). This is especially true for elderly consumers, many of whom live alone and survive on fixed incomes--conditions leading to a heightened concern for getting special bargains to make limited resources go further (Zaltman et al. 1978). The combination of social isolation (Schiffman 1971, Lawther 1978) and low self-esteem (Waddell 1975) translate into a situation where elderly consumers frequently find themselves unable to access the product-related information they need to make optimal purchase decisions. This can lead in several instances (and does, as the data in this study appear to indicate) to a less than satisfactory buying experience. Elderly consumers feel mistreated, cheated and bad about certain purchases. These feelings develop into a generalized dissatisfaction with the product category. That is, the inferred directionality is a deficient consumer information environment lending itself to bad buying experiences which in turn lead to a general dissatisfaction with the product and service categories where the negative purchase experiences occurred.

Conclusion

Much consumer research in the area of consumer information environments has focused on issues of type of information that is available, the optimum format for information presentation, and the associated information search and processing heuristics of consumers. This paper has focused on a different and as yet underresearched dimension of consumer information environments: The impact on consumers of an environment depleted in its most crucial element, product-related information. The specific consumer segment studied here is that of the elderly.

As the results of this study indicate, elderly consumers perceive information deficiencies in several major product and service environments. The inability of elderly consumers to get the information they need leaves them not only generally dissatisfied with the products themselves, but also with feelings of being cheated during actual purchase

²This inferential logic follows the process of theory construction in marketing suggested by Zaltman and his colleagues (forthcoming).

experiences. Since the objective of this paper was to describe the correlates of deficient consumer information environments rather than to make normative public policy recommendations, the latter will not be an area of conjecture here. Rather, it might be helpful to describe some directions for future public policy research suggested by this study.

Although we now have knowledge about a relationship between insufficient product information and the likelihood of dissatisfactory buying experiences, there is still inadequate understanding of why elderly consumers are unable to find the information that they need. Is it that elderly consumers require specific kinds of information that are currently unavailable? Or is the information available but perhaps presented in a form that is not easily comprehended? Or is the same type and quantity of information available to both younger and older consumers, but the latter are simply not able to access it (due to social isolation, ambulatory problems, or other reasons)? Additionally, although causality was inferred in this study (i.e., information deficiency → bad buying experience → general dissatisfaction with products) does an alternative process actually occur (for e.g., bad buying decisions being the result of personal competence factors yet the negative experience being attributed to unavailability of product-related information)? Finally, a critical issue for further exploration is the comparison of different age cohorts. The data reported here have been on the elderly exclusively. The purpose of this paper was not to make a comparative analysis of older versus younger consumers. Some of this comparative analysis has been reported in work cited earlier (for instance, Zaltman, Srivastava and Deshpande 1978), however much more needs to be done in order to develop policy that is sound, informed, and most importantly, beneficial to elderly consumers.

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RESEARCH ON CONSUMERISM:
OPPORTUNITIES AND CHALLENGES

Paul N. Bloom, University of Maryland

Abstract

A short review is presented of previous research on the subject of consumerism. Several ideas are offered on where the most valuable research contributions can be made in looking at consumerism in the future.

Introduction

Consumerism has been the subject of considerable discussion over the last two decades. This social movement--which has sought to help consumers attain safer products, more information, adequate selection, and better access to redress mechanisms--has been examined by researchers from numerous disciplines using a wide variety of research approaches. These researchers have sought to describe, explain, predict, and control the overall consumer movement and the organizations, individuals, and issues that have made up the movement. Put differently, one could say that these researchers have studied consumerism extensively on both a macro and micro level.

This paper contains a brief review of the research that has been done on consumerism during the last two decades. The review is not designed to provide exhaustive coverage of past research studies, but, instead, to point out areas where research has been lacking or where new research opportunities have recently emerged. Actually, the paper refers to only a small number of past research studies--three of which are the studies that were presented immediately prior to the delivery of this "discussant's" paper. The review is organized to cover research seeking to (1) describe and explain consumerism (on both a macro and micro level), (2) predict the movement's future (on both levels), and (3) control aspects of the movement (on both levels).

Describing and Explaining Consumerism

Much effort has been devoted toward describing what consumerism is and toward explaining why the movement emerged and developed the way it did. Numerous writers have offered descriptions of the legislative debates, the legal battles, the boycotts and demonstrations, and the fund-raising techniques that have characterized the consumer movement (see, for example, Clark, 1980; Greysen, 1973; Handler, 1978; Herrmann, 1974; Kotler, 1972). These writers have offered an assortment of explanations for the rise and sustained vitality of 1960's-70's consumerism, placing importance on factors such as the increase of material wealth of the American public, the depersonalization of shopping, the support of prominent political figures, the skills and charisma of Ralph Nader, and so forth.

The empirical work directed at describing and explaining consumerism has tended to be very limited in its focus. Most of the empirical research has sought to either (1) describe the characteristics of consumers who hold "consumerist" attitudes or who report being "dissatisfied" or (2) explain what has caused consumers to develop "consumerist" attitudes or to become "dissatisfied." One could say that this research has tended to look at consumerism on a more micro level, being concerned with understanding more about the individual attitudes and opinions that provide some basic underlying support for the consumer movement. More macro-level empirical studies, examining how the strength

and vitality of the overall movement has been affected by consumer attitudes and opinions versus factors such as those mentioned in the previous paragraph, have not been done. Furthermore, only limited effort has been devoted toward other types of micro-level studies, such as investigations of individual consumer groups, their supporters and clients, and the reasons why people choose to become supporters or clients.

Thus, what is available is a large assortment of studies on "consumerist" attitudes and opinions, and the three studies reported upon prior to the delivery of this paper all contribute nicely to this body of literature. Through the guidance of all this literature, much is now known about who favors consumer protection legislation (Sentry, 1977), who likes Ralph Nader (Barksdale and Perreault, 1980), who thinks business cares about consumers and charges reasonable prices (Darden, Stanley, and Howell, 1982), who feels dissatisfied (Warland, Herrmann, and Willits, 1972), and why dissatisfaction develops (Deshpande and Krishnan, 1982; Richins, 1982). In addition, it is now known that much of what consumers think and feel about consumerism has remained reasonably stable over the last decade or so (for a review of relevant studies see Bloom and Greysen, 1981). What past empirical research cannot reveal, however, is why--in spite of relatively stable and favorable thoughts and feelings about consumerism across many different types of consumers--the consumer movement as a whole has had relatively dramatic ups and downs? Clearly, some new and different forms of empirical research will be required to address this question.

While the previous research on attitudes and opinions has been helpful--by showing that an important element for the vitality of a social movement, mass public discontent, has been present--it has not been enough. Sociologists who have analyzed social movements have come to recognize that to understand a social movement, it is necessary to look beyond data on discontent toward information about the resource mobilization abilities of the organizations making up the movement. In fact, a "resource mobilization" approach has essentially replaced a "discontent" approach as the dominant paradigm in the sociology literature for analyzing social movements (Zald and McCarthy, 1979; Jenkins and Perrow, 1977).

Thus empirical research on a more micro-level that would be consistent with the "resource mobilization" approach might examine things such as: (1) the changes over time of funding and memberships for various consumer organizations, (2) the reasons why individuals contribute to and join consumer organizations--something which Richins (1982) has, to a degree, addressed in her work, and (3) the amount of assistance and political support given to consumer organizations by certain labor unions, legislators, celebrities, and others. Such research is needed to begin to understand how individual consumerist attitudes get converted into group consumerist behaviors and a national consumer movement.

There is also a need for some more macro-level empirical research that would examine how certain global indicators of the movement's health (e.g., legislative victories, lawsuits won, information programs commenced) are related to variables such as the inflation rate, per capita income, GNP, and public attitudes. It might also prove interesting to conduct a more macro-level study on the consumer

movement similar to one that was conducted recently on the farm workers movement (Jenkins and Perrow, 1977). In this study, abstracts from the New York Times Annual Index were content analyzed to identify major events and activities that occurred between the late 1940's and early 1970's that were related to the farm workers movement. Statistical analyses of the relationships between various measures developed in the content analysis provided support for the notion that the farm labor movement was most successful (in achieving its own objectives) when numerous supportive actions and activities were undertaken by groups and individuals who were not formally part of the movement. The results were interpreted as supplying support for the idea that discontent--which remained strong among farm workers throughout the studied period--cannot, by itself, determine the strength (or weakness) of a social movement; that a movement's strength is determined to a great extent by its ability to mobilize resources and support from all sectors of society (Jenkins and Perrow, 1977).

Predicting Consumerism's Future

Nothing helps one make a good prediction like a good explanation. But, as has just been lamented, good, empirically tested explanations of consumerism have not appeared. In spite of this lack of guidance for making predictions--or perhaps, because of it--writers have not been shy about forecasting the future of the movement. Marketing scholars (including this writer--see Bloom and Stern, 1978; Bloom and Greyser, 1981), economists (Herrmann and Warland, 1980), futurists (Molitor, 1981), and consumer advocates themselves have spoken out freely and frequently about consumerism's future. The predictions that have been made have generally been based on personal observations, discussions with consumer advocates, and intuition, without much rigorous theoretical thinking or empirical analysis to back them up. About as rigorous as the predictions have gotten is the work of Graham Molitor (1981), who uses futurist curve-plotting techniques to forecast the strength of the movement and its most prominent issues. Unfortunately, (and understandably) Molitor--who is now a private consultant--has not laid out the details of his forecasting methodology for review by others.

In the view of this author, the best available approach for predicting the future of consumerism, given the lack of tested theoretical explanations of the movement, involves two elements:

1. Studying the trends in consumer attitudes and opinions (or discontent);
2. Examining the potential resource mobilization skills of the individual organizations making up the movement.

Such a two-pronged approach to prediction would be consistent with the resource mobilization literature cited earlier. It would involve both careful review of public opinion polls that have been conducted over a period of years and critical evaluation of, in a sense, how well various consumer organizations market themselves.

This author recently finished working on a forecasting project that employed such an approach and arrived at the following conclusions (see Bloom and Greyser, 1981):

1. Public discontent with certain features of the marketplace, and a consequent desire for consumer protection initiatives in areas like product safety and health care, have not diminished in recent years (public contentment with government has diminished). This suggests that a constituency for consumer organizations should remain available for at least the near future.
2. National consumer organizations have been experiencing funding difficulties and should continue to face them unless they can determine a way to overcome the "free rider" problem (Olson, 1965). This is a problem that

emerges because people have little incentive to contribute to a collective action if they can get the benefits of the collective action without contributing in any way.

3. State and local consumer organizations should have a brighter future because they often deal with the "free rider" problem more effectively. These organizations can provide people with "selective benefits" such as consumer education materials and redress assistance in exchange for their contribution to collective actions.
4. The organizations that position themselves to take advantage of certain societal trends should be the most successful and will probably be at the forefront of the movement. Trends will probably favor groups that deal with, for example, the problems of the elderly and the consumer difficulties produced by the new communications technologies.

Additional research is clearly required to refine and find further support for these predictions. Of particular help would be research that explores dimensions of the "free rider" problem, seeking to understand how consumers are likely to react to calls for collective action in the future. This is another way of saying what was said in the previous section about the need for more micro-level research on the supporters and clients of consumer organizations.

Controlling Consumerism

There are certainly individuals who would like to be able to exert some control over the evolution of the overall consumer movement. Some members of the business community would probably like to steer consumerism toward a quick death, while certain consumer advocates would like to steer consumerism toward a position of much greater importance in American politics. On a more micro-level, a desire to be able to exert control over the fortunes of individual consumer organizations clearly exists among many consumer advocates.

Research that could help these various people in their control efforts has been very limited. Of course, research seeking to explain consumerism could indirectly help them and, perhaps, has helped them by suggesting causes of discontent and activism that they might try to eliminate or exacerbate (depending on what they were trying to accomplish). But more direct assistance to control efforts can probably be attained by various forms of evaluation research. Studies that could tell something about how well certain control efforts have actually "worked" would be most useful. Thus, much could be learned from evaluations of lobbying efforts--such as Schwartz's (1979) study of the business lobbying effort against the proposed consumer protection agency--or of programs initiated by various organizations to attract members, educate consumers, or handle redress problems. An example of this last type of evaluation can be found in the TARP, Inc. (1979) study of complaint-handling procedures in various public and private organizations. It should be recognized, however, that evaluation research of consumer programs can be extremely difficult and frustrating (see Bloom and Ford, 1979).

Conclusion

Volumes have been written on the subject of consumerism, but only a relatively small portion of this writing has contained reports on empirical research. The focus of the empirical work in this area has thus far been on understanding the nature and determinants of consumer discontent. A broader understanding of consumerism could be obtained through more research on consumer organizations, their supporters and clients, and the performance of their programs and initiatives.

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THE EYE OF THE BEHOLDER: INDIVIDUAL DIFFERENCES IN PERCEPTIONS OF CONSUMPTION SYMBOLISM

Russell Belk, University of Utah
Robert Mayer, University of Utah
Kenneth Bahn (student), University of Utah

Abstract

Using paired pictures of three houses and four automobiles, responses were elicited which measured impressions of the owners of each object. Comparisons of response patterns between college students and older adults, males and females, and high and low social class subjects showed substantial differences in impression formation between these groups. These individual differences are interpreted in light of theories of social status and gender roles.

Introduction

As demonstrated in a recent review paper (Holman, 1981), there is ample evidence that people both attempt and succeed in communicating information about themselves via their visible consumption choices. A person's choices of clothing, automobiles, homes, furnishings, and leisure activities are often rich in implied and inferred messages about the consumer making these choices. A substantial stream of research covers how consumers communicate their self-concept through their consumption selections, that is, encode messages to others. Much less is known about the subject of this paper--the determinants of how people decode messages conveyed by others' visible consumption.

Most of the research on the decoding of consumption cues focuses on the effect of particular types of cues. Some of this research has documented the sizable extent to which isolated consumption cues influence our impressions of others (Buckley and Roach, 1974; Calder and Burnkrant, 1977; Gibbins, 1969; Hamid, 1968, 1969, 1972; Haire, 1950; McKeachie, 1952; Thornton, 1944; Werbel and Bahn, 1980; Woodside, 1972). The most recent research focuses on the impact on impression formation of altering part of the total configuration of consumption cues which may be visible in meeting another person (Belk, 1980, 1981; Gibbins and Schneider, 1980; Holman, 1980). However, relatively little research on decoding consumption symbolism has considered the extent of individual differences in the way we perceive others based on their consumption choices. The present research is part of a broad attempt to understand the influence of perceiver characteristics on the decoding of consumption cues.

The entire research project investigates the difference in the impressions formed by perceivers differing in age (from preschool children to middle-aged adults), gender, and social class. The emergence of impression formation among young children will be the main focus of later research. The portion of the research presented here, however, examines differences between college students and older adults in their perceptions of the owners of the same set of houses and automobiles. It was hypothesized that this difference in age and experience would result in different inferences about the product owners. There is little prior research to support this contention, but Cunningham, Anderson, and Murphy (1974) found that status consciousness tends to increase with age. This finding may mean that older perceivers are more willing or able to make such inferences about others. There is also some evidence that as age increases perceivers tend to make fewer object attributions (e.g. he selected that shirt because it is a nice shirt) and more person attributions (e.g. he selected that shirt because he is conservative) (Ruble, et al., 1979).

Within the college student and older adult groups, comparisons are also made between the response of male and female perceivers. It was hypothesized that males and females would differ in the impressions they formed of the automobile and house owners. This hypothesis is supported by several prior studies (Allison et al., 1980; Belk, 1978; Golden, Allison, and Clee, 1978; Hamid, 1969) and is derived from the expectation that experience in enacting differing gender roles may direct attention to different consumption objects and to different attributes of these consumption objects when males and females make consumption-based inferences about, in this case, a male consumer. Aside from specific differences in the nature of person perceptions by males and females, there is also some evidence that females are generally more sensitive to consumption cues and other personal cues than are males. (Belk, 1978; Hall, 1978; Hamid, 1969).

The final individual difference characteristic examined in the present study is social class. Given the difficulty of assigning college students to social strata, social class effects are examined only within the older adult sample. The expectation here was that higher and lower social class respondents would make different inferences about traits of the product owners. Some support for this hypothesis was found in a study by Sommers (1964) in which high and low social class individuals differed in the extent to which they felt various products described themselves and described members of another social stratum. Similar findings have been reported by Munson and Spivey (1981) for at least some of the product categories and brands they investigated. In many respects their findings support the observations of Veblen (1899) concerning product-based communication within and between social classes.

Choice of Consumption Objects

There were several reasons for choosing automobiles and houses as the consumption objects for study. First, these items are commonly observed and easily recognized by young children as well as adults (Cobb, 1954; Estvan and Estvan, 1959; Riesman and Roseborough, 1955). Second, both cars and houses can normally be seen without also seeing their owners. Thus, these products could be presented alone as stimuli without having to worry about any unintended manipulations based on the product user shown. Third, owners of different kinds of automobiles and houses do in fact vary substantially in their demographic characteristics (Ferber, 1962; Katona, 1964; Porter, 1966)--even though the United States is relatively egalitarian in terms of whether people own a car or house at all (Lebergott, 1975).

Fourth, consumers regard cars and houses as expressive of themselves. Even though the classic study by Evans (1959) was unable to detect personality differences between owners of Fords and Chevrolets, subsequent studies have found strong relationships between self-concept and automobile preferences (Birdwell, 1968; Green, Maheshwari, and Rao, 1969; Grubb and Hupp, 1968; Grubb and Stern, 1971; Jacobson and Kossoff, 1963; Ross, 1971). Consumers also appear to encode messages about themselves through their housing choices (Cooper, 1974).

Finally, and most importantly, automobiles and houses are commonly perceived as consumption objects subject to different choices by different types of people. That is, people attribute unique characteristics to the owners of

different types of cars and houses. Despite the fact that as much as one-fourth of a sample obtained by Felson (1978) claimed to be unable to rate the prestigiousness of American cars such as Ford Torino and Plymouth Fury, studies employing a more diverse set of foreign and domestic cars have had more success (King and King, 1980a, 1980b; Munson and Spivey, 1981). Even Ford and Chevrolet owners have been distinctly profiled using a forced choice adjective check list (Wells, et al., 1957). And when factors such as number, age, and condition of automobiles are added to a consideration of make and model, the ability to draw inferences about social status is further enhanced (Rainwater, 1974). Automobiles differing in make and country of manufacture have also been found to be perceptually matchable with different owner occupation types (Green and Wind, 1973, chapter 7). Further, automobiles differing in age, condition, and make have been found to receive different degrees of hostile (horn-honking) responses when presumably stalled at a stop light (Doob and Gross, 1968). Similarly, the ascription of social status to others has been found to vary with size, location, condition, and cost of their housing (Rainwater, 1974; Coleman and Rainwater, 1978), although Felson (1978) found that suburb alone was only a moderately useful cue in rating status of home owners in Chicago. And the style of a residence also affects personality inferences (Cooper, 1974; Vershure, Magel, and Sadalla, 1978).

In fact, automobiles and houses have precisely those product characteristics that maximize the likelihood that consumer choices in that product class will be used as cues to owners' personalities and social strata. Belk (1980) found that product classes viewed as offering more variety, more unique choices, more visible consumption, greater cost, and more thoughtful selection are more likely to be used as salient cues in making consumption-based inferences about the social class and personality of another consumer.

Method

Manipulations

In selecting the particular automobiles and houses as stimuli for eliciting perceptions of consumption symbolism, it was reasoned that the stimuli should be within the subjects' average range of experience and have potentially distinct consumer images associated with them. While no systematic knowledge exists about which specific attributes of houses and automobiles most powerfully elicit inferences about their owners, the literature cited above suggests that age, size, style, and cost (present value rather than initial purchase price) are attributes likely to lead to differences in images attributed to product owners. Inasmuch as possible, other object attributes were to be held constant (e.g., make of car).

Pairs of color photographs were used to present the stimuli to the subjects. The paired comparison format was chosen for two reasons: (1) to provide a task simple enough for preschool children as well as adults, and (2) to isolate the product characteristics that serve as the potential bases for inferences about the owner. Because age and cost tend to covary for automobiles, three rather than four paired comparisons were used. Similarly, size and cost in addition to style and age covary for houses, necessitating only two paired comparisons. This reduction in the pairs of photographs to be shown also substantially shortened the time necessary to complete the task (an especially important consideration with respect to the preschool children used in another phase of the research).

The automobiles ultimately selected were:

1. a blue 1981 Chevrolet Chevette two-door sedan;
2. a blue 1981 Chevrolet Caprice two-door coupe;
3. a blue 1981 Chevrolet Camaro two-door coupe; and
4. a blue 1971 Chevrolet Camaro two-door coupe.

All four cars were photographed in the same or similar settings with the same camera, lense, and distance. All had whitewall tires, were facing left, and were nearly identical in their shade of blue paint.

In order to provide a task which could be accomplished by pre-school children as well as adults and in order to isolate the variables manipulated, automobiles were presented in a paired comparison format. The first pair involved the first and second cars which varied in size and cost (this compounding was unavoidable within a single make of automobile). The second pair involved the second and third cars which varied in style with the Camaro intended to be sportier. And the third pair involved the third and fourth cars which varied in age and cost. Each of these manipulations were tested among a subsample of the respondents. These manipulation checks are examined in the results section.

Three house photographs were selected with similar objectives and constraints:

1. a large white Bauhaus style two-story contemporary house;
2. a large white Colonial style two-story traditional house; and
3. a small white Colonial style two-story traditional house.

Comparisons of the first and second houses involved contrasts of style and age. Size and cost were varied by comparing the second and third houses. To the extent possible, landscaping, lighting, perspective, and surroundings were either held constant or eliminated from the photographs. These intended and unintended manipulations were also tested among a subsample of the respondents.

Samples

The student sample was drawn from three liberal arts and two business undergraduate classes at the University of Utah. A total of 170 subjects from these classes were shown slides of the five pairs of stimuli presented in different orders in each class. A subset of 76 subjects subsequently saw the slides one at a time and rated them on manipulation check scales. Although the ratio of males to females in the total sample is approximately equal, classifactory data were only obtained from 73 students and these subjects (39 female and 34 male) are used to test the gender hypothesis for the student sample.

The sample of non-college adults was a convenience sample of 62 people drawn from the metropolitan area of Salt Lake City, Utah. Student interviewers recruited the sample subject to the restrictions that the respondents be 30 years of age or older and not be currently enrolled in college. These respondents were presented with the same pairs of stimuli rendered in black and white photographic reproductions in a self-administered questionnaire booklet. This adult sample consists of 23 males and 39 females. Social classes among this group were estimated using the Hollingshead and Redlich (1958) two-factor index. The sample was split at the median (32.5) on this index (mean score=34.2 on an ascending social status scale ranging from 11 to 77), yielding 27 people in the lower status group and 28 in the higher status group. These groups were used to test the social class hypothesis.

Criterion Measures

It was intended that the responses measuring consumption-based impression formation among adults also be measurable among preschool children. Consequently, it was necessary to use a small number of easily understood person characterizations, which could be inserted in the question, "Which of these two cars/houses is most likely to be owned by a man who is ___?" After examining measures used in prior research (little standardization is evident) and conducting small-scale pretests of children's abilities to respond to several types of items, a set of 12 person

attributes was selected. The 12 attributes were intended to represent a variety of possible demographic, personality, emotional, and interpersonal inferences which could be made about other people.

To determine the structure of the criterion set as reflected in respondent perceptions, a matrix was prepared to reveal interdependencies among user attributions. The matrix showed the degree to which two attributions were seen as being appropriate for the same stimulus object in the view of the majority of the respondents. For instance the majority of subjects judged that the same house in a particular stimulus pair belonged to "a doctor" and to "someone who has a lot of money." Since similar congruence was found for all five pairs of stimuli, perfect interdependence existed between these two attributions. Similarly, since the same house or car was never perceived as belonging both to a doctor and to a mailman, perfect interdependence also existed between these two attributions.

The matrix indicated that the 12 attributes could be reduced to four clusters (two of which contain only one attribute):

1. Age
 - A. "Is a grandfather"
2. Sociability
 - A. "Is someone who has a lot of friends"
 - B. "Is someone I would like to meet"
 - C. "Is happy"
3. Successfulness
 - A. "Is a doctor"
 - B. "Is someone who has a lot of money"
 - C. "Is smart"
 - D. "Is a mailman"
 - E. "Is one of the first people to have the newest things"
 - F. "Is bossy"
 - G. "Is lucky to live the way they do"
4. Aspiration
 - A. "Is the kind of person I would like to be"

Within the groups of "sociability" items and "successfulness" items, all pairs of items received five of five possible "same" choices. Furthermore, such a perfect correspondence occurred for none of the other possible pairs of items.

Results

Manipulation Checks

Table 1 shows the mean ratings on several intended and unintended manipulations for the pairs of stimuli which were ultimately compared in the paired judgment task. (Manipulation check measures were obtained on one stimulus object at a time however). Means are shown only for pairs which differed significantly according to correlated means t-tests ($\alpha=.05$). It may be seen that while most of the intended manipulations were successful, for each pair there are other, unintended, differences. For instance, the large contemporary house appeared somewhat larger and appeared to be on a somewhat larger lot than the large traditional house. In this case, the slide was cropped to reduce this difference, but some differences are partially unavoidable given the configurations of existing houses and cars. This was also felt to be acceptable given that the main intent was to provide distinct, natural, and familiar stimuli to which consumers could attribute consumption symbolism. Nevertheless, the ability to clearly infer why a consumption selection creates a particular impression of its user is diminished by the inextricably bound stimulus properties.

College Students Versus Older Adults

Table 2 shows that for 27 out of the 36 attributions made

for the three pairs of houses, the adult and student groups differed in their judgments. The table provides a number of insights into the particular ways in which the attributions of the two groups differ. Yet the most striking difference is the fact that, contrary to expectations, students were more nearly unanimous in their judgments of which automobile or house in a pair was best represented by each of the attributions. This may be seen in Table 3 which shows the average differences between the dominant (i.e. most often selected stimulus in a pair) and non-dominant attributions within each pair of stimuli for the adult subject group and for the student subject group. For each of the five stimulus pairs, the students were significantly more consistent in their portrayal of owners than were the adults. To the extent that this reflects differences in degree of stereotyping rather than simply differences in involvement with the task, it suggests that students rely more heavily on consumption-based stereotypes while adults make less of visible consumption behavior.

TABLE 1
MEAN SCORES* ON MANIPULATION CHECK DIMENSIONS FOR SIGNIFICANTLY** DIFFERENT PAIRED STIMULI

HOUSES	Pair			
	Large Traditional	Large Contemporary	Large Traditional	Small Traditional
Small	2.4	1.8	2.4	3.9
Traditional	4.4	1.2		
Inexpensive	2.7	1.4	2.7	3.9
City Setting				
Large Lot	2.7	3.7	2.7	2.2
Several Story			4.8	2.1

AUTOMOBILES	Pair					
	1981 Camaro	1971 Camaro	1981 Camaro	1981 Caprice	1981 Chevette	1981 Caprice
New	4.6	2.3	4.6	4.8		
Large			2.9	4.5	1.4	4.5
Expensive	3.8	2.7	3.8	4.5	2.7	4.5
Non-sporty	1.9	2.6	1.9	4.0	3.6	4.0
Costly to Operate	3.9	3.7	3.9	4.3	1.5	4.3
Holds Many People	2.6	2.7	2.6	4.2	2.3	4.2
Domestic					3.6	4.8

*5-point scales; higher scores reflect judgments of more of the dimension.

**Via correlated means t-test at $\alpha=.05$; $n=76$.

Apart from the differences in the degrees of consumption-based stereotyping in the two subject groups, there are relatively few disagreements between the two groups concerning which stimulus in a pair goes with a particular attribute of the product owner. Instead there is general agreement that:

1. The man who drives the smaller automobile rather than the larger one is younger, more sociable, but less successful and less the subject of aspiration;
2. The man who drives the less sporty automobile is older, more sociable, more successful and more the subject of aspiration;
3. The man who drives the newer automobile is younger, less sociable, but more successful and more a person whose status is to be aspired to;
4. The man who lives in the newer (more contemporary styled) house is younger, not consistently more sociable, more successful, and more the subject of aspiration; and
5. The man who lives in the larger house is younger, less sociable, more successful, and more likely to inspire aspirations.

TABLE 2
DIFFERENCES IN DOMINANT ATTRIBUTIONS BY ADULT
AND STUDENT SAMPLES*
(NON-DOMINANT RECIPROCAL PERCENTAGES NOT SHOWN)

ATTRIBUTION	PRODUCT CATEGORY AND STIMULUS PAIR								
	Automobiles								
	1. Small--Large		2. Non-Sporty--Sporty		3. New--Old		4.		
A	S**	A	S	A	S	A	S	A	S
1.A. A Grand-father			(74.5)		(96.5)			75	89
2.A. Someone who has a lot of friends***	71	61			71	55			(63.5)
2.B. Someone I would like to meet****	56	16			71	50			53 66
2.C. Happy	(59.5)				(64.0)			56	57
3.A. Doctor			(95.0)		74	89		82	93
3.B. Someone who has a lot of money				89	97		69	87	86 95
3.C. Smart	51			69	91			69	75
3.D. A Mailman	(97.0)			55				66	85 94
3.E. One of the first people to have the newest things			74	82		55	53		88 99
3.F. Bossy*****			67	88		63	63		64 83
3.G. Lucky to live the way they do			(76.0)		69	78			69 76
4.A. The kind of person I would like to be			(62.5)		61	71			61 74

ATTRIBUTION	Houses								
	1. New--		2. Old		3. Large--		4. Small		
	A	S	A	S	A	S	A	S	
1.A. A Grand-father					87	94			76 90
2.A. Someone who has a lot of friends***	55			84					69 54
2.B. Someone I would like to meet****	56	50							(57.0)
2.C. Happy			66	75			74		61
3.A. A Doctor	88	92					82	94	
3.B. Someone who has a lot of money	(93.0)						82	94	
3.C. Smart	73	86					71	91	
3.D. A Mailman			(93.5)						92 69
3.E. One of the first people to have the newest things	88	99					82	92	
3.F. Bossy*****	64	83					(58.0)		
3.G. Lucky to live the way they do	69	76					68	85	
4.A. The kind of person I would like to be	61	74					59	87	

*Where dominant proportions are not significantly different via Z test at alpha=.05, an unweighted average proportion is shown in parentheses. **A=Adult, n=62; S=Student, n=151. ***"Friendly" in adult sample. ****"...to visit" in adult sample. *****"mean" in student sample.

TABLE 3
AVERAGE DIFFERENCES IN PROPORTIONS OF SUBJECTS
MAKING ATTRIBUTIONS TO DOMINANT AND NON-DOMINANT
MEMBERS OF EACH STIMULUS PAIR*

PRODUCT CATEGORY & STIMULUS PAIR	SUBJECT GROUP	
	Adults	Students
Automobiles		
1.Small vs. 2.Large	43.8%	55.5%**
2.Non-sporty vs. 3. Sporty	31.5%	44.1%**
3.New vs. 4.Old	41.2%	63.0%**
Houses		
1.New vs. 2.Old	54.4%	57.7%**
2.Large vs. 3.Small	41.8%	60.2%**

*If 80% of a subject group said that the left member of a stimulus pair "is a grandfather" (and therefore 20% chose the right member of the pair) then there is a 60% difference between the left (dominant) choice and the right (non-dominant) choice for the attribution. The averages are over all 12 of the attribution responses so that higher average percentages reflect more nearly unanimous stereotypes.

**Row percentages differ significantly via Z test with alpha=.0001.

It is apparent that, over subjects and over stimulus pairs, those owners judged to be more successful were also more likely to be the subjects of aspiration. Further, whether the stimuli are cars or houses, newness seems to connote a younger, less sociable, and more successful owner who is more likely to be the object of aspiration. Similarly, for both cars and houses, largeness connotes a person who is less sociable but more successful and more the object of aspiration. In fact, the only instance in which sociability and success are not negatively related is with respect to car style. This anomaly may be attributed to the fact that the adult and student samples showed their least amount of agreement concerning the success dimension of car sportiness.

Males Versus Females

Table 4 presents a summary of the dominant attributions which differed between males and females in one or both of the subject groups. The greater number of attributions which are stronger among males would suggest that the males in these two samples have a greater tendency to have consistent consumption-based stereotypes than do females. Indeed the mean differences between the dominant and non-dominant attributions for males are significantly higher (averaging 53.8%) in the two subject groups than are these mean differences for females (averaging 46.4%). This finding is opposite that of other research (Belk, 1978; Hamid, 1969) which concludes that females are more sensitive to consumption cues. The apparent explanation is that decisions about automobiles and houses are more within the domain of male sex roles (Davis and Rigaux, 1974). In contrast to the present research, the studies just cited focused more strongly on apparel and fashion goods; areas which may be more relevant to female sex roles.

The other notable finding suggested by Table 4 is also subject to a sex role explanation. It may be seen in the

table that males are more likely than females to make strong attributions of success and personal aspiration to those with larger and newer automobiles and houses as well as the less sporty automobile. It has been suggested by others (Davis and Moore, 1945; Simmons and Rosenberg, 1971) that recognition of status differentials is a prerequisite for achievement motivation and career preparation. Furthermore, a series of early studies found greater attention to and interest in status indicators by boys than girls (Jersild, Markey, and Jersild, 1933; Zeligs, 1942; Cobb, 1954). For instance, Cobb (1954) found that junior and senior high school boys expressed wishes for personal achievement and possessions more often than girls, while girls expressed wishes for social and family relationships more often than boys. Emerging changes in sex roles notwithstanding, such findings may explain the tendency of the males in the present study to give more consistent attributions of success and attribution. That is, if males are more likely to pursue a career, attention to status-related consumption differences is more relevant to their success.

TABLE 4
SUMMARY OF ATTRIBUTIONS WHICH DIFFER
SIGNIFICANTLY BETWEEN MALES AND FEMALES

MALES WERE SIGNIFICANTLY* MORE LIKELY THAN FEMALES TO ATTRIBUTE THE LISTED CHARACTERISTICS TO THE OWNERS OF THE:

Large Auto- mobile (vs. Small)	Non-Sporty Automobile (vs.Sporty)	New Auto- mobile (vs. Old)	New House (vs. Old)	Large House (vs. Small)
3A.Doctor (A**)	2A.Lot of friends (A)	2A.Lot of friends (S)	3C.Smart(S)	2C.Happy (S)
3C.Smart (S)	2C.Happy (S)(A)	2C.Happy (S)	3G.Lucky to live the way they do(S)	3A.Doctor (S)(A)
3G.Lucky to live the way they do (S)	3A.Doctor (S)	3A.Doctor (A)	4A.Kind of person I'd like to be (S)	3B.Lot of money (A)
4A.Kind of person I'd like to be (S)	3B.Lot of money (S)	3B.Lot of money (S)	I'd like to be (S)(A)	3C.Lucky to live the way they do (S)
	3C.Smart (S)	3C.Smart (S)		4A.Kind of person I'd like to be (A)
	4A.Kind of person I'd like to be (S)(A)	3F.Bossy (S)		
		3G.Lucky to live the way they do (S)		
		4A.Kind of person I'd like to be (S)(A)		

Small Auto- mobile (vs. Large)	Sporty Auto- mobile (vs. Non-Sporty)	Old Auto- mobile (vs. New)	Old House (vs. New)	Small House (vs. Large)
3C.Smart(A)	3D.Mailman (S)	1A.Grand- father (S)(A)	1A.Grand- father (S)	1A.Grand- father (A)
		2B.Someone I'd like to meet (A)		3D.Mail- man(S) (A)
		3D.Mailman(A)		

FEMALES WERE SIGNIFICANTLY* MORE LIKELY THAN MALES TO ATTRIBUTE LISTED CHARACTERISTICS TO OWNERS OF THE:

Large Auto- mobile (vs. Small)	Non-Sporty Automobile (vs.Sporty)	New Auto- mobile (vs. Old)	New House (vs.Old)	Large House (vs. Small)
3E.Innova- tor (S**)	3B.Lot of Money(A)		3F.Bossy (S)(A)	

Large Auto- Non-Sporty New Auto- Large
mobile (vs. Automobile mobile (vs. New House House (vs.
Small) (vs.Sporty) Old) (vs.Old) Small)

3G.Lucky to
live the
way they
do(A)

Small Auto- Sporty Auto-Old Auto- Small
mobile (vs. mobile (vs. mobile (vs. Old House House (vs.
Large) Non-Sporty) New) (vs.New) Large)

2A.Lot of
friends
(S)
2B.Someone
I'd like
to meet
(S)

2A.Lot of
friends
(S)
2C.Happy(S)

*via Z test at alpha=.05

** (S)=student group, n=78; (A)=adult group, n=57

Lower Social Class Subjects Versus Higher Social Class
Subjects

Table 5 summarizes the dominant attributions which differed between the lower and higher social class subjects in the adult sample. While the overall tendency to draw consumption-based inferences is similar for lower and higher social class subjects, other specific differences in attributions exist. Considering the size and age manipulations it appears that both groups see the owners of larger and newer houses and automobiles to be more successful. But while lower social class subjects see these persons as "lucky", higher social class persons see them as the type of person they would "like to be". That is, lower social class persons seem to be more fatalistic and believe in external control of their lives while higher social class persons appear to believe that they have personal control over their lives (Herzog, 1963; Lewis, 1966). This same theme may be reflected in the finding that lower class subjects tend to make sociability attributions to the non-sporty automobile owner while higher social class subjects tend to make attributions of success to this owner.

TABLE 5
SUMMARY OF ATTRIBUTIONS WHICH DIFFER
SIGNIFICANTLY FOR LOWER AND HIGHER
SOCIAL CLASS SUBJECTS

LOWER SOCIAL CLASS SUBJECTS* ARE SIGNIFICANTLY** MORE LIKELY THAN HIGHER SOCIAL CLASS SUBJECTS TO ATTRIBUTE THE LISTED CHARACTERISTICS TO THE OWNERS OF THE:

Large Auto- mobile (vs. Small)	Non-Sporty Automobile (vs.Sporty)	New Auto- mobile (vs. Old)	New House (vs.Old)	Large House (vs.Small)
	2A.Lot of Friends	3E.Innovator	3G.Lucky to	3C.Smart
	2B.Someone I'd like to meet	3G.Lucky to live the way they do	to live the way they do	3G.Lucky to live the way they do
	2C.Happy			
	4A.Kind of person I'd like to be			

TABLE 5 (CONTINUED)

Small Auto- mobile (vs. Large)	Sporty Auto- mobile (vs. Non-Sporty)	Old Auto- mobile (vs. New)	Old House (vs. New)	Small House (vs. Large)
--------------------------------------	--	----------------------------------	------------------------	----------------------------

3E. Innova-
tor
2B. Some-
one I'd
like to
meet
2C. Happy
3D. Mailman

HIGHER SOCIAL CLASS SUBJECTS* ARE SIGNIFICANTLY** MORE LIKELY THAN LOWER SOCIAL CLASS SUBJECTS TO ATTRIBUTE THE LISTED CHARACTERISTICS TO THE OWNERS OF THE:

Large Auto- Small	Non-Sporty Automobile (vs. Sporty)	New Auto- mobile (vs. Old)	New House (vs. Old)	Large House (vs. Small)
----------------------	--	----------------------------------	------------------------	----------------------------

3A. Doctor 3B. lot of money	3A. Doctor 3B. Lot of money	4A. Kind of person I'd like to be	2B. Some- one I'd like to meet	4A. Kind of person I'd like to be
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Small Auto- mobile (vs. Large)	Sporty Auto- mobile (vs. Non-Sporty)	Old Auto- mobile (vs. New)	Old House (vs. New)	Small House (vs. Large)
--------------------------------------	--	----------------------------------	------------------------	----------------------------

1A. Grand-
father
1A. Grand-
father

*Lower social class scored less than 32.5 on Hollingshead and Redlich (1958) Index, n=27 (adult sample); Higher social class scored 32.5 or greater on this index, n=28 (adult sample).

**via Z test at alpha=.05

Conclusions

The data reviewed here clearly indicate that individual differences exist in the nature and extent of consumption-based person impressions formed by various observers. For the (distinctive and visible) automobile and housing consumption cues studied, college student subjects draw more distinct inferences than older subjects, and males draw more distinct inferences than females. These findings may indicate that the perceptions grow more complex as we age and that we pay more attention to products for which our gender is seen to more responsible.

It was also found that while college students and older subjects agree that newer and bigger cars and houses connote greater success and are more likely to inspire aspirations to own them, males make these inferences more readily than females. This was suggested to be due to gender roles, coupled with the hypothesized necessity to perceive status differentials in order to perceive career success incentives.

Finally, while social class groups were equally sensitive to consumption symbolism, lower social classes appeared to see luck as allowing the purchase of status symbols while higher social classes appeared to see self-motivation as being responsible. There was also some evidence that higher social class subjects may view automobiles more as symbols of success while lower social class subjects see them more as social facilitators.

The findings reported here should certainly be explored in

larger, more systematically drawn samples. Future research should also investigate additional product classes. Even this, though, will only yield a static picture of the person attributions that are inferred from consumption choices. The authors hope to provide a more dynamic perspective by directing their future attention to the emergence of these attributions among children and examining how perceiver factors such as age, gender, social class and race affect this developmental process.

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IS A GIFT ALWAYS A GIFT?
AN INVESTIGATION OF FLOWER PURCHASING BEHAVIOR ACROSS SITUATIONS

Debra L. Scammon, University of Utah
Roy T. Shaw, University of Utah
Gary Bamossy (student), University of Utah

Abstract

The reasons for the purchase of flowers, an item frequently purchased as a gift, are analyzed by grouping reasons into personal uses, obligatory events and gift occasions. Discriminant analyses of purchaser and purchasing variables demonstrate some significant differences between these groups. The results suggest that finer discrimination of gift occasions into those considered to be obligatory and those considered voluntary might be worthwhile.

Introduction

Gift-giving presents a special situation within the general realm of consumer behavior which has only recently caught the attention of marketing/consumer researchers. Conceptualizations of gift-giving behavior have focused on the dimensions of gift-giving (e.g., givers, gifts, recipients, and gift-giving occasions) and the functions of gift-giving (e.g., communication, social exchange, economic exchange, and socialization) (Belk, 1979). Studies have examined the occasions of gift-giving and have described the frequency of gift-giving for various occasions as well as the types of gifts selected and the prices paid (Ryan, 1977; Belk, 1977).

Research investigating the effects of situations on purchasing behavior suggests that shopping for a gift involves different behaviors than does shopping for a purchase for personal use. For example, Gronhaug (1972) found that consumers utilized different types and sources of information depending on whether the purchase was for personal use or for a gift. Ryan (1977) found gift shoppers more likely than those buying for personal use to have a target price range in mind for the purchase.

The cut flower market seems to be facing a predicament shared by many specialty markets. Flowers are frequently (traditionally) purchased as gifts yet they account for only a small percentage of gift purchases. With economic pressures, as well as declining numbers of consumers among the ranks of flower purchasers (Flower News, 1979), the industry is faced with a decision of whether to encourage the purchase of flowers for non-gift-giving (that is, for personal use), to attempt to expand the number of occasions for which flowers are considered an appropriate gift, or whether both strategies for market expansion might be pursued simultaneously. This paper takes a preliminary look at the cut flower market and attempts to increase understanding of personal and gift purchases of flowers. It examines various gift-giving occasions in an attempt to understand differences among occasions for which flowers are chosen as gifts. The paper thus focuses on the purchases of one product across different situations, specifically attempting to discover whether there are differences between purchasers and their purchasing behaviors across "gift-giving" situations.

Theoretical Background

In an early study, Belk reported a wide array of gift-giving occasions (1977). Intuitively, it seems there should be a relationship between the occasion for giving and the function of the gift, or the act of giving performs.

Research has identified four primary functions of gift-giving; (1) communication; (2) social exchange; (3) economic exchange; and (4) socialization. The first three functions are discussed below.

As is the case with any form of communication, the message does not have meaning except as it is interpreted by the sender and/or the receiver. In the context of gift-giving, the giver runs the risk of the gift being misinterpreted. It is important that the giver choose the "right" gift to convey the desired message to the recipient. Mauss concluded from his studies of archaic societies that gifts are often a means of showing honor and respect for the recipient (Mauss, 1954). However, a gift provides other means of communication as well. The recipient of a gift can display the gift conspicuously to communicate to others how important someone finds them (Levi-Strauss, 1965). The giver also can communicate something about himself/herself (Schwartz, 1967) through the choice of a gift. Belk (1979) points out that the message which a gift communicates about the giver may be either an attempt to demonstrate a particular self-trait or an attempt to obtain consensual validation of personal tastes and traits. Gifts which are visibly or conspicuously consumed provide the greatest opportunities for communication (of all three kinds) but are risky in that their meaning may be misperceived by recipient as well as observers. Thus, most gifts chosen as a means of communication are likely to be those that are considered traditionally acceptable or "safe."

Gifts also perform the function of facilitating social exchange. Important in this function are the occasions for which gifts are given as well as the nature of the gift item chosen. In many instances gift-giving appears to be ceremonial, serving as a symbol of social support in various rites of passage from one life stage to another (for example, weddings, graduations, funerals). Gifts may be presented in situations where a "social debt" has been incurred. In such cases, the gift demonstrates a gesture of gratitude. For example, in some societies it is customary to present a dinner hostess with a bottle of wine or a bouquet of flowers as a token of appreciation for the invitation. Theories of social interaction such as Homan's (1961) "distributive justice theory" and Adam's (1963) "equity theory" lend support to findings that suggest there are acceptable price ranges for gifts and that the appropriateness of an item as a gift depends on its perceived intimacy (Sherif and Sherif, 1963). The frequent occurrence of "rites of passage" events, for example, appears to make more expensive gifts acceptable for such occasions. A prior history of gift-giving between two persons may make a more intimate gift appropriate. The idea of economic exchange is explained by Mauss (1954) who describes gift-giving as a series of obligatory reciprocal exchanges, that is, certain occasions have become institutionalized as appropriate for exchanging gifts. Others suggest the norm of fair exchange prompts evaluation by the giver of what he/she last received from another person before selecting a gift (Belshaw, 1965). Similarly, research by Ryan (1977) reports those buying items as gifts were more likely to begin shopping with a pre-specified price range than were those buying for personal use.

These three functions of gift-giving taken together suggest that purchasers and their purchasing behavior may well differ across gift-giving occasions. This research examines

two different types of gift-giving occasions, as well as personal use, as three different purchasing situations. It focuses on the cut flower market which historically has been substantially an "occasion" market (gifts) but which has exhibited an increasing trend toward becoming a "personal use" market as well (Flower News 1979).

The Cut Flower Market

Some background on the cut flower market will help to emphasize the fact that the industry is facing a dilemma. Although few items other than clothing and jewelry account for a very large share of gift purchases (25% and 11% respectively), cut flowers were selected as gifts for only slightly over 2% of the gifts reported by Belk (1977). The cut flower market has not shown any real growth in the last couple of years. A study conducted by the American Florists Marketing Council (AFMC) in 1979 suggested that the market has changed with fewer people buying flowers in 1979 than in 1973 when a similar study was conducted. The people who are buying flowers are doing so more frequently, however. In the AFMC national consumer survey, 46% of those who purchased flowers made six or more purchases with an average number of purchases of 7.4 (Flower News, 1979). An interesting dynamic revealed by the AFMC study is that those who buy flowers more often do so for non-occasions (personal use). The study reports that the light users, however, rarely purchase flowers for themselves but instead buy flowers for friends or relatives for special occasions. Industry experts say many of these purchases are for what they call "new occasions" (to the cut flower industry) such as birthdays and anniversaries in addition to remembrances for more "traditional" events for flowers such as funerals (Florist, 1979).

Industry reports suggest there are at least two different situations for which consumers buy flowers: for their own personal use and enjoyment, and as gifts for friends or relatives on special occasions. Further, there seem to be some important differences among the occasions for which flowers are chosen as gifts. This study investigates these different segments of the flower market by examining purchaser characteristics and purchasing behavior patterns for different purchase occasions.

Method

Data for this study were obtained from two sources. Customer lists from six retail florists in a large western city provided 155 names of past customers. After systematic follow-up of two call-backs, 107 usable questionnaires were completed, for a response rate of 69%. The same questionnaire was used in mall-intercept interviews conducted in four different shopping malls in the same city. 194 usable questionnaires were obtained through this latter method, giving a final data set including responses from 301 persons. Respondents provided information about their past and intended future purchases of flowers. They also responded to questions using a 5-point Likert-type scale about their attitudes toward flower purchases in general. Demographic and socio-economic data on respondents were also obtained.

The dependent variable of interest was reason for purchase. Respondents were examined according to their past reasons for purchasing flowers. Reasons for purchase were grouped together according to those primarily for personal use, those representing what might be called obligatory events due to the social and/or economic exchange nature of the event, and those representing "no strings attached" gift occasions. The Grouping of reasons for purchase and the distribution of purchases across these reasons are

presented in Table 1.¹

TABLE 1
FREQUENCY OF PURCHASE OCCASIONS

Purchase Occasion	Number of Responses ¹	Percentage of Responses
Group I: Personal Use		
Personal Home or Office Use	41	8.6
"Just Because"	16	3.4
"Other Special Day"	19	4.0
"Other"	48	10.1
Group II: Obligatory Event		
For a Patient in a Hospital	85	17.9
For a Dance or Party	21	4.4
For a Dinner Hostess	16	3.4
For a Funeral	82	17.3
For a Wedding	16	3.4
Group III: Gift Occasion		
Gift for an Anniversary	19	4.0
Gift for a Birthday	44	9.3
Gift for Mother's Day	41	8.1
Gift for Easter	16	3.4
Gift for St. Valentine's Day	10	2.1
TOTAL RESPONSES	474	100%

¹Since respondents could have included multiple reasons for purchases, the number of total responses exceeds the number of respondents (n=230 purchasers).

Based on evidence from research on personal versus gift purchasing in general, and specifically for the cut flower industry, it was hypothesized that those who purchased primarily for personal use would pay less, shop at conveniently located, minimum service stores, and be more likely to buy on impulse than those purchasing for non-personal reasons.

The research on gift-giving suggests that "a gift is not always a gift." The basis for classifying non-personal reasons into either "obligatory events" or "gift occasions" were derived from literature on the functions that gifts and gift-giving play in society. Obligatory events were felt to involve both communication of feelings for the recipient, such as respect, sympathy, and support, as well as notions of fair social/economic exchange such as appreciation, gratitude, etc. Purchases made to fulfill social obligations were expected to be more likely to be made in a manner to minimize shopping/purchasing effort for the giver yet, at the same time, item selection would involve consideration of the message conveyed to the recipient and observers. Thus, it was hypothesized that purchases made for obligatory events would be planned, ordered by phone, paid for by charge account, delivered to the recipient, and purchased at a well-known florist shop which provides extras (e.g., wrapping, gift card, artistic design of floral pieces).

In contrast, those reasons grouped together as "gift occasions" were felt to represent situations in which the notion of fair exchange played only a minimal role, but rather a gift was given primarily as a means of communica-

¹Each respondent provided information for all purchases made during the preceding year. There were 71 non-purchasers. Ninety-two purchased for one reason, 66 for two reasons, 38 for three reasons, 18 for four reasons, and 16 for more than four reasons. Cases with multiple reasons which caused an overlap for group assignment were handled in the following manner: The first tie-breaker was frequency of purchase by reason. A case with two "personal purchase" and one "occasion purchase" would be assigned to the personal group. If a case could still not be assigned after checking frequency, the reason associated with the higher price range was used to assign the case.

tion, either to or about the recipient or about the giver. Since the gift item plays an important role in such situations, it was hypothesized that these purchases would be higher priced, paid for in cash as opposed to charged, picked out in person and delivered personally.

A second expectation was derived from the fact that most gift occasions can be anticipated, e.g., a spouse's upcoming birthday. Thus, the giver may spend a good deal of time thinking about the appropriate gift for the pending occasion. With the occasion in the back of the mind, the giver may happen to see an item which "strikes him/her right" and make what appears to be an impulsive gift selection. That is, the purchase is planned but the item selection is based on impulse. Thus, it was hypothesized that impulse buying would be more likely for purchases for "gift occasions" than for "obligatory events."

Finally, it was hypothesized that the purchasers of flowers for these three groups of reasons would differ on demographics and attitudes toward flowers. Industry trends suggest that personal purchase of flowers is on the increase, primarily with younger, professional people (Flower News, 1979). These people enjoy purchasing for themselves as a reward or a "pick up." Since the study involves purchases of only one product category, flowers, it is expected that respondents' attitudes toward flowers will also influence their purchase behaviors and intentions.

Two discriminant analyses were performed with three groups identified by the categories of reasons for purchase-- Group I, personal uses; Group II, obligatory events; Group III, gift occasions. One analysis used purchaser characteristics (e.g., attitudes and demographics) as the predictor variables and the other used purchasing behaviors (e.g., price paid, store where purchased, method of payment, intended purchases) as the predictor variables. The results of these two analyses are reported separately below and treated together in the discussion section.

Results

Several internal data checks were carried out prior to performing the primary analyses presented in this paper. Because data for this study were obtained from two sources, several tests were performed to determine whether the aggregation of data from respondents whose names were obtained from the customer lists of six local florists and respondents contacted in mall intercept interviews conducted at four shopping malls, could bias the results of the study. A priori, it was expected there would be differences in purchasing behaviors between respondents from the two data sources since respondents obtained from the customer lists of florists were generally frequent purchasers who took advantage of the opportunity to purchase on credit offered by the shops.

Upon examination of the entire sample, the demographic profiles of the respondents obtained from customer lists and shopping malls proved to be very similar. Chi-square tests revealed that the only significant differences were that there were more females in the customer list group and those in the shopping mall group were in earlier stages in their family life cycle.

Chi-square analyses and t-tests were performed comparing the two groups where appropriate on the purchasing variables. Several significant differences were identified in purchasing behavior between respondents from the two sources. Respondents in the customer list group made more, and more planned purchases, paid higher prices for their flowers, charged their purchases, and had their flowers delivered. The attitudes towards flowers held by respondents from the two sources were also different. Those in the shopping mall group felt buying flowers to be an ex-

travagance and bought flowers more on impulse rather than because of a family tradition.

Since there were differences between respondents obtained from the two sources, the distribution of those respondents across the three discriminant groups was examined. Respondents from each source were satisfactorily represented in each group.

Further chi-square analyses and t-tests were performed on responses received from subjects obtained from each data source within each discriminant group. Although there were some significant differences found, there were far fewer differences than there were for the entire sample indicating that many of the differences identified with the whole sample were related to the variables used to form the discriminant groups, not simply to individual differences between respondents obtained from the two sources.

Although in this study discriminant analysis was used primarily for descriptive purposes to provide a multi-variate profile of purchasers in each of the groups and not for purposes of prediction, a holdout sample was created and analyzed in order to evaluate the stability of the data. Using the purchasing variables, a holdout sample was created by randomly selecting one-half of the cases assigned to each of the discriminant groups. The discriminant functions computed using only these cases were then used to classify the entire sample. The holdout sample resulted in 75.63% correct classification compared to 71.18% correct classification with the discriminant functions computed utilizing data from the entire sample. The similarity of these percentages suggests that there is no significant problem with bias in the functions calculated from the full sample. However, precautions in interpretation of these data are presented in the following discussion of findings.

Purchaser Characteristics

Two discriminant functions were estimated in the analysis using attitude and demographic/socioeconomic variables as predictor variables. The first accounted for 60.63% of the variation explained after orthogonal rotation. Both functions were significant at the $p \leq .05$ level with Wilks Lambda of .76 and .91 respectively. The classification matrix, which is subject to upward bias since the functions used to predict group membership were derived from the complete sample, indicates that these functions were successful in correctly assigning 55.9% of the cases to the three groups. This figure compares to 34.9% and 43.2% correct assignment expected with the proportional chance criterion and the maximum chance criterion respectively (Morrison, 1969). The rotated standardized discriminant coefficients are presented in Table 2 and the group means for these variables are displayed in Table 3. Function I discriminates Group II (Obligatory Event) from Group I (Personal Use) and Group II (Gift Occasions). Function II discriminates Group I from Group II and Group III. The variables with the highest coefficients for Function I are three dummy variables identifying respondents' occupations while the variables most important in Function II are three attitude measures.

²The distribution of respondents from the two sources across the three discriminant groups is as follows:

Source of Respondent:	Discriminant Group		
	I	II	III
Customer List	31	60	13
Shopping Mall	49	39	45
Total	80	99	58

TABLE 2
PURCHASER CHARACTERISTICS¹
ROTATED STANDARDIZED DISCRIMINANT COEFFICIENTS

Variable ²	Function	
	I	II
Student/Housewife	.7069	-.4690
Sex (Male=1; Female=2)	-.6954	.0647
Skilled White Collar	.6852	-.0947
Executive	.3889	-.2881
Flowers are Planned Purchase for Special Occasion (1)/Flowers are Impulse Purchase (5)	-.1556	.7625
Flowers are Extravagant (1)/Flowers are Part of my Budget (5)	-.0309	.5362
Flowers are Tradition in Family (1)/We Buy Flowers Infrequently (5)	-.0162	.4541
Skilled Blue Collar	.2084	-.3762
Family Life Cycle	-.1832	-.2764
Group Centroids:		
Group I	.2467	.4981
Group II	-.4709	-.1909
Group III	.4976	-.2925

¹Fifteen predictor variables were used to form the discriminant functions.

²All variables significant at $p \leq .001$ in the multivariate analysis.

TABLE 3
PURCHASER CHARACTERISTICS
GROUP MEANS

Variable	Group		
	I	II	III
Student/Housewife ^{2,3}	.0972	.0707	.2069
Sex (Male=1; Female=2) ¹	1.3392	1.5905	1.3883
Skilled White Collar ^{2,3}	.3611	.1616	.3103
Executive	.0694	.0707	.1035
Flowers are Planned Purchase for Special Occasion (1)/Flowers are Impulse Purchase (5) ⁴	3.0989	2.3042	2.4503
Flowers are Extravagant (1)/Flowers are Part of my Budget (5)	3.0954	2.8573	2.6357
Flowers are Tradition in Family (1)/We Buy Flowers Infrequently (5)	2.7594	2.5523	2.7359
Skilled Blue Collar ³	.1111	.1616	.1552
Family Life Cycle ¹	2.1096	2.8059	2.1216
n ⁴	72	99	58

¹Univariate F-ratios significant at $p \leq .001$.

²Univariate F-ratio significant at $p \leq .05$.

³The variables representing occupations were included as dummy variables. For example, if a respondent was a student, that variable was coded "1" and all the other occupations were coded "0", thus, the closer the group mean for an occupation variable is to 1.000, the more members of that group there were from a particular occupation.

⁴72 cases were not classified, since these respondents made no flower purchases.

Interpreting the standardized discriminant coefficients as relative importance weights in conjunction with an examination of the group means on these variables suggests that Function I identifies respondents in Group II (Obligatory Event) as more likely to be female and the principle wage earner in their households as less likely to be students, housewives or executives, but more likely to be skilled white collar workers than respondents in Group I (Personal Use) and III (Gift Occasion). In contrast, Function II differentiates respondents in Group I from Groups II and III on the basis of their attitudes toward flowers. Personal Users (Group I) are most likely to buy flowers simply on impulse, to include flower purchases as part of their regular budget, and least likely to feel flowers are

a family tradition. They are less likely than respondents in Groups II and III to be blue collar workers, students, or housewives. Examination of the significant univariate F-ratios suggests that the age of respondents is also different between groups with Obligatory Purchasers (Group II) older than Personal Users (Group I) and Gift Purchasers (Group III). Taken together these data support the hypothesis that consumers who purchase flowers for different reasons differ on demographics and attitudes.

Purchasing Variables

Discriminant analysis was also performed using the same groups as dependent variables and using variables describing past and intended purchasing behaviors as the predictor variables. This analysis resulted in 71.18% correct classification ($p \leq .01$) and two significant functions. Again interpreting the standardized discriminant coefficients as relative importance weights, Function I appears to separate Personal and Obligatory Purchasers from Gift Purchasers, and Function II separates Personal Purchasers from Obligatory and Gift Purchasers. The variables with discriminant coefficients $> .3000$ on one or both of the functions are presented in Table 4. The group means for all those variables with either univariate or multivariate F-ratios of $p \leq .05$ are displayed in Table 5.

TABLE 4
PURCHASING CHARACTERISTICS¹
ROTATED STANDARDIZED DISCRIMINANT COEFFICIENTS

Variable ²	Function	
	I	II
Intend to Purchase, "Other Special Day"	.5528	.2966
Intend to Purchase from Grocer/Retailer	.4570	-.1478
Intend to Purchase from Full-Service Cash and Carry	.3702	-.1626
Intend to Purchase, Anniversary	.3309	.2338
Intend to Purchase, Personal Use	-.0782	.5963
Intend to Purchase, Anniversary	.0526	.5254
Intend to Purchase, Other Reason	.2231	.4822
Intend to Purchase from Mall Florist	.4336	-.4818
Intend to Purchase from Mall Florist	.0134	.4517
Method of Payment	-.0759	.4206
Selected Store Because of Advertising	-.0088	.3999
Intend to Purchase, Dinner Hostess	-.2759	.3801
Intend to Purchase, Birthday	.1991	.3753
Purchase was Planned/Impulse	-.1643	.3567
Group Centroids:		
Group I	-.2776	.8970
Group II	-.6272	-.5309
Group III	1.4151	-.2074

¹Stepwise analysis was used on the 67 predictor variables included in the analysis with a cutoff after step 31.

²Respondents could offer first and second reasons for intended future purchases. The stores where they intended to shop, as well as the prices they intended to pay, were also requested for each intended purchase. This explains why some of the same variables appear twice in the table.

The variables which have the highest discriminant coefficients on Function I all represent intended future purchase intentions, two relating to occasions for purchase and three relating to the type of store where respondents plan to shop. Function II contains 10 variables with discriminant coefficients $> .3000$. Five of these variables relate to occasions for intended purchases, two to stores where purchase is planned, two to past purchasing behavior and one to reason for shopping in the most frequently patronized store.

TABLE 5
PURCHASING CHARACTERISTICS
GROUP MEANS

Variable ³	Group		
	I	II	III
Intend: "Other Special Day" ^{1,2}	.0417	.0101	.1724
Intend: Grocer/Retailer ¹	.0139	.0101	.0345
Intend: Full Service Cash & Carry ¹	.0278	.0606	.1035
Intend: Anniversary ¹	.0556	.0101	.0862
Intend: Personal Use ^{1,2}	.3194	.2020	.0690
Intend: Anniversary ^{1,2}	.0972	.0101	.0517
Intend "Other" Use ^{1,2}	.1528	.0303	.1379
Intend: Mall Florist ^{1,2}	.0000	.0101	.1035
Intend: Mall Florist ^{1,2}	.0278	.0101	.1035
Paid (Cash=1; Charge=2) ^{1,2}	1.3097	1.3970	1.1405
Reason for Patronage--Advertising ¹	.0278	.0000	.0000
Intend: Dinner Hostess ¹	.0139	.0000	.0000
Intend: Birthday ^{1,2}	.0556	.0202	.1379
Planned=1 Impulse=2 ^{1,2}	1.3654	1.1912	1.1659
Price ²	4.0296	3.8857	3.3766
Order by Phone=1 In Person=2 ²	1.4867	1.3184	1.5352
Deliver=1 Pick Up=2 ²	1.5753	1.3405	1.7486
Intend: Price ²	3.9763	3.8848	3.4500
Full-Service Florist ²	.1528	.2222	.0690
Mall Florist ²	.0000	.0202	.1035
Intend: Patient in Hospital ²	.1111	.1010	.0000
Intend: Funeral ²	.0694	.1414	.0172
Intend: "Other Special Day" ²	.0278	.0505	.1724
n ⁴	72	99	58

¹Multivariate F-ratios significant at $p \leq .001$.

²Univariate F-ratios significant at $p \leq .05$.

³Respondents could offer first and second reasons for intended future purchases. The stores where they intended to shop as well as the prices they intended to pay were also requested for each intended purchase. This explains why some of the same variables appear twice in the table.

⁴72 cases were not classified since these respondents made no flower purchases.

⁵Same f.n. as #3 on Table 1.

Group II appears to resemble Group I along the dimensions important to Function I. It is also very similar to Group III in terms of those variables important in Function II. Thus, the functions are illustrated primarily by describing Groups I and III.

At the multivariate level, discriminant coefficients suggest that respondents in Group I (Personal Use) clearly have a greater intention to buy flowers in the future than do respondents in Groups II and III. Those in Group I have greater intentions to purchase for personal use, anniversaries, "other special days," dinner hostesses, and birthdays. They are more inclined to purchase on impulse than to plan their purchases and least likely to purchase flowers from a mall florist shop.

Gift Purchasers (Group III) also intend to purchase flowers in the future. Although they intend to purchase for a personal reason, they are more likely to plan to purchase for "other special days," anniversaries, and birthdays. Gift purchasers have the widest range of shopping intentions including shopping at grocer/retailers, full service cash and carry florist shops, and mall florists.

Examination of the group means for those variables with significant univariate F-ratios ($p < .05$) provides additional descriptive details regarding group members. Personal Users are most likely to have made an impulse purchase of flowers in the past, most likely to intend to make flower purchases in the future for personal use, anniversaries, and "other" reasons. Although both Obligatory Purchasers and Gift Purchasers have purchased flowers in the past their purchase patterns are quite different. Obligatory Purchasers are most likely to have charged these purchases, phoned in their orders, and had the flowers deliv-

ered. They are least likely to intend to purchase flowers in the future for anniversaries, "other special days," or for "other" reasons. Conversely, Gift Purchasers paid cash and picked up their purchases. They paid the lowest price and were the most likely to have purchased from a mall florist. Their future intentions suggest they want to pay a low price yet plan to buy from either a full service or a mall florist, often among the highest priced of the available outlets. Based on their past purchasing, convenience may play a more important role in their decision than price. Gift Purchasers are least likely to intend to buy flowers for a patient in the hospital, but very likely to intend to purchase for birthdays and "other special days." Generally these data support the hypothesized differences in purchase behavior among consumers who purchase flowers for different reasons.

Discussion

The findings from this study tend to support earlier research on situational influences on consumer behavior which suggests that personal use and gift use represent different situations. Further, findings suggest it may be worthwhile to differentiate gift-giving situations into those that are obligatory in nature and those that involve voluntary gift-giving with little expectation of reciprocity.

Discriminant analyses of flower purchases with groups formed to represent personal use, obligatory events, and gift occasions using both purchaser and purchasing variables as predictor variables revealed significant differences between the groups as predicted in the hypotheses. Some additional unanticipated differences were also highlighted.

Personal Uses

It was hypothesized that purchases made for personal use would be low priced, made from minimum service conveniently located stores and often made on impulse. The data clearly identified this group by the attitudes of group members toward flowers and by their future intentions regarding flower purchases. Interestingly, their greater likelihood of purchasing for personal reasons described only part of their flower buying behavior. They were also more likely to intend to buy flowers for future obligatory events and gift occasions. They were most likely to purchase on impulse. These behaviors were supported by the respondents' attitudes toward flowers. These purchasers were most likely to include flower buying as part of their normal budget (as opposed to feeling buying flowers is an extravagance), and most likely to say they buy flowers "just on impulse" (as opposed to planning purchases for special occasions). These respondents tended to be in the career age groups (20-29 or 30-44 years of age). They were least likely to have a blue collar worker as the principal wage earner in the household. In sum, the people who bought flowers for personal reasons had positive attitudes toward flowers, were likely to come from younger, professional/executive families and felt flowers were appropriate for a variety of occasions.

Obligatory Events

As hypothesized, flower purchases made for obligatory events were made simply. Purchases were most often charged, ordered by telephone, and store delivered to the recipient. Buyers in this group intended to buy flowers for other obligatory events in the future but not for future gift occasions. This group of purchasers was comprised of the oldest respondents and those furthest along in the family life cycle. They were predominately female members of older couples with no dependent children or were solitary survivors. These characteristics describe persons likely to have many social obligations, e.g., graduations or weddings of grandchildren, social engagements "requiring" gifts of appreciation, funerals of friends also in the

later stages of life. The convenience of telephone ordering and delivery service may be important in their purchasing as they are likely to be less mobile.

Gift Occasions

Those respondents who have purchased flowers for gift occasions in the past were most likely to intend to buy flowers for gift occasions in the future. They were least likely to buy flowers either for their own personal use or for obligatory occasions. This behavior was reinforced by their attitude that flower purchases are "planned for special occasions." They generally paid cash for their purchases and delivered their gifts in person. Although they were least likely to have bought from a full-service florist in the past they plan to do so in the future, perhaps to take advantage of the extras offered by this type of shop which may make a gift more special. Gift Purchasers have bought flowers from mall florists and intend to do so again in the future. These purchasers were the youngest of the respondents and were likely to be students or housewives or to have an executive as the head-of-household. Contrary to what was hypothesized, past purchases for gift occasions were generally in the lower price ranges (\$11-15) and respondents also intended to pay the least for future purchases. This may be a result of the frequency of gift occasions as compared to obligatory events. The infrequent occurrence of events such as friends in the hospital, funerals, and weddings (for any individual recipient) may make a more expensive item appropriate. Conversely, the relative frequency of occasions for which an individual may be an intended recipient of a gift (e.g., birthday, Saint Valentine's Day, Easter, Mother's Day), may make less expensive gifts acceptable.

Conclusions

The findings from this study suggest that more detailed understanding of occasions for purchase, particularly along the lines of occasions of purchase for non-personal use, may prove to be a fruitful area for future research. As has been demonstrated in many different contexts, the more specific the predictors of future behavior, the more accurate the predictions are likely to be. Just as knowledge of whether someone is shopping for a purchase for themselves or for a gift for someone else allows more accurate prediction of that person's shopping/purchase behavior, this research suggests that knowledge of whether a non-personal purchase is being made for an obligatory event or for a gift occasion may also facilitate more accurate prediction of consumer behavior.

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SYMBOLISM AND TECHNOLOGY AS SOURCES FOR
THE GENERATION OF INNOVATIONS

Elizabeth C. Hirschman, New York University

ABSTRACT

This paper has proposed that product innovations may arise from two independent sources - symbolism (intangible attributes) and technology (tangible attributes). Symbolic innovations are those which result from the reassignment of social meaning to an existing product, generating a secondary diffusion for it among those identifying with the relevant reference group. Technological innovations are those that spring from the addition or alteration of tangible features in a product that serve to distinguish it from prior models. Innovations may arise in given product classes from either or both of these two sources. It is argued that symbolic innovations will diffuse primarily due to their association with a given reference group; whereas technological innovations will diffuse primarily as a result of consumer perceptions of and need for their superior performance.

INTRODUCTION

The diffusion of product innovations has generally been described using a paradigm originating in rural sociology (Ryan and Gross 1943) and applied in such diverse fields as medicine, communications, anthropology and education. This model of the diffusion process at present dominates the design and conceptualization of the majority of research conducted on new product diffusion and adoption (Rogers and Shoemaker 1971, Robertson 1971).

Research conducted using the traditional innovation diffusion model has centered on characteristics of two primary entities in the diffusion process - adopters of innovations and the innovations, themselves. For example, innovation adopters are typically classified according to the time they adopted an innovation as measured: (1) from the innovation's introduction into their social system or (2) from their first learning of the innovation (see Midgley and Dowling 1978, Wallendorf 1979, Zaltman and Wallendorf 1979 for recent summaries of this research). Typically, an 'innovator', 'early adopter', 'early majority', 'late majority', 'laggard' categorization scheme is applied to adopters based on the rapidity of their adoption (Rogers and Shoemaker 1971).

The characteristics of innovations that affect their diffusion have received a similar level of attention (c. f. Robertson 1971, Rogers and Shoemaker 1971, Zaltman and Wallendorf 1979). The attributes of innovations identified in research as possessing importance for their potential diffusion include: (a) relative advantage, (b) compatibility, (c) complexity, (d) trialability and (e) observability (Rogers and Shoemaker 1971).

Despite the utility of these two research streams for increasing our understanding of the diffusion process, there is a third aspect of innovation adoption and diffusion that has received considerably less attention in the literature but which may possess large importance. This aspect is the dimension(s) along which innovations are generated within given product classes. In other words, a valuable path for investigation may be how innovations are created for a given type of product; what type or source of change from pre-existing forms is required in a later form for it to be considered new or innovative.

Robertson (1971) has addressed this issue by conceptualizing a continuum of innovations from "radically discontinuous" to "continuous". The former term designates an innovation differing from earlier forms in several relevant features (attributes); while the latter term describes innovations possessing a majority of features in common with earlier products in addition to some novel features. The central thesis of Robertson's approach is that innovations may be conceived as more or less innovative depending on the proportion of features they share in common with earlier models. This conceptualization is somewhat analogous to Tversky's (1977) propositions concerning similarity and dissimilarity of objects as measured by their congruent and noncongruent attributes. In this perspective, innovations are considered more, or "incrementally", innovative to the extent that they possess attributes not isomorphic with prior models.

An alternative way of approaching this same issue is to focus not on the proportion of common or noncommon attributes that innovations possess with earlier products, but on the dimensions along which those attributes are added to the product. It is posited that product innovations are generated primarily along two major dimensions: (1) symbolism and (2) technology; and that innovations arising from one or the other of these dimensions possess fundamentally different properties and diffuse according to fundamentally different principles. These two dimensions for generating innovations are described below as dichotomous "ideal types". Of course, in actuality both dimensions are continuous and may be interrelated for some product classes.

SYMBOLIC INNOVATIONS

A symbol is an entity that stands in place of or represents another entity (Smelser 1972). An innovation that is generated primarily through symbolic changes is one which communicates a different social meaning than it did previously. Its physical form remains predominately unchanged, but the meaning assigned to that form is novel. Stated in cognitive terminology, a symbolic innovation is one that possesses different intangible attributes than it did in a previous stage. An intangible attribute is one which is associated with the object by consumers, but which does not arise from the physical nature of the object itself (Hirschman 1980, 1981a, 1981b). For example: sexiness, conservatism, and prestige are intangible attributes that may be associated with products.

That products may serve as symbols has been an accepted proposition of behavioral research for many years (Barber and Lobel 1954) and was perhaps first extensively examined within marketing under the auspices of "motivation research" in the 1950's. Despite the implicit understanding of the socially symbolic role played by many products, the influence this may have on their adoption and diffusion has been rarely incorporated in innovation research. The value of using such a perspective becomes apparent if one views symbolic innovations as communicative devices representative of different lifestyles. These lifestyles may serve, in effect, as reference groups for the adopting consumer. Therefore, the consumption of symbolic innovations may be viewed within a sociological context as representing the individual's attempt to assimilate roles

and to communicate reference group identification(s) to others (Chapman and Volkman 1939, Hyman 1942, Merton and Kitt 1950, Sherif 1953, Shibutani 1973).

As Grubb and Grathwohl (1971, p.24) have noted, "A more meaningful way of understanding goods as social tools is to regard them as symbols serving as a means to communicate between the individual and his significant references... If a symbol is to convey meaning it must be identified by a group with which the individual is associated... and the symbol must communicate similar meaning to all within the group." This idea can be extended to include the notion that innovations are probably even more useful as social symbols if their intangible meanings are known to those outside the reference group, as well.

Products may vary in the amount of socially symbolic (i.e., intangible) meaning they convey and in the degree to which socially symbolic meaning contributes to their perceived innovativeness. For example, an innovation such as interferon, a new drug for use in the treatment of cancer, possesses little meaning as a social referent and it is unlikely that considerations of life style would figure prominently in its adoption by an individual or its diffusion throughout society. Conversely, innovative products in such areas as hairstyles, jewelry, and apparel may be adopted largely as a result of reference group influence (Schenk and Holman 1980). Such socially symbolic innovations may be adopted as a result of socialization processes and the desire to express self-identity; that is, consumers may find the intangible attributes (e.g., youthfulness) associated with the innovation to be congruent with the self-image they wish to convey and adopt the innovation accordingly (Brim 1960, Gergen 1971, Mortimer and Simmons 1978, Turner 1975).

A central idea in viewing symbolic innovations is that they may have been physically present in society for an extensive period of time, yet be considered innovations at the present time. This is because their innovativeness arises not from the novelty of their tangible features (which are already "known"), but rather from a change in the social meaning (i.e., intangible attributes) assigned to the product, which makes it appear novel as a symbol. For example, corn-rowing of hair has been known and present in American society ever since Africans, to whom it is indigenous, arrived here in the 1600's; yet its widespread diffusion as an innovation among white women was not experienced until the late 1970's.

The symbolic meaning assigned to the corn-row hairstyle changed from its being associated with the Black ethnic subculture to being viewed as an innovation appropriate for white women who desired to emulate the life style exhibited by Bo Derek in the movie '10'. The corn-row hairstyle "innovation" was already present in society; however, its innovativeness arose from the fact that its social meaning had been altered and, hence, was novel. In essence the style was re-labeled as a product appropriate for a different reference group than that in which it originated. That is, the intangible attributes it had possessed--identifying it with a particular reference group--were replaced with a different set of intangible attributes, which made it appropriate for a second reference group. Subsequently, it diffused secondarily among those identifying with this latter reference group.

Another instructive example of secondary diffusion for a symbolic innovation as a result of reference group re-assignment is that of wire-rimmed eyeglass frames. This type of eyeglass frame was originally introduced in the late nineteenth century and became widely diffused throughout a variety of social strata (Carson 1974). When plastic eyeglass frames entered as innovations during the mid-twentieth century, the proportion of persons wearing wire-rimmed frames declined and was largely confined to those who had acquired them originally and not adopted

plastic frames (Favel 1978). However, toward the end of the 1960's, wire-rimmed eyeglass frames became identified with the student/hippie reference group and diffused widely throughout this subculture, where it was perceived as an innovation.

An interesting operational anomaly for the traditional diffusion paradigm is raised by these two examples. Because both the corn-row hairstyle and wire-rimmed eyeglass frames were already present in society prior to their being relabeled in social meaning and experiencing a secondary diffusion process, a definite time of social system introduction can not be designated for them. Unlike flouridated toothpaste, which did not exist prior to its introduction and diffusion, these two socially symbolic innovations pre-existed their latter diffusions by several decades.

This operational complication is further illustrated by the inability of the traditional diffusion paradigm classification scheme to appropriately label adopters of symbolic innovations. Using time of adoption, a consumer who adopted wire-rimmed eyeglasses in the 1920's and laggardly refused to adopt the later plastic frames would be classified as considerably more "innovative" than a college student who adopted wire-rimmed frames shortly after they were symbolically relabeled in the 1960's.

This same problem is encountered in studying the diffusion of many apparel item innovations such as skirts, pants, ties, socks, and shoes in which lengths, widths, and designs have gone "in" and "out" of style in successive cycles or which have been adopted and discarded as symbols of different reference groups on a longitudinal basis. If a researcher uses time of adoption as the criterion for classifying adopters, without regard for the social (intangible) meaning the product possesses for the adopter, classification is hopelessly confounded by the multiple identities of the innovation.

There are two major propositions to be derived from these examples. The first is that products whose innovativeness springs from their socially symbolic meaning need not be newly entered into a social system to constitute innovations. Their innovativeness arises from a redefinition of their social meaning--the assignment of a novel set of intangible attributes. They are novel as social symbols; yet are not novel as physical entities. The second proposition is that the diffusion pattern for such innovations will be guided by their use as social referents, rather than technological performance. Consumers who want to identify with the life style they are perceived to represent will choose to adopt them; those who do not wish to emulate such a life style will not adopt them. Symbolic innovations primarily are adopted for their utility as social communicative devices and not for their technological superiority.

TECHNOLOGICAL INNOVATIONS

The technological innovation is the type of innovation for which the traditional innovation diffusion model principally was invented as a descriptive and explanatory device. The central notion of a technological innovation is that it possesses some tangible features never previously found in that product class. Unlike symbolic innovations whose innovativeness derives from the assignment of novel intangible attributes to a present product, technological innovations have never existed in their present form prior to creation. Hence, their time of introduction into a social system can be calculated with accuracy (theoretically at least) and adopters can be meaningfully arrayed according to the time of both innovation introduction and adopter awareness. Examples of technological innovations include hybrid seed corn (Ryan and Gross 1943), antibiotics (Menzel and Katz 1960), flouridated toothpaste, birth control pills, the automobile, the laser, and the atomic bomb. In each of these instances, the innovation had a deter-

minant date of creation and represented a substantially different, tangible entity than its predecessors. Further, in each instance, the innovation exhibited what was perceived to be a superiority in performance over its predecessors. For example, flouridated toothpaste is believed to result in fewer teeth cavities than is unflouridated toothpaste.

Technological innovations, it may be argued, will diffuse according to a somewhat different set of principles than symbolic innovations for several reasons. First, they may be adopted primarily because of their performance characteristics rather than because of their social symbolism. Thus they may diffuse more according to consumer need for their technical utility, rather than consumer desires for self-identity.

Second, because they possess some fundamentally new features, rather than simply novel reference group assignment, technological innovations may be more inherently "different" and "discontinuous" than symbolic innovations. Because of this, it is perhaps to be expected that they would diffuse first among the more informed stratum of consumers (as indicated by higher educational attainment and occupational status) and among those more predisposed toward risk-taking, as has been found in the majority of research investigations on this type of innovation (Rogers and Shoemaker 1971).

Third, technological innovations result from the accretion of scientific knowledge; they cannot exist before the discovery of certain information needed to create them. Thus, prior to their creation they are unknown and unknowable to the society generating them. After introduction, their long-term effects may be largely unpredictable and, hence, more uncontrollable (e.g. nuclear fission, birth control pills, recombinant DNA).

In contrast, the physical properties of symbolic innovations are generally known to all or many members of a society; hence, their effects may be more predictable, despite the reassignment of their symbolic meaning.

IMPLICATIONS FOR CONSUMER RESEARCH

The implications of these two dimensions of innovation generation may be discussed by viewing them as orthogonal axes along which various product classes can be arrayed. Such an arrangement is depicted in Figure 1.

Products designated as Cluster "A" in Figure 1 are those that are high in social symbolism but low in technology as bases for innovation within the product class. That is, innovation is generally effected via the reassignment of intangible attributes to presently existing products. Examples include apparel, beer, cigarettes, and hairstyles. In each of these instances, products are frequently repositioned by marketer-induced changes in their intangible attributes. A product can be made to seem new by use of a promotional campaign that provides it with novel symbolic features. Cluster "B" contains products such as medical equipment, the laser, and computer systems--in which technological changes generally dominate the symbolic dimension in generating innovation. Cluster "C" contains products for which both the symbolic and technological dimensions are used in balanced proportions to effect differentiation and generate innovation. Included in Cluster "C" would be such products as automobiles, stereo systems, watches, and television sets. Cluster "D" represents products that are relatively lower in both the symbolic and technological differentiation dimensions. Falling into this category are such products as sugar, soap, hardware, and fertilizers, which experience relatively low rates of innovation within the product class.

Products in Cluster "A", it is assumed, will diffuse primarily as a result of reference group influence. Consumers

will adopt product innovations in this quadrant because they wish to identify with the reference group seen as "sponsoring" the innovation at the present point in time; that is they wish to use the intangible attributes associated with the product to communicate their own identity to others. This, of course, leaves open the possibility that the consumer knew about, but avoided adopting, the product at an earlier point in time because s/he did not identify with the reference group then sponsoring it, and also the possibility that the consumer may discard the product at a future point in time, because the product has been reassigned to a reference group with which s/he does not wish to identify. The diffusion of such innovations is believed determined predominantly by the diffusion of their sponsoring reference groups. If a reference group experiences an increase in popularity, the diffusion of the product symbols associated with it will increase as well.

Products in Cluster "B", it is assumed, will diffuse primarily as a result of their perceived superior technical performance relative to other products. Innovations in Cluster "B" are relatively (though not completely) free of reference group affiliation. Their utility to the consumer centers around their novel technological superiority and not their value as social referents. The consumer presumably adopts them to fulfill a physical need (e.g., a cure for cancer or diabetes) rather than to communicate self-image to others. Hence, the diffusion of such products should be largely predictable through identification of consumers with relevant needs and the ability to perceive the utility of the innovation.

Products in Cluster "C" experience innovation on both the symbolic and technological dimensions. Hence, new products may possess both a reference group affiliation and some novel technological features. To predict diffusion patterns for these products, information on the consumer's self-image, ability to perceive technological change, and need for the performance improvements inhering in the innovation would be required. It is possible that technologically superior innovations in this cluster may be rejected by some consumers, because they are perceived to be reference-group-inappropriate. Further, some consumers may adopt innovative products from this cluster because they are viewed as representing the appropriate reference group--even though their technological superiority is undetected.

Finally, product classes represented in Cluster "D" are not generally associated with a given reference group and hence communicate little social meaning. Further, they are products for which few technological advances are sought and/or possible. As a result, few innovations are generated within Cluster "D". Their diffusion is likely to be stable and dependent primarily on the distribution of the consumer need they are fulfilling.

SUMMARY AND IMPLICATIONS

This paper has proposed that product innovations may arise from two independent sources - symbolism (intangible attributes) and technology (tangible attributes). Symbolic innovations are those which result from the reassignment of social meaning to an existing product, generating a secondary diffusion for it among those identifying with the relevant reference group. Technological innovations are those that spring from the addition or alteration of tangible features in a product that serve to distinguish it from prior models. Innovations may arise in given product classes from either or both of these two sources.

It is argued that symbolic innovations will diffuse primarily due to their association with a given reference group; whereas technological innovations will diffuse primarily as a result of consumer perceptions of and need for their

superior performance. While the traditional diffusion model has served as an adequate paradigm for technological innovations (for which it was primarily designed), it is argued that problems in measuring time of introduction and in classifying adopters make it inappropriate for describing the diffusion process for symbolic innovations. It is suggested that reference group theory may serve as a more appropriate framework for understanding this latter type of innovation.

There are several conceptual and methodological implications to arise from this framework. Let us first consider those regarding symbolic innovations. Because symbolic innovations require no novel technological attributes, they are perhaps easier to create and manipulate than technological innovations. This implies that scientific expertise is not required for their construction. Because of this trait, symbolic innovations may arise from two sources not traditionally considered as the birthplace of innovation--consumers and advertisers. Consumers, themselves, are capable of creating a symbolic innovation by undertaking a consensual decision to redefine the social meaning of a cultural object. For example, the recent use of razor blades and chains as jewelry by members of the "punk rock" subculture reflects this symbolic innovation phenomenon. Quick-thinking manufacturers were able to capitalize on this trend by generating "razor blade and chain" jewelry offerings (with dull edges for the timid) which were purchased by consumer-followers of the punk rock trend.

Similarly, advertisers can create a symbolic innovation by relabeling an existing product or by providing differentiating intangible attributes to a product that is physically identical/similar to its competitors. For example, a cigarette can be made to seem new if it is shifted from feminine to masculine (i.e., Marlboro). Similarly, two physically identical automobiles can be made to appear as distinct innovations via the image created through advertising (e.g., Ford Escort vs. Mercury Lynx).

This implies that research and development resources need not be expended by marketers in the generation of symbolic innovations; rather, only a competent promotional campaign is required. Further, it also implies that marketers do not control all symbolic innovations; in many instances consumers have been the source of creativity in reassigning social meaning to objects and providing them with innovation status.

Turning now to technological innovations, we should first note that their dependence upon physical alteration/improvement makes them more likely to be controlled by formal production systems. That is, formal research and development departments staffed by experts are generally necessary to the generation of technological innovations. This has the disadvantage of a probable higher origination cost for a given technological innovation. However, it also implies the corresponding benefit (to marketers) of insuring greater direct control over the distribution and availability of the innovation.

For example, the availability of popular technological innovations can be purposely restricted by their manufacturers in order to maintain high profit margins which will not only cover R & D expenses, but contribute to the capitalization of the company. In contrast, the control of some symbolic innovations may lie more with consumers than manufacturers (e.g., the long hair and faded jeans of the hippie era), thus preventing or inhibiting the ability of marketers to generate profits from them.

These ideas are but a few that may be generated using the symbolic/technological innovation framework. Although this framework is still in its formative stages, it is believed to provide a novel perspective of the innovation process. Its central thesis is that innovations may be

brought into being by two substantially different means--symbolism or technology--and that the differences between these modes of innovation production can have important implications for measuring and explaining the adoption/diffusion process. It is hoped that researchers of innovation-related phenomena will find it to be a useful vantage point.

FIGURE 1
LOCATIONS OF PRODUCTS RELATIVE TO SYMBOLISM AND TECHNOLOGICAL INNOVATION AXES

Symbolism: High		
"A"		"C"
hairstyles		automobiles
wearing apparel		television sets
jewelry		stereo systems
eyeglass frames		house
Technology: Low		
"D"		"B"
fertilizers		medical equipment
dog food		computer systems
soap		laser
hardware		recombinant DNA
		Symbolism: low

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SYMBOLS, SELVES, AND OTHERS

Sidney J. Levy, Northwestern University

Abstract

The three papers are diverse views on the symbolic character of products. The two studies reported are convincing demonstrations that cars, houses, and flowers have meanings that both cut across market segments and differ among them. Hirschman's paper highlights the difference between the diffusion of innovations that are physically or technologically novel and those that are innovations by virtue of change in social meaning alone. Further study can work toward clarification of concepts, exploring interaction of symbols, richness and layering of symbolic meaning, and the complex process whereby people interpret symbols to themselves, to others, and about others.

Discussion

As Beth Holman noted in introducing this morning's three papers, they are unusually well-related to the panel topic of consumption symbolism and consumption behavior. Taken together, the presentations explore various perspectives on the symbolic significance of products. Belk, Meyer and Russell show that people readily interpret the sizes and styles of houses and cars for inferences about the likely characteristics of owners. Some of these inferences show great consensus, others less so. The results seem to show that there is a broad cultural recognition of the meanings of the sizes and styles, with some variations related to age, social status, and sex. It is perhaps surprising that the consensus is so great, given people's pragmatic knowledge that many circumstances can affect actual ownership.

We might also turn the problem around and wonder what is the logic in the minds of those who do not go along with the majority of the sample. If we assume that they too must be interpreting the symbolism of the different sizes and styles, it would be interesting to know what meanings they are using, and what their characteristics are that incline them to a less conventional inference; or perhaps they are making other conventional inferences.

Perhaps we might group the adults and students who agree and compare them to the adults and students who disagree, to learn more about the decoding process. In a freer style interview, we might explore the associations and thought processes people use--maybe that younger men think a sports car mainly represents youth rather than the success of achieved social status, or that one can be young and successful without being of the higher status that goes with maturity. In any event, the study gives useful support to the fundamental facts of age, sex, and social status as symbolic elements bound up in consensual perceptions of major products and readily decoded as such.

The Scammon, Shaw and Bamossy study adds thoughts about another product, the symbolic meaning of flowers, with particular focus on the interpersonal idea of gift giving. By exploring the characteristics of different motives among those who buy flowers, some broad dimensions are suggested about the meanings of flowers and how they may differ in different situations. They are suited to personal use, for gifts on various occasions, and as obligatory gifts for specific situations, and these uses are differentially suited to kinds of consumers, differentiated by age, social class, sex, and other aspects of custom, economics, etc.

That older women are inclined toward the obligatory event seems consistent with their mature roles as keepers and teachers of proper behavior. They are the mothers who try to socialize the young to say thank you. Also, lower status people are especially obedient to what the rules say is the right thing to give. It might be interesting to select subsamples that more purely represent the three use patterns, to examine them as ideal types. Using people who actually fit all three situations but assigning them to only one, seems to cloud the results. On the other hand, multi-use behavior is probably common, so an approach might be devised that takes account of that reality rather than riding over it.

The complexities of gift giving and the meanings of flowers might both be further explicated by considering personal use as a form of gift giving to the self--"I owe it to myself." I as subject reward me as object. Flowers (or any other product) raise the issue of what is being communicated by the choice of gift. Is it "sheer" obligation? The reward of "pick up" is mentioned; what about some of the ideas and feelings derived from flowers seen as natural, vital, beautiful, sensitive, fragile, elegant, feminine, subtle, luxurious, and so on, in general, as well as the diverse artifactual vocabulary conveyed by roses, orchids, daisies, potted mums, and Japanese Ikebana arrangements?

Hirschman seeks to distinguish "technological innovations" that arise and diffuse when some physical, technical change meets a need for superior performance from "symbolic innovations" that arise and diffuse when their social meanings change. As her examples indicate, she seems to refer to a real distinction, it being evident that there are changes in the perceptions of products even though the products do not physically change. However, there are some problems with the terminology she uses and then, as a consequence, with the resulting conceptualization, that are interesting to explore.

By treating symbolism and technology as dichotomous, in effect Hirschman denies the symbolic meanings of technological innovations. It is as if to say that "symbolic meaning" is the same as "social meaning" (which is true by definition), but that high technology lacks social meaning (which is empirically not true). She qualifies that the dichotomy is for the purpose of describing ideal types and that the two dimensions are continuous and may be interrelated for some product classes. But that does not handle the difficulty which is later compounded by the matrix that shows such categories as high and low symbolism and high and low technology.

There may be some confusion between the popular use and scientific use of these terms. An analogy might be made to the popular and scientific uses of the term personality. In everyday life a person may have "a lot of personality" or even "no personality" at all; but to the science of psychology everyone has as much personality as anyone else. Scientifically speaking, all objects have as much symbolism attached to them as people are capable of conceiving--to say something is dull, uninteresting, low in symbolism is to be characterizing its symbolic nature. Therefore, even if we were to grant that there was some objective, non-symbolic way to determine that there were gradations in height of technology, such a scale could not be inversely

related to a similar scale of amounts of symbolism. Objects that are popularly regarded as representing (symbolizing) low technology (e.g., some jewelry, some fertilizers, etc.) might "actually" be the product of high technology in the eyes of more knowledgeable segments, from whom this view has not yet diffused to other social groups. Similarly, the objects Hirschman groups as low in symbolism such as computer systems, lasers, medical equipment, etc., are in actuality as rich in symbolism as the ideas of the people who know of them. They are not only technological innovations, they are also symbolic innovations and can experience the same kinds of shifts in meaning that are noted for eyeglass frames. For example, the original perception of computers as intimidating business machines is being succeeded by such social meanings as child's play for kids learning in school and playing games with them as they diffuse into the home. To suggest that high technology has low symbolism because it is superior in function is rationalistic and ignores that the lab workers, technicians, and scientists are snobs about their equipment, and that even the supposed superiority is a symbolic claim that may yet be shown to be false (e.g., innovative pharmaceuticals with dreadful side effects that turn from miracle drugs into poisonous horrors).

Perhaps all this is to say that from a scientific view there can only be kinds of symbolism, not amounts, except as popularly perceived, and that Hirschman is pointing to variations in perceived levels of symbolism and technology. And, apart from the problems of talking about these matters, her distinction between the changing perceptions of unchanged products that are "customer driven" and the changing perceptions due to new technologies that are "marketer driven" remains a useful one.

The discussion of these three papers highlights to me what we might call a serial regress of perceptions, as in a mirror where an observer sees an observer who sees an observer, to infinity. I am made self-conscious in commenting on and trying to sort out my perceptions of these authors' perceptions of their subjects' perceptions; and you will observe mine, perhaps mention them to others, etc.

The study of consumer behavior often focuses on the self-concept, as a set of perceptions whereby consumers symbolize to themselves who they are. They are able to do this by being self-conscious, being subjects taking themselves as objects. This ability is thought to be derived from early processes, whereby children internalize the attitudes of significant others. Thus, from observing others, we come to observe ourselves, and then by transference continue to relate our self-perceptions to how others will perceive us. We can then have the paradoxical idea of "secret display" whereby even covert consumption is a way of symbolizing to ourselves who we are.

As we go up and back in this process, we tell the others how we perceive ourselves and how we want them to perceive us. We do this by verbalizing it ("I love you"), by acting it out (staying late at the office), and by use of products, services, brands, etc., that are symbolically informative. Because people are complex and layered, their symbolic communications are often not taken at face value. Another way of putting this is to note that any object or action represents many ideas, and any idea is represented by many objects or actions. "I love you" may be deemed insincere, the office devotion taken as a sign of inefficiency, while the ways that insincerity and inefficiency can be manifested are also legion. Cigarettes and guns may be the artifacts of virile males or the superficial signs of underlying impotence, as some exaggerated dresses say sexy or frigid in the same breath. Such complexities lead to the various categorizations of symbols that may need to be taken account of, that were not noticed in this morning's papers; e.g., symbols are public, private, formal, informal, conscious, unconscious, etc.

Another source of richness in the use of products as consumption symbols is the way symbols interact to limit one another or to create new meanings. Giving flowers may say one thing, candy and flowers even more so; and what might have been the effect on the results if Belk, et al. had combined big cars and small houses or big houses and small cars? The notion of interacting symbols might be extended to encompass the patterning of more complex situations.

In this respect we may have much to learn from anthropologists who routinely examine the symbolic nature of complexes of activities. My awareness in this regard was recently refreshed by a rereading of Clifford Geertz's The Interpretation of Cultures.

We academicians observe and think about the relationships among symbols by studying the ways that selves use them and the interpretations made by others who observe the selves. Although we may dignify our observations and thoughts by calling them data and theories, it may be salutary to recognize that we are just more others observing selves; and that data and theories are symbols of our profession. It is necessary to face up to the subjectivity that is involved on all sides. Symbolic analysis is not a manifestation of behaviorism. It frankly requires interpretation. We are studying people's fantasies about personalities, their ages, their sex, and their social status, and in so doing having fantasies of our own. As the three papers presented here this morning demonstrate, it is an intriguing and engaging activity, and I hope we can move it toward increasing richness and sensitivity.

NUMBER OF CHOICE ALTERNATIVES AND NUMBER OF
PRODUCT CHARACTERISTICS AS DETERMINANTS OF THE
CONSUMER'S CHOICE OF AN EVALUATION PROCESS STRATEGY

Russell G. Wahlers, University of Notre Dame

Abstract

Various evaluation process models have been developed to quantitatively represent the mental algebra used by consumers in forming brand preferences. The specific variables underlying the individual's choice of evaluation strategy are not fully understood. This study examines the influence of two situational variables on the consumer's selection of an evaluation process strategy: (a) the number of choice alternatives and (b) the number of product characteristics involved in the evaluation task. Both variables were found to influence evaluation strategy choice. A dichotomy between compensatory additive utility models and noncompensatory lexicographic models emerged as the evaluation task's complexity was experimentally manipulated.

Introduction

A great deal of research in marketing has investigated the manner in which consumers process information in arriving at brand evaluations. The various information integration methods used by consumers are cognitive processes which are neither observable nor directly measurable. Marketers have borrowed and adapted attitude measurement methodology from the various behavioral sciences and have developed a number of evaluation process models which offer alternative quantitative explanations of the mental algebra used by consumers in forming brand preferences. By examining the relative power of these evaluation models to mathematically explain consumers' ultimate preference patterns, researchers have made inferences about the nature of evaluation process behavior underlying the development of preferences.

While various evaluation process models representing alternative explanations of consumers' information processing behavior are found in the literature¹, the expectancy-value model has become the dominant framework used by consumer researchers in the 1970's (Engel, Blackwell, and Kollat 1978, p. 393). The popularity of this model implies a widespread acceptance of the specific information processing approach which the model was developed to operationally represent. Despite its research popularity, however, the universal applicability of the expectancy-value model in explaining consumers' evaluation process behavior across various types of brand evaluation situations has not been clearly demonstrated.

Engel et al (1978, p. 393) suggest that any of a number of evaluation process strategies will be used by the consumer depending on the circumstances of the evaluation task. They further contend that the specific variables underlying the consumer's choice of an evaluation strategy are not yet understood. Few published studies have systematically explored the role of selected situational variables on the consumer's choice of evaluation process approaches. Research by Bettman (1975) and Kakkar (1977) as well as

¹See for example: William L. Wilkie and Edgar A. Pessimier, "Issues in Marketing's Use of Multiattribute Models," *Journal of Marketing Research*, Vol. 10 (November 1973), pp. 428-41 and James F. Engel, Roger D. Blackwell, and David T. Kollat, *Consumer Behavior*, 2d ed. (Hinsdale, Ill.: The Dryden Press, 1978), pp. 391-406.

Perreault and Russ (1977), comparing linear compensatory evaluation process models with nonlinear noncompensatory models of the lexicographic type, suggests that the power of lexicographic models may exceed that of linear compensatory models in explaining consumers' information processing strategies as the brand evaluation task becomes increasingly complex. There is reason to conjecture that the consumer's perception of the evaluation task's complexity increases as the number of choice alternatives and/or the number of product characteristics involved in the evaluation task increase.

The research reported here was undertaken to examine the influence of two independent variables on the consumer's selection of an evaluation process strategy used in comparing alternative life insurance policies. The two variables are: (a) the number of choice alternatives and (b) the number of product characteristics involved in the evaluation task confronting the consumer. The investigation attempts to answer two basic questions:

- (1) Is the consumer's choice of an evaluation process strategy influenced by the number of choice alternatives and/or the number of product characteristics involved in the evaluation task?
- (2) Which type(s) of evaluation process strategy(ies) is (are) most appropriate in explaining the consumer's preference patterns given the different numbers of choice alternatives and product characteristics involved in the evaluation task?

These questions were addressed by examining the evaluation process explanatory power of four types of compensatory additive utility models and two types of noncompensatory lexicographic models as the numbers of choice alternatives and product characteristics involved in the evaluation task were experimentally manipulated.

The remainder of this paper proceeds by describing the six evaluation process models examined in the study. Next the research hypotheses are specified accompanied by a discussion of the methodology. After the analysis and conclusions are presented, the paper concludes with a discussion of the implications for the consumer researcher and the marketing practitioner.

Six Evaluation Process Models

Six different evaluation process strategies are examined. These six strategies represent potential, alternative explanations of the subject's evaluative behavior. Each of the strategies is operationally represented in quantitative model form. The set of evaluation process models includes four compensatory additive utility models and two noncompensatory lexicographic frameworks:

- (1) Expectancy-Value Model (EVM)
- (2) Beliefs-Only Model (BOM)
- (3) Variability-Weighted Expectancy-Value Model (VWEVM)
- (4) Variability-Weighted Beliefs-Only Model (VWBOM)
- (5) Strict Lexicographic Model (STLM)
- (6) Satisficing Lexicographic Model (SFLM)

This list is not intended to be exhaustive but rather re-

flect a reasonably representative cross section of the basic multiattribute evaluation process explanations described in the marketing literature. Both additive utility and lexicographic evaluation models are included because of the marked differences between these conceptual approaches. In addition, earlier studies (Russ 1971; Perreault and Russ 1977; and Bettman and Kakkar 1977) have investigated differences among evaluation processes of the types used here.

Basic Expectancy-Value Model

Probably the best known of the compensatory additive utility evaluation process frameworks is the expectancy-value model which embodies the multiattribute attitude measurement approaches originally conceptualized by Fishbein (1963) and Rosenberg (1950). The model assumes that there are multiple evaluative criteria (or product attributes) against which each choice alternative is evaluated. It is further assumed that the consumer assigns varying weights of importance to each of the desired product attributes which are evaluated one at a time. In this evaluation, the consumer formulates perceptions or beliefs about the extent to which each desired attribute is exhibited by each choice alternative. The consumer's overall evaluation of a given choice alternative is based upon how well that item exhibits desired product attributes in addition to how important each of the attributes is to the consumer.

In symbolic notation, the basic expectancy-value model has the form:

$$E_j = \sum_{i=1}^n W_i B_{ij} \quad (1)$$

where: E_j = the consumer's evaluation of choice alternative j

W_i = the importance weight given to product characteristic i

B_{ij} = the consumer's belief as to the extent to which characteristic i is offered by choice alternative j

n = the number of product characteristics used in the evaluation of the choice alternatives

The value of E_j is a measure of the decision maker's attitude toward choice alternative j . Given a set of m choice alternatives ($j=1, \dots, m$) the alternatives can be rank ordered in terms of decreasing E_j values to represent an implied preference ranking.

The above model is an additive utility framework in that the utility (desirability) of a given choice alternative is equal to the sum of the utilities of its parts. The framework, moreover, is compensatory since a choice alternative's weakness on one characteristic may be compensated for by a strength on another characteristic (Green and Wind 1973, pp. 38-46).

Beliefs-Only Model

One of the issues addressed in the literature is whether or not the importance weight W_i adds to the explanatory power of the expectancy-value model (Cohen, Fishbein, and Ahtola 1972; Sheth 1973; and Sheth and Talarzyk 1972). Fishbein and Ajzen (1975) contend that the importance component is of conceptual importance. However, importance does not need to be measured as a separate model component because it is included in the polarity of the consumer's belief evaluation B_{ij} . That is, the consumer's belief evaluation associated with a given attribute will tend to be significantly positive (desirable) or significantly negative (undesirable) only if that attribute has substantial importance to the consumer. Thus, the importance factor is an integral part of the belief evaluation and need not be

measured separately. Tversky (1976) has proposed such a framework of the form:

$$E_j = \sum_{i=1}^n B_{ij} \quad (2)$$

wherein the concept of a product characteristic's importance to the consumer is considered an integral part of the B_{ij} belief component.

Variability-Weighted Expectancy-Value Model

Bettman (1974) contends that the inclusion of importance weights enhances the model's explanatory power when the product characteristics are significantly variable in importance to the decision maker. Perreault and Russ (1977) concur and add that a product characteristic may also be more instrumental in the evaluation task if the belief evaluations B_{ij} along the particular characteristic i are substantially varied across all choice alternatives $j=1, \dots, m$. They, therefore, developed an operational measure for each product characteristic's variability such that:

$$V_i = (B_{iU} - B_{iL}) / \bar{B}_i \quad (3)$$

where: V_i = the variability of product characteristic i

B_{iU} = the highest belief rating among all choice alternatives against product characteristic i

B_{iL} = the lowest belief rating among all choice alternatives against characteristic i

\bar{B}_i = the average belief rating of a consumer among all choice alternatives against product characteristic i

This measure of product characteristic variability V_i was incorporated by Perreault and Russ (1977, p. 424) into the basic expectancy-value model resulting in the following variability-weighted expectancy-value framework:

$$E_j = \sum_{i=1}^n V_i W_i B_{ij} \quad (4)$$

Variability-Weighted Beliefs-Only Model

The influence of product characteristic variability can also be incorporated into the previously described beliefs-only framework resulting in a variability-weighted beliefs-only model of the form:

$$E_j = \sum_{i=1}^n V_i B_{ij} \quad (5)$$

This formulation accommodates both Fishbein's position that the product characteristic's importance weights need not be measured separately and Bettman's view that product characteristic importance is influenced by the consumer's polar range of belief evaluations across all choice alternatives being compared.

Strict Lexicographic Model

The strict lexicographic model suggests that in evaluating choice alternatives the consumer perceptually ranks the alternatives based on the extent to which each alternative possesses the single most important product characteristic. If more than one choice alternative exhibit the same utilities along the most heavily weighted characteristic, a preference tie initially exists. In this instance, the alternatives are further evaluated against the next most important characteristic until the tie is broken (Perreault and Russ 1977, p. 424). Strictly speaking, only the single

most heavily weighted characteristic is salient in determining preference is there are no perceived ties along that attribute. Product characteristics of lesser importance become salient only as tie breakers. The lexicographic evaluation process is noncompensatory in that a choice alternative's deficiency on an important characteristic cannot be offset by a strength on another characteristic of lesser importance. It is also assumed that separate and independent utility functions exist for each characteristic. Thus the model cannot be mathematically represented in terms of a single utility index.

Symbolically, let Z_j denote a given choice alternative where $j=1, \dots, m$. Further interpret " $>$ " to mean is preferred to and " \sim " is indifferent to. Assume that the characteristics are ordered such that $i=1$ is the most important characteristic, $i=2$ the second most important characteristic, and so forth for all n characteristics. Then for any two choice alternatives, say x and y , $Z_x > Z_y$ implies that there exists an i th characteristic such that $b_{ix} > b_{iy}$ and for all $k < i$ (i.e., for all characteristics more important than characteristic i) $b_{kx} \sim b_{ky}$. It follows that if $Z_x \sim Z_y$ then $b_{ix} \sim b_{iy}$ for all i .

Satisficing Lexicographic Model

Simon (1955) has proposed a satisficing evaluation model suggesting that the decision maker often selects the first choice alternative encountered which exceeds some minimum acceptable utility level on each characteristic involved in the evaluation task. Perreault and Russ (1977, p. 426) have proposed an evaluation model which incorporates this satisficing concept with the lexicographic ordering sequence previously discussed. In this satisficing lexicographic model, choice alternatives are ordered lexicographically along each product characteristic taken in order of decreasing importance weights. However, a minimum level of acceptability exists on each characteristic which serves to disqualify choice alternatives with out-of-tolerance evaluation ratings. In effect this framework represents a lexicographically ordered conjunctive model (Kotler 1976, p.90).

The preference ordering rules associated with the strict lexicographic model apply to the satisficing lexicographic model with one exception. Let $S=(s_1, s_2, \dots, s_n)$ represent a vector of minimally satisfactory product characteristic values defined over all $i=1, \dots, n$ characteristics. Thus for m choice alternatives, $Z_1 > Z_2 > \dots > Z_m$ implies that there exists an i th characteristic such that $b_{i1} > b_{i2} > \dots > b_{im}$ and all ratings $b_{ij} \geq s_j$ for $j=1, \dots, m$. In general, Z_j is satisfactory if and only if $b_{ij} \geq s_j$ where the i th product characteristic is the basis for the ordering sequence.

Methodology

In the study, the power of the four additive utility models and the two lexicographic models to explain subjects' preference patterns was investigated as the numbers of choice alternatives and product characteristics involved in the evaluation task were systematically manipulated. By investigating the explanatory power of these selected models, inferences are made regarding the evaluation strategies used by the subjects under study.

The Evaluation Task

A 12 x 7 matrix of potential evaluative information was developed involving alternative life insurance policies. The matrix contained information on 7 policy attributes for 12 policy alternatives. The set of policy attributes was based on the results of a pilot study and consisted of:

- (1) Policy type (term vs. permanent)
- (2) Annual premium (\$)
- (3) Long-run average annual net cost (\$)
- (4) 20-year cash value (\$)

- (5) Dividend policy (participating vs. nonparticipating)
- (6) Size/scope of insurance firm's operation (description)
- (7) Firm's sale/service methods (description)

Using this information as an information pool, an algorithm was developed to generate questionnaires containing information on a controlled number of life insurance policy alternatives (choice alternatives) and a controlled number of policy attributes (product characteristics). In all, nine separate questionnaire versions were used - each reflecting a unique combination of 4, 8, or 12 policy alternatives and 3, 5, or 7 policy characteristics. Each questionnaire presented evaluative information to the subject in a format similar to the product ratings summaries featured in Consumer Reports magazine.

A judgment sample of 351 undergraduate business students distributed among five Midwestern universities was used in the study. Each subject was given a questionnaire containing information on a controlled number of life insurance policies and a controlled number of policy attributes. A brief discussion of questionnaire terminology was conducted. Subjects were then asked to evaluate the information provided by the questionnaire and rank order the life insurance policies in terms of decreasing preference. In addition to this ranking task, subjects were asked to assign importance weights to the various policy characteristics, rate each policy alternative's characteristics on a desirability scale, and identify a minimum acceptability limit on each policy characteristic contained in the questionnaire.

The Dependent Variable

Using the decision rules associated with the six evaluation process models applied to each subject's choice alternatives-by-product characteristics ratings and importance weights, six hypothetical insurance policy preference rankings were generated. Each of the six model-generated preference rankings represented an alternate explanation for the given subject's evaluation behavior. The preference ranking generated by each model was then correlated with the subject's original preference statement. Spearman's Rho was used as the measure of rank correlation. For each subject, the correlation coefficient computed for each of the six evaluation models expressed the power of the given model to explain the subject's stated preference ranking of choice alternatives. This correlation coefficient associated with each model served as the dependent variable and is subsequently referred to as the given model's explanatory power. For each of the 351 subjects in the study, a row vector of six correlation coefficients was computed representing the explanatory power of each evaluation process model in reconstructing the subject's stated preference ranking.

Hypotheses

The following hypotheses were tested. Both focus on the explanatory power of each evaluation process model as the criterion of interest.

Hypothesis 1: The number of choice alternatives and/or the number of product characteristics involved in the evaluation task exert no influence on the explanatory power of the six evaluation process models under study.

Hypothesis 2: There are no pairwise differences in explanatory power between evaluation process models - given each of the nine evaluation task combinations of controlled numbers of the choice alternatives and product characteristics.

The first hypothesis was intended to test the general significance of the influence of the two independent variables on the explanatory power of the models. The second hypothesis was aimed at providing insight into the relative appropriateness of each model as a possible explanation of the subjects' evaluation process approaches.

Analysis and Results

The mean explanatory power coefficients for each evaluation process model was computed. These explanatory values are shown in Table 1 broken down by the nine experimental treatment combinations representing the different evaluation tasks. Several interesting explanatory value patterns emerged.

As shown in the lower-right-hand marginal totals cell of Table 1, the model exhibiting the highest degree of overall explanatory power was the strict lexicographic model (.737) while the variability-weighted beliefs-only model (.495) was the poorest performer within the set of models over all 351 respondents. Further, the explanatory power of each of the two lexicographic models was found to exceed the performance of all of the additive utility frameworks. Among the four additive utility models, the expectancy-value model exhibited the highest explanatory power (.591) - but well below that of the lexicographic models. This general pattern of the evaluation models' explanatory power values is consistent with the findings of Perreault and Russ (1977, p. 428) in their earlier study.

Even more interesting, however, was the pattern of explanatory values among the experimental treatment cells in Table 1. For the simplest evaluation task comprised of 4 choice alternatives and 3 product characteristics, each of the additive utility models exhibited better explanatory performance than either of the lexicographic models. However, two patterns emerged in treatment cells characterized by increasing numbers of choice alternatives and/or characteristics. Not only was the explanatory power of each additive utility model found to decrease, but the performance of the two lexicographic models was observed to improve. This suggested that the subjects' choices of evaluation strategies tended to change from the compensatory additive utility frameworks to the noncompensatory lexicographic strategies as the evaluation task was complicated by increasing numbers of choice alternatives and/or characteristics.

Multivariate analysis of variance was used to test the significance of the number of choice alternatives and number of product characteristics effects (Hypothesis 1). The experimental design framework was that shown in Table 1. The 39 x 6 subjects-by-model explanatory values matrix within each treatment cell served as the multivariate criterion. The MANOVA results are summarized in Table 2. Both of the experimental effects were found to be highly significant as well as their interaction. Hence, Hypothesis 1 was rejected. These findings suggested that the respondents' selections of evaluation process strategies were singularly and jointly influenced by the number of choice alternatives and the number of product characteristics involved in the evaluation task.

The second research question addressed the appropriateness of the evaluation process strategies (represented by the models) in explaining the subjects' preference patterns given the different numbers of choice alternatives and product characteristics involved in the evaluation task. Hypothesis 2 posited no pairwise differences in explanatory power values between models within each of the nine experimental treatment cells.

When six models were examined in each treatment cell, difference in explanatory power between models was investigated for each of the fifteen possible model pairs. The mean explanatory power coefficient associated with each model was used as the basis for between model comparisons. The differences between the mean explanatory coefficients of the models representing each possible pair were computed, and these differences were tested for significance using the Newman-Keuls procedure. These test results are shown in Table 3. Several interesting patterns emerged from this analysis.

For the simplest evaluation task (4 choice alternatives and 3 product characteristics) the expectancy value model was the best performer in explaining subjects' preference patterns (Table 1). However, based on the Newman-Keuls comparisons (Table 3), no significant differences were found between the expectancy-value model and the other additive utility frameworks with the exception of the variability-weighted beliefs-only model. The strict lexicographic model was found to differ from the expectancy-value framework but not from the other additive utility models.

In the case of the most complex task (12 alternatives and 7 characteristics), the explanatory performance of each lexicographic model significantly exceeded that of each additive utility model. Further, there were no pairwise differences identified between the two lexicographic models nor between any of the combinations of the additive utility frameworks.

For the experimental treatment cells involving moderately complex combinations of alternatives and characteristics, no significant differences were observed between the two lexicographic models, and few differences were found between pairs of the additive utility models.

To summarize the results of the Newman-Keuls tests, few differences existed between pairs of the additive utility models, and almost no differences existed between the lexicographic frameworks across the nine experimental treatment cells. It appeared that a general dichotomy between additive utility and lexicographic models emerged from the analysis. That is, in selecting a model to explain the subjects' evaluation processes, choosing either an additive utility or lexicographic type of model appeared to be more important than selecting a specific variation of either general type. Regarding Hypothesis 2, any pairwise model comparison marked with an "X" in Table 3 indicates a rejection of the null hypothesis of no between model difference.

Conclusions and Implications

The study examined the influence of the numbers of choice alternatives and product characteristics involved in the evaluation task on the consumer's selection of an evaluation process strategy. Six different evaluation models were investigated using life insurance as the product class of interest. It was determined that both independent variables were singularly and jointly significant in affecting subjects' evaluation strategies in comparing life insurance policies. For the simplest evaluation task the additive utility models outperformed the lexicographic frameworks. However, as the number of either or both of the situational variables were increased, respondents' evaluation patterns were best explained by either of the two lexicographic models under study. Thus, subjects exhibited an increasing tendency to employ a lexicographic evaluation strategy as the evaluation task became increasingly complex. Further the Newman-Keuls testing of pairwise model differences suggested that the respondents' evaluation strategies could be at best only generally characterized as either a non-compensatory lexicographic process or a compensatory additive utility process.

Consistent with prior research found in the marketing literature, this study supports the notion that consumers are highly adaptive to their task environment. That is to say the subjects of this experiment appeared to adjust their evaluation strategies in response to the nature of the evaluation tasks to which they were subjected. The study's findings also support the contention that consumers may utilize a lexicographic evaluation approach as a simplifying strategy when overloaded with evaluative information.

TABLE 1

MEAN EXPLANATORY POWER OF EVALUATION PROCESS MODELS BY EXPERIMENTAL TREATMENT^a

		Number of Choice Alternatives																							
		4						8						12						n=117					
Number of Product Characteristics		n=39						n=39						n=39						n=117					
		EVM	BOM	VMEVM	VWBOM	STLM	SFLM	EVM	BOM	VMEVM	VWBOM	STLM	SFLM	EVM	BOM	VMEVM	VWBOM	STLM	SFLM	EVM	BOM	VMEVM	VWBOM	STLM	SFLM
3		.767	.728	.710	.668	.637	.554	.559	.485	.518	.447	.639	.632	.644	.590	.598	.551	.760	.735	.656	.601	.609	.555	.679	.640
5		.694	.615	.626	.529	.762	.686	.578	.523	.585	.510	.761	.718	.555	.524	.511	.499	.745	.735	.609	.554	.574	.513	.756	.723
7		.600	.469	.514	.508	.787	.724	.492	.421	.440	.366	.738	.737	.430	.414	.403	.376	.801	.772	.507	.435	.442	.417	.775	.744
		n=117						n=117						n=117						N=351					
		.687	.604	.617	.568	.729	.655	.543	.478	.504	.441	.713	.706	.542	.509	.504	.475	.769	.747	.591	.530	.542	.495	.737	.703

^aExplanatory power is expressed as the Spearman's Rho rank correlation between the subject's stated preference ranking of choice alternatives and the preference ranking generated by the given evaluation model.

TABLE 2

SUMMARY OF MULTIVARIATE ANALYSIS OF VARIANCE FOR NUMBER OF CHOICE ALTERNATIVES AND NUMBER OF PRODUCT CHARACTERISTICS EFFECTS

Source of Variation	d.f.	F-Ratio	Probability
Number of Choice Alternatives Effect	12,674	7.86	p < .01
Number of Product Characteristics Effect	12,674	8.51	p < .01
Interaction Effect	24,1176	2.42	p < .01

TABLE 3

BETWEEN MODEL COMPARISONS OF THE MEAN EXPLANATORY POWER^a

		Number of Choice Alternatives																							
		4						8						12						n=117					
Number of Product Characteristics		n=39						n=39						n=39						n=117					
		EVM	BOM	VMEVM	VWBOM	STLM	SFLM	EVM	BOM	VMEVM	VWBOM	STLM	SFLM	EVM	BOM	VMEVM	VWBOM	STLM	SFLM	EVM	BOM	VMEVM	VWBOM	STLM	SFLM
3		X						X						X						X					
5		X						X						X						X					
7		X						X						X						X					

Note: EVM = Expectancy-Value Model
 BOM = Beliefs-Only Model
 VMEVM = Variability-Weighted Expectancy-Value Model
 VWBOM = Variability-Weighted Beliefs-Only Model
 STLM = Strict Lexicographic Model
 SFLM = Satisficing Lexicographic Model

^aThe evaluation process models within each pair marked with an "X" were found to be significantly different in explaining subjects' stated preference patterns using the Newman-Keuls test with p < .05.

The study has several implications. From a consumer research perspective, more research attention needs to be paid to lexicographic evaluation processes - particularly in modeling the information integration behavior of consumers confronted by highly complex evaluation tasks. From a marketing management perspective, knowledge concerning the manner in which the consumer processes information in making brand evaluations will aid in formulating marketing communication strategies. For simple evaluations in which the consumer may tend to process information one brand at a time across all product characteristics, information should be presented to the consumer on all salient characteristics. For highly complex evaluation tasks (i.e., life insurance) in which the consumer may tend to process information lexicographically, it is critical that the brand be promoted on the basis of the characteristics that are most highly salient. The most heavily weighted product attribute is often the sole determinant of brand choice in lexicographic evaluations.

More research is needed to explore the influence of other variables connected with task complexity on the decision maker's choice of an evaluation strategy. Such task situational variables might include varying degrees of time pressure, product type, ego involvement, and perceived risk inherent in the brand choice problem.

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MEASURING PERCEIVED RISK:
A REPLICATION AND AN APPLICATION OF EQUITY THEORY

Richard H. Evans, Syracuse University

Abstract

The three consumer decision models employed by Peter and Tarpey (1975) were replicated. In addition, an equity theory model was investigated. A comparison of the two sets of data involving the three models revealed similar results in terms of explanation and prediction. The equity theory model, as operationalized, produced results which were similar to the Peter and Tarpey (1975) data.

Introduction

Peter and Tarpey (1975), using six car brands and six risk attributes, examined three decision making models or strategies--minimization of expected negative utility, maximization of expected positive utility and maximization of expected net utility--in terms of model explanation and prediction. Factor analysis was used to test model explanation and multiple regression was employed to measure model prediction. The factor analysis produced two factors which were labelled by Peter and Tarpey (1975): expected performance and psychosocial.¹ The multiple regression calculation indicated that the maximization of expected net utility model explained most of the variance in brand preference (R^2) followed next by the negative utility model and the positive utility model, respectively.

The research reported here replicates, in part, the work of Peter and Tarpey (1975) and extends it to include another decision making model or strategy. Consequently, the purpose of the present study was to compare four models or strategies of consumer behavior in terms of their relative explanative and predictive capabilities. Two car brands, Pinto and Malibu, which were used by Peter and Tarpey (1975), were also examined in the present study.

Engel, Blackwell and Kollat (1978) indicate the consumer behavior is motive satisfying behavior. Howard and Sheth (1969) state that "Motives serve an essential role in explaining overt purchase behavior." Campbell, Dunnette, Lawler and Weick (1970) have classified the various theoretical orientations to motivation theory into two approaches: content and process. The content approach² deals with "what is within an individual or his environment that energizes and sustains behavior" (Campbell, Dunnette, Lawler and Weick, 1970) while the process approach is ". . . concerned with identifying the major classes of variables and mechanics which underlie how motives operate to determine behavior" (Jacoby, 1976). Three key process theories, according to Campbell, Dunnette, Lawler and Weick (1970), are: stimulus-response theory, expectancy theory and equity theory. Stimulus-response theory has been applied in consumer behavior, for example, by Howard (1968), Farley and Kuehn (1965) and recently by Srinivasan and Kesavan (1976). The formulations of Rosenberg (1956) and Fishbein (1967) are based on expectancy theory. A great deal of research has appeared in the literature using Rosenberg (1956) or Fishbein (1967) as the foundation (see Wilkie and Pessemier, 1973). Equity theory, however, has been applied in consumer behavior to only a very limited

extent. Where equity theory has been applied, theory support has been evident.³

In this paper, equity theory⁴ will be compared with the three models advanced by Peter and Tarpey (1975), to assess its effectiveness in terms of explaining and predicting preference.⁵ The equity formulation adds to or extends the Peter and Tarpey (1975) models in that it involves an element of fairness (Adams, 1963) and, as such, it may be perceived not as a loss minimization, gain maximization or net return model but as a satisficing model (Jacoby, 1976). Further, Jacoby (1976) indicates that ". . . consumer behavior data reflects 'satisficing' . . . rather than maximizing behavior."⁶ It was surmised that the equity model would be similar to the other models in terms of explanation (i.e., it will have two dimensions) but superior to the other models in terms of prediction.

Theoretical Models

Peter and Tarpey (1975) analyzed three consumer decision strategies. The attributes, characteristics or facets used to analyze the decision-making strategies were based on six dimensions of perceived risk. They were: (1) financial risk, (2) performance risk, (3) psychological risk, (4) physical risk, (5) social risk, and (6) time risk. According to Jacoby and Kaplan (1972) each of these attributes are independent and it may be inferred from the Jacoby and Kaplan (1972) paper that the risk facets are essentially inclusive.⁷ Peter and Tarpey (1975) view the consumer to be rational in that ". . . behavior is (a) goal directed, (b) calculated and (c) predicted upon some knowledge of the costs and benefits of alternative choices." Within this framework and considering the above risk facets, Peter and Tarpey (1975) operationalized three models.

³Equity theory has been applied by Leventhal, Younts and Lund (1972) dealing with a retail sales relationship, it was mentioned by Scott (1977) relative to the foot-in-the-door technique and it has been applied by Huppertz, Arenson and Evans (1978) in terms of retailing.

⁴The reason equity theory was investigated was that it was believed that it would produce reasonably high R^2 values. The R^2 values produced in the Peter and Tarpey (1975) study were extremely low.

⁵The relationship between fairness and preference should be positive, i.e., a fair attribute or facet (e.g., price) will be perceived favorably.

⁶One stream of thought regarding decision making is that consumers tend to maximize outcomes. Another is that consumers make "satisficing" decision where objectives are set and the individual attempts to realize or perhaps meet these minimum objectives. Conceptually, decision making on an equity basis is similar to the "satisficing" approach. In other words, an optimum decision in equity theory would be: $O_a/I_a = O_b/I_b$ where O_a pertains to the outcomes of individual a, I_a equals inputs of individual a, O_b refers to the outcomes of the comparison other b and I_b pertains to the inputs of comparison other b.

⁷Jacoby and Kaplan (1972) analyzed five risk facets. A six risk variable was advanced by Roselius (1971).

¹The present study also differs from the Peter and Tarpey (1975) research in that it includes, as suggested by Churchill (1979), reliability information (See Table 1).

²An example of a content theory would be Maslow's Hierarchy of Needs (Maslow, 1954).

The first consumer strategy or model was minimization of expected negativity utility. Algebraically, the model reads:

$$OPR_j = f \sum_{i=1}^n (PL_{ij} \cdot IL_{ij}) \quad (1)$$

where OPR_j = overall perceived risk for brand j
 PL_{ij} = probability of loss i from the purchase of brand j
 IL_{ij} = importance of loss i from purchase of brand j
 n = loss characteristic

Bauer (1960) and others suggested that consumers employ a strategy that involves the minimization of expected loss or perceived risk. Kogan and Wallach (1964) indicated that perceived risk involved two components "... 'a choice' aspect where the emphasis is on probability [of losing] and a 'danger' aspect where the emphasis is on severity of negative consequences." Other researchers (e.g., Cunningham, 1967 and Jacoby and Kaplan, 1972) have suggested that these two components exist in a multiplicative relationship. Consequently, the above negative expected utility model involves both a multiplicative and an additive calculation.

The second model advanced by Peter and Tarpey (1975) was called a perceived return model. The theoretical background for this model is attitude theory which has been widely discussed in the consumer behavior literature.⁸ This model involves multiple attributes or facets, component multiplication and summation. The perceived return may be formulated as:

$$OPR_{ej} = f \sum_{i=1}^n (PG_{ij} \cdot IG_{ij}) \quad (2)$$

where OPR_{ej} = overall perceived return
 PG_{ij} = probability of gain i from purchase of brand j
 IG_{ij} = importance of gain i from purchase of brand j
 n = return characteristics or facets.

The third model researched by Peter and Tarpey (1975) was the net perceived return model. This decision-making strategy was based on earlier research by Lewin (1943) and Bilkey (1953). With this strategy consumers are said to perceive products in terms of "... desirable (positive valence) and undesirable features (negative valence)." Peter and Tarpey (1975) operationalized this approach by assuming that "... individuals attempt to maximize the 'net valence' which is the arithmetic difference between expected positive and negative utility (i.e., net perceived return)." Symbolically, this strategy may be stated as:

$$NPR_{ej} = f(OPR_{ej} - OPR_j) \quad (3)$$

$$= f \sum_{i=1}^n [(PG_{ij} - IG_{ij}) - (PL_{ij} - IL_{ij})]$$

where NPR_{ej} = net perceived return for brand j
 PG_{ij} = probability of gain i from purchase of brand j
 IG_{ij} = importance of gain i from purchase of brand j
 PL_{ij} = probability of loss i from purchase of brand j
 IL_{ij} = importance of loss i from purchase of brand j
 n = utility facets (characteristics)

⁸See Wilkie and Pessemier (1973) for an excellent review article.

The fourth model discussed in this paper was based on equity theory. This decision-making strategy was not analyzed by Peter and Tarpey (1975). Equity theory has been discussed in some detail by Jacoby (1976) and reviewed by Pritchard (1969). As Jacoby (1976) indicates "equity theory is essentially a social comparison theory in which an individual evaluates his "inputs into" versus "outputs derived from" a given situation relative to those of another, where this other may be another person, a class of people, an organization, or the individual himself relative to his experiences from an earlier point in time." According to Campbell and Pritchard (1976) equity theory "... deals with exchange relationships and the fairness or equity of these exchange relationships." One way to operationalize equity theory is to measure the fairness of each facet or attribute in the decision process. This approach for measuring equity has been used by other researchers (e.g., Huppertz, Arenson and Evans, 1978; Austin and Walster, 1974; Brickman and Bryan, 1975; and Wicker and Bushweiler, 1970). In this study the probability of an attribute occurring will be combined with the perceived fairness of that attribute. The numerical value resulting from the multiplicative and additive equity model will be compared to an overall preference measure (i.e., the dependent variable). Equity theory is relevant to risk measurement in that it adds a new dimension for assessing risk. Peter and Tarpey (1975) examined risk in terms of occurrence probabilities and importance. In this study, equity theory was also employed, and risk was assessed in terms of probability of occurrence and fairness. As an example, high monthly payments (risk attribute) for a car may be perceived to be probable-improbable and fair-unfair. If high monthly payments are deemed probable and unfair, purchase is likely to be negatively affected. The conceptual background for equity theory lies in the work of Thibaut and Kelley (1959) and Homans (1961), however, it was formally developed by Adams (1963, 1965). Algebraically, the equity model may be depicted as:

$$PE_{j1} = f \sum_{i=1}^n (PL_{ij} \cdot F_{ij}) \quad (4)$$

where: PE_{j1} = perceived equity for brand j in loss (1) situation
 PL_{ij} = probability of loss i from the purchase of brand j
 F_{ij} = perceived fairness of i from the purchase of brand j

and

$$PE_{jg} = f \sum_{i=1}^n (PG_{ij} \cdot F_{ij}) \quad (5)$$

where: PE_{jg} = perceived equity for brand j in gain (g) situation
 PG_{ij} = probability of gain i from purchase of brand j
 F_{ij} = perceived fairness of i from purchase of brand j

Methodology

Sample

The sample consisted of approximately 250 juniors and seniors enrolled in a basic marketing course at Syracuse University. A total of 245 usable questionnaires were obtained. Of the 245 questionnaires, 119 were completed on the Pinto and 126 were completed on the Malibu. Peter and Tarpey (1975) also used a sample of students.

Questionnaires

The questionnaires used in this study were identical to those of the original study (i.e., Peter & Tarpey, 1975), with the exception that questions on equity were added. Each questionnaire (Pinto, Malibu) contained a preference (like-dislike) question (dependent variable) and thirty-six independent variable questions: (a) six to measure probability of loss⁹ from brand purchase; (b) six to measure loss importance from brand purchase; (c) six to measure fairness of loss from brand purchase; (d) six to measure probability of gain¹⁰ from brand purchase; (e) six to measure gain importance from brand purchase; and (f) six to measure the fairness of gain from brand purchase. The probability questions were measured on a scale with endpoints labelled: probable-improbable and the importance questions were measured on a scale with endpoints labelled: importance-unimportance. To obtain a measure of perceived equity, subjects were asked to rate each attribute in terms of each situation. Therefore, as there were six attributes and two situations (i.e., loss, gain), twelve measures of equity were obtained (for each brand). Fairness was operationalized using a 7-point bipolar scale with end points labelled: fair-unfair.

Statistical Analysis

The data was first analyzed using Cronbach's Alpha (Cronbach, 1951) to measure the reliability of each model component (PL, IL, PG, IG, F (loss) and F (gain) in terms of each brand. To assess if a significant difference existed between a loss situation and a gain situation in terms of fairness the appropriate data was next analyzed in terms of a t-test. Next the data was analyzed in terms of factor analysis to assess the explanatory capability of each model. Using the varimax rotation option, loadings were obtained on each of the six brand characteristics relative to each brand. Originally, it was assumed that all factors would be delineated with an eigenvalue less than 1. However, this was found not to be possible and eigenvalues close to the initial criterion of 1 have been included. Eigenvalues less than 1 are reported in the text of the paper. Further, the data was analyzed using multiple regression analysis. The factor scores served as input in the multiple regression analysis to eliminate multicollinearity among the independent variables. The resulting R²'s which were obtained from the multiple regression analysis were compared on a model by model basis to determine which one best represented the variation in brand preference.

Results

Coefficient alpha values (Cronbach, 1951) are shown in Table 1. Nunnally (1967) suggests that reliabilities between .50 and .60 are acceptable in early stages of basic research. Therefore, except for Malibu PL, the reliability measures for each model component are within or above an acceptable standard.

Table 2 shows the mean fairness scores (F_{ij}) over the two situations (i.e., loss and gain). Table 2 indicates that the subjects perceived from each car brand over the six risk facets a loss situation to be unfair and a gain situation to be fair. A bias in terms of what is fair or unfair has been reported by others, e.g., Messick and Sentis, 1979. Ideally, a loss and gain situation should be perceived as unfair or inequitable. In a loss situation the customer losses and in a gain situation the seller losses. In a fair (equitable) situation neither lose.

⁹Loss facets refer to high maintenance cost, high monthly payments, poor self-image with car, etc.

¹⁰Gain facets pertain to low maintenance cost, improvement in self-image, improvement in social acceptance, etc.

In this study the subjects perceived a fair situation to be when the seller was losing (gain situation).

Table 1
Cronbach's Alpha: Model Components By Brand

Brand	Model Components	Cronbach's Alpha
Pinto	PL*	.756 (.820)**
	IL	.518 (.743)**
	PG	.723
	IG	.724
	F (loss)	.795
	F (gain)	.873
Malibu	PL	.486 (.741)**
	IL	.551 (.753)**
	PG	.551
	IG	.642
	F (loss)	.790
	F (gain)	.771

*Each model component includes six brand characteristics.

**Alpha values reported in Peter and Ryan (1976) for the same brands and model components.

Table 2
Mean Fairness Scores (F_{ij}) Over
Two Situations: Loss and Gain*

Brand	Characteristic	Loss	Gain	
Pinto	Financial	1.808	5.681	t=-20.22, p>.0001
	Social	2.965	4.684	t=- 7.90, p>.0001
	Performance	1.956	5.719	t=-18.25, p>.0001
	Psychological	3.000	5.327	t=-10.98, p>.0001
	Physical	1.886	5.743	t=-18.49, p>.0001
	Time	1.991	5.765	t=-18.53, p>.0001
Malibu	Financial	2.355	5.425	t=-17.19, p>.0001
	Social	3.368	4.491	t=- 5.64, p>.0001
	Performance	2.262	5.650	t=-18.39, p>.0001
	Psychological	3.338	4.982	t=- 8.78, p>.0001
	Physical	1.915	5.665	t=-20.91, p>.0001
	Time	2.284	5.754	t=-18.99, p>.0001

*Scale values: fair (7), unfair (1).

Table 3 shows the matrices of the varimax rotated factor loadings for the loss characteristics for the two automobile brands--Pinto and Malibu. Factor 1 tends to load heavily on expected performance characteristics (i.e., financial, performance, physical and time) whereas factor 2 has high loadings on the psychosocial dimension (i.e., social and psychological variables). A partial exception to the above paradigm is the Pinto brand which also has a high loading for the physical risk characteristic on factor 2. These findings relative to perceived loss are similar to those of Peter and Tarpey (1975).

Table 4 depicts the factor loading matrix for the perceived gain characteristics. Two factors emerged from the analysis (the second factor has an eigenvalue of .7855 and .8808 for the Pinto brand and the Malibu brand, respectively). In keeping with the approach used by Peter and Tarpey (1975), these eigenvalues were considered close enough to the cut-off point of 1 to be included in the analysis. Factor 1 involves the expected performance decision (i.e., financial performance, physical and time) and factor 2 includes the psychosocial dimensions (i.e., social and psychological). The results shown in Table 4 are similar to those determined by Peter and Tarpey (1975).

Table 3
Matrices of Rotated Factor Loadings For Six Perceived Loss Characteristics For Two Automobile Brands

Brand	Characteristic	Factor 1	Factor 2
Pinto	Financial	.7985 (.6733)*	.1912 (.2383)
	Social	-.0727 (.0025)	.8461 (.9249)
	Performance	.7015 (.8815)	.3092 (.1146)
	Psychological	.2555 (.3941)	.7701 (.7470)
	Physical	.3937 (.7037)	.5177 (.1910)
	Time	.8360 (.9011)	-.0539 (.0369)
Malibu	Financial	.7573 (.6995)	-.3624 (.1766)
	Social	.2607 (-.0244)	.6697 (.8814)
	Performance	.6515 (.7203)	.1281 (.3866)
	Psychological	-.0015 (.3049)	-.6966 (.7808)
	Physical	.7271 (.5995)	.2637 (-.1167)
	Time	.8062 (.8040)	.3239 (.2053)

*Peter and Tarpey (1975) findings in parentheses

Table 4
Matrices of Rotated Factor Loadings For Six Perceived Gain Characteristics For Two Automobile Brands

Brand	Characteristic	Factor 1	Factor 2
Pinto	Financial	.8438 (.8389)*	.1981 (.0679)
	Social	.1987 (.1848)	.9057 (.8825)
	Performance	.5742 (.8589)	.5673 (.1792)
	Psychological	.2988 (.1071)	.7704 (.9073)
	Physical	.7090 (.7349)	.4712 (.2247)
	Time	.8800 (.8492)	.2465 (.0877)
Malibu	Financial	.7608 (.6640)	.2459 (.0577)
	Social	.1248 (.0393)	.9247 (.8841)
	Performance	.7385 (.7641)	.1879 (.2935)
	Psychological	.4193 (.3367)	.7133 (.7931)
	Physical	.8263 (.7469)	.1545 (.2039)
	Time	.7721 (.8637)	.2687 (.1027)

*Peter and Tarpey (1975) findings in parentheses

Table 5 depicts the matrices of the rotated (varimax) factor loadings for the six net return characteristics. As with the loss model and the gain model, a two factor solution was requested. The eigenvalue for second factor was .9524 for the Pinto brand and .9367 for the Malibu brand. The factor loading matrices in Table 5 did not show the same two dimensional pattern that was observed in Table 3 and Table 4. The Pinto brand in Table 5 has heavy loadings on the social, psychological and physical characteristics in factor two. On the other hand, the Malibu brand, in terms of factor two, only has a heavy loading on the psychological variable. When considering the perceived net return model, the two dimensional solution involving the expected performance and psychosocial paradigm did not appear to be evident. In other words, relative to the perceived net return model, the results of the present study did not equal those of Peter and Tarpey (1975) in terms of attribute dimensionality.¹¹

¹¹Of the six brands studied by Peter and Tarpey (1975), three did not factor out to produce a clear dichotomy in terms of the two dimensions--performance and psychosocial.

Table 5
Matrices of Rotated Factor Loadings For Six Perceived Net Return (Gain-Loss) Characteristics For Two Automobile Brands

Brand	Characteristic	Factor 1	Factor 2
Pinto	Financial	.8321 (.8035)*	.2169 (.1917)
	Social	.2123 (.0862)	.8259 (.8911)
	Performance	.7819 (.8828)	.2814 (.1662)
	Psychological	.1794 (.3544)	.8613 (.7490)
	Physical	.5077 (.6319)	.5382 (.4008)
	Time	.8611 (.8906)	.1606 (.1733)
Malibu	Financial	.7104 (.5392)	.0969 (.2928)
	Social	.6315 (-.0176)	.0831 (.8459)
	Performance	.8109 (.6912)	-.0767 (.4945)
	Psychological	.1106 (.3641)	.9762 (.6633)
	Physical	.7055 (.7324)	.2444 (-.0519)
	Time	.8298 (.8496)	.1770 (.1832)

*Peter and Tarpey findings in parentheses

Table 6 shows the matrices of the rotated (varimax) factor loadings for the equity model. The eigenvalues for the second factor in the gain situation were below the cutoff point of 1.¹² The perceived equity model did not follow the attribute dimensionality paradigm that was observed by Peter and Tarpey (1975).¹²

Table 7 shows the results of the multiple regression calculation using factor scores as input. The perceived net return model had the highest mean R², followed by the perceived loss model, the perceived equity (gain) model, the perceived gain model, and the perceived equity (loss) model, respectively. In the Peter and Tarpey (1975) study the mean R²'s were ranked from highest to lowest as follows: net perceived return, perceived loss and perceived gain, respectively. The rank order of the R²'s is identical in both studies in terms of the net return, loss and gain models.

In both studies the model that appeared to have the poorest predictive capability was perceived gain.

Table 6
Matrices of Rotated Factor Loadings For Six Perceived Equity Characteristics For Two Automobile Brands

Brand	Characteristic	Factor 1*	Factor 2*	Factor 1**	Factor 2**
Pinto	Financial	.0366	.8484	.8563	.2022
	Social	.8478	.0355	.3301	.8768
	Performance	.1989	.7372	.8106	.2849
	Psychological	.3033	.6378	.1977	.8977
	Physical	.7641	.3390	.5657	.6591
	Time	.7626	.2131	.7446	.3868
Malibu	Financial	.3467	.5849	.0790	.8937
	Social	.7314	-.2466	.7430	.1135
	Performance	.7575	.2382	.3843	.6454
	Psychological	-.0795	.8700	.8059	.1725
	Physical	.6731	.4493	.7244	.3133
	Time	.6822	.1518	.6321	.5362

*Loss Situation

**Gain Situation

¹²The eigenvalue for the second factor with Pinto (gain) and Malibu (gain) was .7631 and .8098, respectively.

Table 7
Brand Preference as a Function of Perceived Loss, Perceived Gain, Perceived Net Return and Perceived Equity: A Comparison of R²'s Obtained From The Regression of Orthogonal Factor Scores

Brand	Perceived Loss Model	Perceived Gain Model	Perceived Net Return Model	Perceived Equity (Loss Sit.)	Perceived Equity (Gain Sit.)
Pinto	.209	.112	.236	.037	.134
Malibu	.200	.074	.292	.054	.067
Mean R ²	.204 (.206)*	.093 (.195)*	.264 (.316)*	.045	.100
Ranking	(2)	(4)	(1)	(5)	(3)

*Mean R² found in Peter and Tarpey (1975) study.

Conclusions

The basic purpose of this study was to investigate four alternative decision making models in terms of their relative ability to explain and predict brand preference. In part, the study by Peter and Tarpey (1975), was replicated. Models are usually compared in the literature on the basis of predictive criteria. However, as Wilkie, McCann and Reibstein (1974) indicate, interest in various models is also based on diagnostic or explanatory performance.

Peter and Tarpey (1975) examined three models--perceived loss, perceived gain and perceived net return. Essentially, with each model they found that attribute dimensionality could be explained in terms of two dimensions: expected performance and psychosocial. Peter and Tarpey (1975) found the perceived net return model to be the best predictor of brand preference.

In the present study a fourth model called perceived equity was added to the three researched by Peter and Tarpey (1975). In the present study, the perceived gain model and the perceived loss (Malibu brand) model exhibited the two dimensional attribute pattern found by Peter and Tarpey (1975), the perceived loss (Pinto brand) model, the perceived net return (Pinto brand) model and the perceived equity (Pinto brand) model in the gain situation only partially yielded a two dimensional pattern and the perceived net return (Malibu brand) model and the three equity models--loss (Pinto and Malibu brands) and gain (Malibu brands)--did not produce the expected performance and psychosocial paradigm. In summary, the present study did not produce a clear cut picture of risk characteristic dimensionality as was the case in the Peter and Tarpey (1975) research. In the present study it was found that the perceived net return model was the best predictor of brand preference--the same as Peter and Tarpey (1975).

Several factors may account for the differences in results. First, although both studies utilized students as subjects, the students may have been different between the two universities involved. Second, the time lapse between the two studies was approximately five years. The results of the two studies could have also been affected by the fact that non-ratio scale measurement was involved in each study (see Schmidt and Wilson, 1975).

The two studies produced very low R² values. A possible reason for this finding is that the facets (attributes) were not determinant (see Alpert, 1971).

Generally speaking, the two studies produced similar results in terms of predicting brand preference but different results in terms of explaining brand preference. The equity model produced less than expected results in terms

of both explanation and prediction. This may have been due to the method of operationalization used in the equity model in this study.¹³

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SELF-IMAGE/PRODUCT-IMAGE CONGRUENCE MODELS:
TESTING SELECTED MODELS

M. Joseph Sirgy, Virginia Polytechnic Institute and State University
Jeffrey E. Danes, Virginia Polytechnic Institute and State University

Abstract

Self-image/product-image congruence models employed in consumer self-concept studies were identified and criticized for their atheoretical foundation. These models include the absolute difference, the simple difference, the difference squared, the Euclidean distance, and the divisional models. This study is designed to compare the predictive strength of a theoretically-based congruence model (referred to as the Interactive model) with those traditional congruence models in relation to purchase motivation (i.e., product preference and purchase intention). The results showed that the Interactive congruence model predicted consumers' purchase motivation only slightly better than the traditional models.

Introduction

Self-concept studies in consumer behavior used a variety of methods to measure degree of congruence between self-image (actual self-image, ideal self-image, etc.) and product image in relation to product preference, purchase intention, and product ownership. These methods include algebraic models (e.g., distance models, multiplicative models), product-anchored measures, correlational indices, measures utilizing mean scores and frequency breakdowns, and other grouping techniques such as factor analysis and multi-dimensional scaling (see Sirgy, (forthcoming) for a comprehensive literature review).

This paper (1) reviews the measurement models used to index the congruity between consumer's self-concept and product image in relation to consumer behavior, (2) introduces a theoretically-derived self-image/product-image congruence model, and (3) compares the predictive strength of the theoretically-derived congruence model with those traditionally used in the consumer self-concept literature.

Literature Review

Birdwell (1968) in his classic self-concept study attempted to determine the differential effects of self-image/product-image congruence on car ownership. A generalized Euclidean distance model was used to test the self-congruity hypothesis.

$$D_j = \sqrt{\sum_{i=1}^n (P_{ij} - AS_{ij})^2} \quad (1)$$

where D_j = overall discrepancy between product images (P_i)s and actual self-concepts (AS_i)s for individual (j).

i = a particular personality image (i) as it is associated with a particular product and consumer self-concept.

P_{ij} = a specific product image (i) of individual (j).

AS_{ij} = the corresponding actual self-image (i) of individual (j).

The relationship between actual self-image/product-image congruence and product preference, purchase intention, or

product ownership has been referred to in the consumer self-concept literature as the "self-congruity hypothesis." Self-concept and product image were measured using a semantic differential scale. Results were significant and supportive of the self-congruity hypothesis. Other applications of the Euclidean distance model in consumer self-concept studies include Delozier (1971), Delozier and Tillman (1972), Green, Maheshwari, and Rao (1969), and Maheshwari (1974).

The Delozier study (Delozier, 1971; Delozier & Tillman, 1972), which analyzed the data at an individual level,¹ found additional support for the self-congruity and ideal congruity hypotheses.² The Green, Maheshwari, and Rao's (1969) study analyzed the data also at an individual level, and contrary to expectations, the results were not supportive of the self-congruity hypothesis.

Maheshwari's (1974) doctoral dissertation study analyzed the data at both the aggregate and individual levels. His results provided some support to the ideal social-congruity hypothesis³ but little support for the social congruity hypothesis.⁴

Dolich (1969) hypothesized that product conspicuousness moderates the extent to which the actual self-image influences product preference relative to the ideal self-image. Similar to most of the studies discussed above, actual self-image, ideal self-image, and product image were measured using a semantic differential scale, and congruence scores were derived using a generalized Absolute Difference Model:

¹ Individual-level analysis refers to statistical analysis performed using the subject as the unit of analysis. This is usually accomplished by correlating the behavior scores (e.g., preference, intention) with self image/product-image congruity scores for each individual. This is to be compared with the traditional aggregate-or group-level analysis in which the behavior scores are correlated with congruity scores among individuals. That is, each subject gets a behavior score and a generalized congruity score. These two variables are then correlated across sample subjects.

² The "ideal congruity hypothesis" refers to the relationship between ideal self-image/product-image congruence and a consumer behavior variable such as product preference, purchase intention, or product ownership. The ideal self-image is defined as "what I ideally like to be."

³ The "ideal social congruity hypothesis" refers to the relationship between ideal social self-image/product-image congruence and a consumer behavior variable such as product preference, purchase intention, or product ownership. The ideal social self-image is defined as "what I ideally like to be seen by others."

⁴ The "social congruity hypothesis" refers to the relationship between social self-image/product-image congruence and a consumer behavior variable such as product preference, purchase intention, or product ownership. The social self-image is defined as "what I believe others see me as."

$$D_j = \sum_{i=1}^n |P_{ij} - AS_{ij}|, \quad D_j = \sum_{i=1}^n |P_{ij} - IS_{ij}|, \quad (2)$$

where IS_{ij} = the corresponding ideal self-image (i) of individual (j).

The data provided support for both self- and ideal-congruity hypotheses but failed to substantiate the moderating effects of product conspicuousness on the relationship between self-image/product-image congruity and product preference.

Maheshwari (1974) also used the generalized Absolute Difference model (which was referred to as the "City-Block Model") in comparison with the generalized Euclidean Distance model. The results indicated no significant predictive differences in preference scores between the two congruence models.

Sirgy (1979, 1980) used a similar generalized Absolute Difference model to test hypotheses involving self-congruity, ideal congruity, social congruity, and ideal social congruity. It was expected that ideal and ideal-social congruity would be more pronounced in relation to product preference than purchase intention, and self- and social-congruity would be more influential on purchase intention than product preference, and that these relationships are moderated by "product personalization." Product personalization was defined as the extent to which a product has personality symbols and associations. Self-Concept as well as product image were measured using a unipolar form of the semantic differential scale.⁵ The results provided support to the hypotheses but only with respect to some products.

Ross (1971) used a generalized Difference Squared model to test the moderating effects of product conspicuousness on the relationship between self-image/product-image congruity and product preference. The study employed a semantic differential to measure actual-, ideal-self-image, and product image. This congruity model can be represented as,

$$D_j = \sum_{i=1}^n (P_{ij} - AS_{ij})^2, \quad D_j = \sum_{i=1}^n (P_{ij} - IS_{ij})^2. \quad (3)$$

The results provided support for the self- and ideal-congruity hypotheses, but failed to support the moderating role hypothesis of product conspicuousness.

Schewe and Dillon (1978) used a Simple Difference model ($P_{ij} - AS_{ij}$) and ($P_{ij} - IS_{ij}$) as a congruence measure. However, compared to other studies, the index was not "generalized" or summed across all attributes (images) but treated at the image level. Similar to most other studies, self-concept and generalized stereotype of product user together with significant others were measured using a semantic differential scale. The analysis provided some support for the self- and ideal-congruity hypotheses.

In a direct test of various congruence models, Hughes and Naert (1970) compared the predictive effectiveness (dependent variable being probability that subject will replace present car) of the following congruence models:

⁵ In comparison to the traditional semantic differential scale which utilized bipolar adjectives, the format used in this study incorporated unipolar adjectives. This procedure was argued to be better suited for self-concept measurement since it allows for the measurement of the applicability or certainty attached to each adjective. It therefore avoids the forced associations of the bipolar format (Sirgy, 1980b).

	Type of Model	R ²
Self-Concept/Product-Image Congruence Models	$\sum_{i=1}^n (AS_{ij} - P_{ij})$	.22
	$\sum_{i=1}^n W_{ij} (AS_{ij} - P_{ij})$	.30
	$\sum_{i=1}^n (AS_{ij} - P_{ij}) / (AS_{ij})$	.23
	$\sum_{i=1}^n W_{ij} (AS_{ij} - P_{ij}) / (AS_{ij})$	.30
Attitudinal Models	$\sum_{i=1}^n P_{ij}$	.29
	$\sum_{i=1}^n W_{ij} P_{ij}$	.43

W_{ij} = importance weight of image (i) of individual (j).

The results showed that the weighted (by importance) versions of self-image/product-image congruence models were more predictive than the unweighted ones, and also the self-congruence models were found to be less predictive of consumer choice compared to attitudinal model.

The congruence models employed by Birdwell (1968), Delozier (1971), Delozier and Tillman (1972), Green, Maheshwari, and Rao (1969) Maheshwari (1972), Dolich (1969), Ross (1971), Schewe and Dillon (1978), and Hughes and Naert (1970) are all criticized for being atheoretical. No theoretical self-concept rationale was advanced to justify the utilization of any of these models.

Contrary to this trend, Sirgy (1981a, 1981b) developed a congruence model based on a self-image/product-image congruence theory (Sirgy, 1981c). One version of the model was tested and the results provided support for the model (Sirgy, 1981a, 1981b). The following section will present a brief exposition of this theoretically-based congruence model. For more theoretical detail, the reader may consult Sirgy (1981a, 1981b).

An Interactive Self-Concept Congruence Model

The interactive self-concept congruence model presented here is based on the self-esteem motive. The interaction between a product-image and a self-image is argued to elicit self-esteem motivation. This interaction results into at least four discrete conditions, namely positive self-congruity, positive self-incongruity, negative self-congruity, and negative self-incongruity.

Positive self-congruity occurs when a positively valued self-image matches that of a positively valued product image. For example, "this car seems to have an image of social outgoingness and dominance" can match the consumer's self-image as being "socially outgoing and dominant." In this case, the theory predicts that the individual will be motivated to approach the product to maintain a desirable level of self-esteem.

Positive self-incongruity occurs when a negatively valued self-image is compared with a corresponding positive product-image. This would induce a high motivational state to approach that product. This is mainly because approaching that product becomes instrumental in approaching an unmet ideal image and therefore increases the person's self-esteem.

Negative self-congruity comes about when a negative product-image is matched against a negative self-image. Here, the person would not be motivated to maintain a state which he/she views in a negative light, since by doing so his/her self-esteem would decrease.

Finally, negative self-incongruity refers to the comparison between a negative product-image and a positive self-image. In this situation, the theory argues that the consumer would avoid the product, since the product does not serve to enhance or maintain his/her self-esteem and in fact may threaten his/her self-esteem given purchase and usage.

The degree of self-esteem motivation activated in relation to a particular product is argued to a primary determinant of purchase motivation (e.g., product preference and purchase intention) toward that product.

A continuous mathematical function of the described interactive congruence model can be shown as follows:

$$PM_{ij} = F(EM_{ij}) = f(2PIV_{ij} - SIV_{ij}), \quad (4)$$

where PM_{ij} = purchase motivation as induced by image (i) of individual (j).

EM_{ij} = self-esteem motivation as induced by image (i) of individual (j).

PIV_{ij} = product-image value of image (i) of individual (j).

SIV_{ij} = self-image value of image (i) of individual (j).

But product-image value (PIV_{ij}) (i.e., a positive or negative product image) according to the congruence theory is a function of the product-image belief (P_{ij}) and the desirability weight placed on that image as reflected by the ideal self-image (IS_{ij}).

$$PIV_{ij} = P_{ij} IS_{ij} \quad (5)$$

And similarly, self-image value (SIV_{ij}) (i.e., a positive or negative self-image) is a function of both actual self-image (AS_{ij}) and ideal self-image (IS_{ij}).

$$SIV_{ij} = AS_{ij} IS_{ij} \quad (6)$$

Therefore,

$$PM_{ij} = f(EM_{ij}) = f(2P_{ij} IS_{ij} - AS_{ij} IS_{ij}). \quad (7)$$

The constant "2" is introduced in the function to support the theoretical argument that a positive congruity state (positive self-congruity) contributes to a different level of self-esteem motivation than a negative congruity state (negative self-congruity). Positive self-congruity is argued to induce a moderate level of positive (approach motivation) whereas negative self-congruity elicits a moderate level of negative (avoidance) motivation. Without this constant, this theoretical distinction would not be reflected.

In factored form, we have:

$$PM_{ij} = f(EM_{ij}) = f(2P_{ij} - AS_{ij}) IS_{ij} \quad (8)$$

And summing across all activatable images, the interactive model can be mathematically represented as:

$$PM_j = f(EM_j) = f\left[\sum_{i=1}^n (2P_{ij} - AS_{ij}) IS_{ij}\right] \quad (9)$$

Purpose

The purpose of this study is to compare the predictive strength of the Interactive model with those traditional models such as the Absolute Difference model, the Simple Difference model, the Difference Squared model, the Euclidean Distance model, and the Divisional model. These are mathematically represented as follows:

$$\text{Interactive: } \sum_{i=1}^n (2P_{ij} - AS_{ij}) IS_{ij} \quad (10)$$

$$\text{Absolute Difference: } \sum_{i=1}^n |P_{ij} - AS_{ij}|, \quad \sum_{i=1}^n |P_{ij} - IS_{ij}| \quad (11)$$

$$\text{Simple Difference: } \sum_{i=1}^n (P_{ij} - AS_{ij}), \quad \sum_{i=1}^n (P_{ij} - IS_{ij}) \quad (12)$$

$$\text{Difference Squared: } \sum_{i=1}^n (P_{ij} - AS_{ij})^2, \quad \sum_{i=1}^n (P_{ij} - IS_{ij})^2 \quad (13)$$

$$\text{Euclidean Distance: } \sqrt{\sum_{i=1}^n (P_{ij} - AS_{ij})^2}, \quad \sqrt{\sum_{i=1}^n (P_{ij} - IS_{ij})^2} \quad (14)$$

$$\text{Divisional: } \sum_{i=1}^n (P_{ij} - AS_{ij}) / AS_{ij}, \quad \sum_{i=1}^n (P_{ij} - IS_{ij}) / IS_{ij} \quad (15)$$

Method

Subjects

One hundred and sixty-eight female students enrolled in undergraduate psychology and consumer behavior classes at the University of Massachusetts and Virginia Tech were recruited as subjects. Since this is an explanatory (theoretical) study and not a descriptive one, the use of students and convenience sampling is justified in the context of this study.

Products

Two brands of automobiles (MGB and VW RABBIT) and two brands of magazines (PLAYGIRL and GLAMOUR) were used in this study.

Preliminary Procedure

In an effort to obtain a highly consensual set of images associated with each of the designated automobiles and magazines that would be as salient as possible for the population under consideration, 23 female subjects in an independent sample set were asked prior to the development of the questionnaire what characteristic images and stereotypes they thought would be associated with driving each of the designated automobiles and with reading each of the designated magazines. Subjects' responses were subjected to a content-analysis procedure and those images which were found to be highly consensual were presented in the final questionnaire (30 images or attributes).

Procedure

The 168 female subjects were run in groups of 5-15. The products were displayed in pictures removed from magazines and posted on 8 1/2" x 11 1/2" white bond paper. The subjects were instructed to look at these products and to become familiar with them before proceeding to respond to the questionnaire.

Questionnaire

The questionnaire was divided in two parts. Part 1 included questions concerning product preferences and purchase intentions for each product. Product preference was measured on a 5-point rating scale varying from very-much-dislike to very-much-like using the following question:

To what extent do you like _____, or to what extent does it appeal to you? (Note that the question is about liking not buying _____).

Purchase intention was measured on a 5-point rating scale varying from definitely-would-intend-to-buy-it to definitely-would-not-intend-to-buy-it. The precise question was:

Suppose that you have become aware of the need to buy _____, and suppose that you can reasonably afford _____ of your choice, would you intend to buy _____ in the near future.

Part 2 included questions on product images, actual self-images, and ideal self-images, respectively. The personality adjectives which were elicited from the preliminary procedure were used in a unipolar-type semantic differential format to measure these variables. Product images pertaining to PLAYGIRL, MGB, GLAMOUR, and VW RABBIT were independently assessed by the personality adjectives using 5-point likelihood-type scales.

A representative question used to elicit product image responses for a specific product is:

Imagine yourself driving or owning a MGB automobile. What kind of image do you think others would have of you driving or owning this car? For example, if I imagine myself driving or owning a CADILLAC, the kind of image others would have of me would be that of being wealthy, upper class, powerful, and

Table 1

Beta Weights of the Various Congruence Models in Relation to Product Preference and Purchase Intention

Product	Dependent Variable	Inter-active $\Sigma(2P-AS)/IS$	Absolute Difference		Simple Difference		Difference Squared		Euclidean Distance		Divisional	
			Σ | P-AS |	Σ | P-IS |	Σ (P-AS)	Σ (P-IS)	Σ (P-AS) ²	Σ (P-IS) ²	$\sqrt{\Sigma$ (P-AS) ²	$\sqrt{\Sigma$ (P-IS) ²	Σ (P-AS)/AS	Σ (P-IS)/IS
MGB	Preference Intention	.256	-.243	-.268	-.138*	-.102*	-.234	-.216	-.254	-.234	-.242	-.175
		.416	-.380	-.383	-.276	-.289	-.351	-.343	-.351	-.307	-.349	-.351
PLAYGIRL	Preference Intention	.511	-.469	-.509	-.148*	-.292	-.477	.513	-.469	-.516	-.354	-.428
		.500	-.401	-.497	-.136*	-.239	-.411	.477	-.416	-.494	-.289	-.367
VW RABBIT	Preference Intention	.346	-.347	-.390	.147*	.144*	-.301	-.349	-.320	-.369	-.030*	-.081*
		.458	-.465	-.504	.133*	.192	-.430	-.457	-.440	-.474	-.142*	-.116*
GLAMOUR	Preference Intention	.603	-.595	-.587	-.241	-.234	-.563	-.592	-.554	-.578	-.447	-.533
		.533	-.498	-.494	-.189	-.262	-.467	-.493	-.466	-.484	-.365	-.442

*p > .05

Note: With respect to the Absolute Difference, Simple Difference, Difference Squared, Euclidean Distance, and Divisional models, negative Beta weights were expected. This is because a high congruity level (low discrepancy score) is expected to go with a high preference or intention score and vice-versa. However, with respect to the Interactive model, positive Beta Weights were expected since a high congruity level (high score) is expected to go with a high preference and intention score and vice-versa.

dominant. Now driving or owning a MGB automobile may elicit a certain type of image. Describe this image by checking the likelihood of the personal characteristics listed below:

The actual self-image variable was measured using 5-point likelihood type scales ranging from very-much unlike-me to very-much-like-me using the following question:

How do you see yourself? To what extent do you think of yourself as having the following personal characteristics listed below?

The ideal self-image variable was measured using a 5-point desirability-type scale ranging from very-much-dislike to very-much-like using the following question:

How would you ideally like to see yourself? To what extent would you ideally like to see yourself as having the following personal characteristics listed below?

Results and Discussion

Product preference (and purchase intention) scores were regressed on each of the different models. The beta weights (or correlation coefficients) of each congruence model is shown in Table 1.

The pattern of correlations as shown in Table 1 point to the fact that overall the Interactive congruence model performed only slightly better than the Absolute Difference, Simple Difference, Difference Squared, Euclidean Distance, and Divisional models.

To compare the relative predictive validity of the Interactive model against the other models, incremental F-tests⁶ were performed. Product preference (and purchase intention) scores were regressed with one of the traditional congruence model scores (restricted model) and then with both the traditional and the Interactive congruence models scores (full model). In each case, it was expected that the incremental R² would be significant. In other words, the variance added by including the Interactive congruence model with the traditional model would be significant, and therefore attesting to the predictive strength of the Interactive model.

In this light, 80 incremental F-tests were performed through a step-wise regression procedure. The results revealed that only 47 out of the 80 tests showed that the Interactive congruence model to be more significantly predictive ($p < .05$) than the Absolute Difference, Simple Difference, Difference Squared, Euclidean Distance, and Divisional models.

Although these results provide little support for the predictive validity of the theoretically-based Interactive congruence model relative to its traditional counterparts, it is not clear whether differences in the model's predictive performance was due to construct validity or

⁶ e.g./ F-incremental (see Kerlinger and Pedhazur, 1973)

$$= \frac{R_{I+DS}^2 - R_{DS}^2}{1 - R_{I+DS}^2} \frac{(N - k_2 - 1)}{(k_2 - k_1)}$$

where I = Interactive congruence scores.
 DS = Difference Squared congruence scores.
 N = Number of total observations,
 k₁ = Number of independent variables in the reduced model.
 k₂ = Number of independent variables in the full model.

product and model variation. It should also be noted that the reliability and validity of the measures used in this study are unchecked and may be a source for error. Future research is underway to investigate these issues.

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SOME COMMENTS ON MULTI-ATTRIBUTE PREFERENCE MODELS

Donald R. Lehmann, Columbia University

Abstract

This paper discusses the problems in comparing multi-attribute models of preference. It begins by commenting on three particular papers in the area. The paper then discusses some of the problems with comparing multi-attribute models and proposes a general type of model which seems worth further investigation.

The field of multi-attribute model examination has grown rapidly and seems close to maturity. Consequently many papers compare various models. This paper proceeds by commenting on three such papers in specific and then on the area of individual-level preference models in general.

EVALUATION-PROCESS STRATEGY

The paper by Wahlers (1981) uses an experimental manipulation to examine the impact of the number of choice alternatives and the number of characteristics on the rule used by consumers to evaluate products. The paper is basically sound and the results seem plausible. Thus many may decry the lack of theoretical explanation for the choice models. On this issue I side with the author who has a simple and appropriate interest in seeing which fits best without any great theoretical pretense. I similarly applaud his restrained and brief summary. What follows is a series of suggestions and comments:

1. Some of the underlying models seem flawed. In particular, the variability-weighted models in fact double-weight variability since the characteristics with the greatest variation produce greater variation in the E_j 's and hence are already weighted more heavily.
2. One would expect it would be very difficult to separate the model used at the individual level. In this regard several other papers are worth perusing including Beckwith and Lehmann (1973), Bettman (1979), Lehmann (1971), and Wright (1975) as well as some recent work by Einhorn and the elimination-by-aspect and elimination-by-tree approaches (Tversky, 1972; Tversky and Sattath, 1979).
3. The use of undergraduate students to evaluate life insurance policies may introduce a serious bias. Since the purchase of life insurance is not likely to be under serious consideration by most undergraduates, one could reasonably hypothesize that their objective would be to find a method to finish the task. Since a lexicographic procedure is faster, they would be expected to use one. Hence the results are biased toward the use of a lexicographic rule.
4. If subjects used a lexicographic rule, then they would not normally rank all the alternatives, but rather would discard them until the best emerged. Since subjects are required to rank all the alternatives, they are forced to use a more complete procedure than may be typical.
5. The hypotheses, while perfectly reasonable statistically, are not exciting. A more positive hypothesis (e.g., lexicographic models will do better for more complex situations) seems better to represent the author's (or at least my) expectations. It also is consistent with Bettman's (1981) position on the importance of situational impact on use of overall evaluation in choice processes. Put more dramatically, by adhering to the form of science (in this case by using a null hypothesis that nothing is going on) we may retard rather than enhance the growth of knowledge.
6. The method of analysis is fairly simple. As one reviewer pointed out (and the author recognized), use of ANOVA might be more informative than the MANOVA reported

in the paper. Specifically a dummy variable regression with R^2 as the dependent variable and 5 model dummies, number of alternatives, and number of characteristics as the independent variables (plus some interactions) seems potentially interesting. Also use of an adjusted R^2 seems preferable. Moreover, the results that are reported tend to be fairly sterile. While Tables 1 and 3 are interesting, they also raise some questions. For example, for the case of 3 characteristics the average correlation is .767, .559, and .661 for 4, 8, and 12 alternatives respectively. This apparent non-monotonicity seems worth at least a comment. Moreover Table 2, which reports F statistics from a MANOVA, while a fairly standard way to report results, seems unnecessary. What would be more useful would be to report the impact of the choice alternatives on the dependent variable.

7. It can be argued that the wrong dependent variable is used. Since choice of life insurance normally involves selecting one policy, then only the first choice is relevant and hence the percent of first choice brands predicted should be used.

8. Since the models are individual in nature, the model which is best for each individual should be computed and then the results aggregated. This prevents a model which is best for a segment of the sample (e.g., 20%) from being swamped by the total results. Given the great margin by which lexicographic beat compensatory models, however, this is very unlikely to change the basic conclusions.

SELF IMAGE/PRODUCT CONGRUENCE

The paper by Sirgy and Danes (1981) compares the power of various mathematical forms of models related to the discrepancy between self and product images to predict response to products. As such it is very much parallel to the paper by Wahlers (1981) in both topic and approach.

My major question has to do with why one would want to apply self-image to brand choice given the poor performance of personality-type variables in general in predicting brand choice (Kassarjian, 1971; Wells, 1975) and the fact that product attributes both predict better and are more actionable managerially. What would be interesting would be to see if self-image either a) adds significantly to the predictive power of attribute-based models or b) is related to benefit-segments derived from attribute models. Also I would expect that self-image, in conjunction with basic economic and life-style variables might explain product-class choice (e.g., designer jeans), but not brand choice.

Some specific comments on the paper follow:

1. Why should the interactive model be converted into the particular continuous form shown in (1)? PM can be written as $PIV + (PIV-SIV)$. This suggests a product becomes more desirable as the product image (PIV) improves and as self image (SIV) decreases. Why not just use $PIV-SIV$, the simple difference form, or $3PIV-SIV$? Also consider the one-attribute example in Table 1. Several problems become obvious. First, the coding scheme used makes a big difference in the results, which is predictable given the interval nature of the data. Second, some of the conclusions seem illogical. For example, for the 1 to 5 coding alternative h should be better than alternative g and yet the model rates them in the opposite order. In short, the interaction model in formula (7) is questionable.

TABLE 1
One-Attribute Version

Model: (2P-AS)IS = 2(P)(IS)-(AS)(IS)

Alter- native	Values Coded -2 to +2			Model
	P	AS	IS	
a)	2	2	2	4
b)	2	2	-2	-4
c)	2	-2	2	12
d)	-2	2	2	-12
e)	2	-2	-2	-12
f)	-2	2	-2	12
g)	-2	-2	2	-4
h)	-2	-2	-2	4

Alter- native	Values Coded 1 to 5			Model
	P	AS	IS	
a)	5	5	5	25
b)	5	5	1	5
c)	5	1	5	45
d)	1	5	5	-15
e)	5	1	1	9
f)	1	5	1	-3
g)	1	1	5	5
h)	1	1	1	1

- All the models seem likely to be highly collinear. I would like to see a report on the correlations which emerge in this particular study in terms of both the raw variables (P, AS, IS) and the predictions.
- The questionnaire may induce a form of halo effect (Beckwith and Lehmann, 1975). By first giving liking response and then the ratings (the paper implies this order), subjects may rate a product (e.g., MGB) as having those attributes they also value, hence making product-image and self-image more congruent.
- It is unclear exactly how the analytical results were generated. It appears that each product was analyzed across respondents. It would seem to be more consistent with the spirit of the models to analyze within subject across products, although the design only gives 4 observations per subject. Also standardizing the data within person might be considered.
- Given the results in Table 1, it is not clear which differences are significant. More importantly, the simpler models (absolute difference or difference squared) seem to do at least as well as the more complex interactive model and the best of these are the appropriate standard of comparison. Moreover, the use of the F-test in footnote 6 seems inappropriate since the expanded model does not imbed the simpler one so the impact of adding another variable is confounded with the mathematical form chosen. In any event it appears that neither the self-image model in general nor the interaction model in particular is very strong predictively.

MEASURING PERCEIVED RISK

The paper by Evans (1981), like the other two on this session, focuses on comparing the predictive performance of models--this time, those based on the perceived risk involved in products. In extending Peter and Tarpey (1975), the paper uses six dimensions of risk. Again the question of why not to use product-specific attributes seems relevant. It seems hard to believe that individuals use six dimensions of perceived risk to evaluate brands within a product category.

The major extension in this paper involves an application of equity theory. While this is innovative and hence worth considering, it is very difficult to see how equity theory leads to equations (4) and (5) or even why one would want to apply it to brand choice. Even more importantly, (4) and (5) could be combined into a single equation such as:

$$PE = f\left\{\sum_{i=1}^n [PG_{ij}F_{ij} - PL_{ij}(1-F_{ij})]\right\}$$

$$\text{where } 0 \leq F_{ij} \leq 1$$

This model counts fair gains as positive, discounts fair losses, discounts unfair gains, and counts unfair losses as negative. As such it seems more closely related to equity notions than the two models presented.

Some other comments:

- The questions seem likely to be difficult to answer. Hence one would predict noisy data and low R's (which in fact occur).
- The reliability coefficients appear to have been calculated across the 6 dimensions of risk. Since they are supposed to be independent, the fact that they are highly related suggests either a) a severe measurement problem or b) that the assumption of independence is not justified.
- Table 2 seems to indicate gains are fair and losses unfair. Given this typical reaction, a model of gains minus losses such as the net utility model seems most appropriate.
- The results of Table 5 seem similar to Peter and Tarpey (1975), with the exception of Pinto.
- The key results seem to be in Table 7. These indicate a) that none of the models work well, indicating perceived risk is not a good predictor of behavior vis-a-vis product-specific attribute models and b) that the equity models used are basically failures.

EVALUATING ALTERNATIVE PREFERENCE MODELS

Finding which model consumers use to form preferences is a popular pastime. Research in this area seems to agree that preference can be represented (which does not necessarily imply causality) as some combination of the alternative objects' attribute positions and their utilities. Considerable disagreement exists over the identity of the attributes and the rules consumers use to combine attribute information. From this disagreement stems the tendency to compare models. Unfortunately the competitive testing suffers from several problems.

- Most of the models are deterministic. The lack of an explicit theory of error in the models makes their testing very difficult. In fact it is probably best to view both the attributes and the positions of objects as stochastic. Hence the attributes are a fuzzy set and membership probability a function of a variety of situational and personal characteristics.
- The goals of modelers differ. Most tests of competing models are based on predictive ability within the original data set. Yet many other criteria exist, such as understanding process or simplicity. If prediction is the sole goal, then the use of any measure beyond overall preference may not be justified.
- The data are imperfect. Much of the data used is based on questionnaires, which introduces innumerable possible biases. Other data comes from experiments which raise serious questions of external validity.
- The models generally have no notion of memory or learning over time. Any rational buyer when faced with repeat purchases in a product class seems likely to seize on shortcuts to make the decision more rapidly. Hence most decisions simply call on routine procedures stored in memory and involve very little or even no information processing (e.g., Lehmann and Moore, 1980).
- Most of the models predict similar if not identical preference orders for many sets of alternatives. This makes distinguishing among models very difficult and for certain managerial objectives not very crucial (Dawes and Corrigan, 1974; Einhorn and Hogarth, 1981).
- There is no single correct model. Different individuals use different approaches for different situations (Moore and Lehmann, 1980). Hence even for a single person or single product category the best a researcher could

hope to do is predict the probability that each of several models is being used. Thus it seems to be more useful to study the covariates of the model used rather than attempt to find "the" model.

Given these problems it is not surprising that arguments over the correct model persist. To add to that debate, this paper will conclude by briefly presenting another model which subsumes many of the existing models. While the model is not tested, it is a fairly comprehensive framework for considering both information processing and overall preference.

The model, referred to as the statistical satisficing model, assumes the following:

1. Individuals attempt to select a "best buy" based on attributes. The attributes are not completely fixed but vary with information availability, curiosity, etc.
2. The function which individuals use to compute overall preference is compensatory, but is not used without error. (Given most people can't correctly add four numbers in their head, this seems a plausible assumption.) Note that the compensatory function may include the risk (uncertainty) on attributes as well as the expected values much as risk and return appear in finance models.
3. People are busy and attempt to reach a nearly optimal/very good choice quickly (Shugan, 1980).
4. There are "weak" causal schema in memory relating perceptions on the attributes. Hence information on one attribute leads (via a regression-like model with an error term) to perceptions on other attributes (e.g., the relation of price to quality). This process may well be subconscious. It can be visualized as a spider's web, where well traveled paths are stronger and the entire web is both intricate and changing over time.
5. For well-known products, brand name or even package appearance serves as a cue to both other attributes and overall preference (Lehmann, Moore, and Elrod, forthcoming).

Based on this, individuals can be viewed as attempting to select an alternative which, with some level of confidence, they know will not be surpassed in overall utility by an amount greater than the cost of continued search and evaluation. Hence the process may be thought of as the following:

1. Gathering initial bits of information. These are more likely to come on more important dimensions (Tversky, 1972; Tversky and Sattath, 1979) or on dimensions which are salient (e.g., those for which the information is highlighted in a display).
2. Using a) the bits of information already in hand, b) whatever inferences to missing bits of data can be made, and c) an integration rule (e.g., linear additive compensatory) to form an estimate of the overall utility of the alternatives being considered.
3. Considering the statistical probability that either a) by gathering more information about the alternatives being considered or b) by attempting to add more alternatives to the set that the utility of the best alternative will increase substantially. (This suggests a number of interesting studies where an individual's confidence level and required level of improvement to continue evaluating are compared to such factors as general compulsiveness and implied wage rate.) This process is expected to be very inexact.
4. Either making a choice or reverting to (1).

This particular model is not very specific and hence not easy (or maybe even possible) to test. Nonetheless it seems to be a useful organizing framework as well as a normative approach for discussing decision-making. It also, assuming simplicity is not the major criterion, seems to integrate information processing and integration with preference in a stochastic framework. As such it seems

worth further elaboration and investigation.

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