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## **Faculty Working Papers**

THE STRUCTURE OF CONSUMER ATTITUDES:  
THE USE OF ATTRIBUTE POSSESSION  
AND IMPORTANCE SCORES\*

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The Structure of Consumer Attitudes:  
The Use of Attribute Possession and Importance Scores  
by  
Joel B. Cohen and Michael Houston

Introduction

If there is an article of faith within the field of consumer behavior, it is that "attitudes" should and ought to receive particular attention from consumer researchers. The reasons for this have not been spelled out as carefully as they might. At first inspection, of course, it stands to reason that an intervening variable occupying a functional relationship with behavior will receive considerable attention. There is, however, far less evidence for attitudinal-behavioral consistency than one might imagine. A number of suggestions have been made as to why this is the case and what might be done about it (Fishbein, 1971; Rokeach, 1968). Nevertheless, it appears as though most consumer researchers are willing to assume that the construct itself has much to offer. Greater diversity of opinion exists as to its precise role in the process of consumer decision making (Howard and Sheth, 1969; Krugman, 1965; Day, 1969; Ferber, 1962; Lavidge and Steiner, 1961) and, of course, the "best" way to measure attitudes.



In the last few years, however, a number of consumer researchers have begun to examine the construct to a greater extent. These have, essentially, been "friendly" probings whose purpose has been to develop a richer and more integrative understanding of attitude development and structure, interrelationships with other intervening variables and behavior, and attitude measurement. It seems especially important that the focus has been more integrative. The attitude model or orientation and the means of measurement must go hand in hand with the goals of the inquiry. It is hard to imagine any single model or means of measurement as per se "right" and the others "wrong." The dimension of "usefulness" is not easily divorced from purpose (i.e. the reason for the research).

As an example, let us consider two research topics of some interest in consumer research. The first of these is concerned largely with a consumer's "categorization response" both attitudinally and behaviorally. Jacoby's work on multi-brand loyalty (Jacoby, 1970) and Monroe's investigations of price perception (Monroe, 1970) are two examples in this area. In discussing his decision to use Sherif's social judgement model (Sherif, Sherif and Nebergall, 1965), Jacoby carefully outlines why he considers that approach to be particularly useful given the purpose of his inquiry. Among other aspects, Jacoby points to the utility of considering brand categorization



(in terms of acceptance, rejection and noncommitment) to be a particularly salient feature of multi-brand loyalty. In other words, the model seems to fit the problem and might be said to have "face validity." For Monroe as well, a central issue seems to be translating the consumer's frames of reference for acceptability (benchmarks, anchoring points, ranges) into operational equivalents. For both, it may be more important to locate the several boundaries or points of greatest resistance along a possibly continuous favorability dimension than to assign individuals scores which appear to have interval properties. Face validity, of course, is seldom a definitive test, since one is forced to argue through analogy and appearances rather than evidence. It is, therefore, imperative for a researcher to decide on a means by which the adequacy of a model may be established. In the research referred to above, the attention given first to conceptualization and then to operational definition would seem to provide a sound basis for evaluation.

A second research topic of growing interest is that of ascertaining the component structure of attitudes, especially as these relate to brand choice behavior (Bass and Talarzyk, 1969; Sheth, 1969; Sheth, 1970; Sheth and Talarzyk, 1970; Bither and Miller, 1970). It is this topic on which the remaining portion of this paper will focus.



The Fishbein and Rosenberg Models

Recent consumer research has featured the application of two somewhat similar models of cognitive structure (Fishbein, 1963, 1967; Rosenberg, 1956, 1960). The first has its origins more in the behavioristic tradition (learned, mediating responses) following upon the work of Doob (1947), Osgood and his associates (1957, 1965), Staats and Staats (1958), and Rhine (1958), while the second is more in accord with the Michigan "functional" approach (Smith, 1949; Katz, 1960).

Somewhat surprisingly, perhaps, the rather similar applications to which the models have been addressed have greatly muted possibly important conceptual differences between them. Sheth (1970), for example, is quite eclectic in his use of "a conceptual framework that seems most realistic . . . based on the strengths . . . of researchers including Rosenberg, Rokeach, Dulany and Fishbein." While there is much to be gained from a skillful pooling of orientations, it might be premature to fail to allow the evidence to help us select the more useful (for a specified purpose) from a number of competing orientations when there are meaningful differences among these. If, for example, there is reason to believe that the continued development and application of the Rosenberg and Fishbein models will lead to significant differences in prediction or structural insight (a not unreasonable assumption in





the light of their substantial differences in theoretical orientation), this possibility could be foreclosed by a premature marriage. For example, we note that Sheth and Talarzyk (1970) in "applying Rosenberg's two-factor theory and its variations proposed by Fishbein" attempt a useful, if liberal, translation of Rosenberg's "value importance" factor in terms of specific product attributes (e.g. taste, color, price, package size). Rosenberg, in keeping with the "functional" approach, had utilized "value importance" in an effort to ascertain the relationships between personally important needs and values (building upon the work of Murray [1938] and White [1951]) and one's attitude toward certain issues, groups and objects. While the use of product-specific benefits seems quite valid and sensible in its own right (see the fine discussion of this approach in Howard and Sheth [1969]), the distinction between the two approaches to needs and values seems important enough to be kept separate. In fact, while the Sheth-Talarzyk approach seems on its face to be far more likely to predict consumer behavior toward a specific product or brand, there seems little question but that Rosenberg's approach will tend to produce more fundamental knowledge and understanding of the interrelationships between attitudes, needs and values. Indeed, one may well want to relate (perhaps cross sectionally) various patterns of consumer attitudes



toward products, suppliers, market conditions, etc. to more general and pervasive needs and values.

This brings us back again to the purposes for which the Fishbein, Rosenberg or other approaches are to be used. Behavioral prediction is obviously a major goal of attitude research. There is a very great need to more adequately specify both attitudinal and behavioral variables if the extent of our ability to predict behavior is to be realized. An insightful examination of this relationship is presented by Fishbein (1971). He summarizes his adaptation of Dulany's (1967) theory of propositional control as follows:

...the theory essentially leads to the prediction that an individual's intention to perform any behavior in a given situation...is a function of (1) his attitude toward performing the behavior in the situation and (2) his perception of the norms governing that behavior in that situation and his motivation to comply with those norms.

There are several aspects of this theory which differ considerably from those of previous formulations. First, the theory focuses on an attitude toward performing a specific behavior in a particular situation rather than with an attitude toward a given person or object.<sup>1</sup> Behavior must, of course, occur at a specific time and place. Hence, the researcher should specify the dependent variable accordingly (e.g., making an unkind comment about the boss at an office party)



and work back to an operational equivalent at the attitudinal level.

A number of objections might be raised regarding this approach including the difficulty of specifying the exact situation in which, say, consumers are likely to find themselves when preparing to make a purchase. To the extent this is true we should not expect to make predictions with especially high degrees of accuracy. It may, however, be the case that a small number of situational contexts, each thought to be probable, might be specified in advance for a given behavior. These could then be incorporated into the attitude measurement procedure and used in prediction (after assigning appropriate probabilities of occurrence). Another objection might be that the situational context could be quite unimportant for many acts of behavior. Under such conditions one need then only measure one's attitude toward performing a specific behavior. Again, however, the difference between an attitude toward performing a given behavior (e.g. buying) and merely evaluating an object is quite important.

Substantial variation among behavioral acts and across people is to be expected relative to the importance of normative considerations. Some work on the development of an interactive consumer-product typology incorporating perceived social conspicuousness is now under way and may prove useful in this regard (Cohen and Barban, 1970). To the extent



that normative considerations are not likely to influence behavior they may simply be ignored (or weighted appropriately) in making predictions from the theory.

Attitudes, as considered above, should be expected to (and do in fact) predict behavioral intentions more accurately than they do behavior itself. Part of this discrepancy results from operational factors. For example, behavioral intentions are generally measured at a closer point in time to the attitudinal measure than is behavior.<sup>2</sup> Hence there is a greater opportunity for attitudes to change over the longer interval. This may be a particular problem in consumer research, since attitudes toward many products and brands, (1) may not be strongly held and (2) are subject to constant influence attempts through advertising and other information sources. In fact, it is certainly reasonable to expect many consumers to deliberately seek out information which, if accepted, would likely produce some restructuring of beliefs and attitudes and to do so at an increasing rate as they approach the time of decision. To the extent that either genuine attitudinal changes or disturbance factors (e.g. changes in economic conditions, special promotions, out of stocks) intervene between intentions and behavior, one should expect attitudes to predict the latter to a lesser degree.

At the heart of both the Fishbein and Rosenberg approaches is a structural model of similar algebraic form. Since our





research utilizes a model of exactly similar form, we shall not present a formal statement of the other two models, but rather call attention to differences in concepts which distinguish the models.

The model we have used is as follows:

$$A_b = \sum_{j=1}^n P_j I_j$$

where:  $A_b$  = a consumer's attitude toward a brand

$P_j$  = the brand's possession score on attribute  $j$ ,  
i.e. the extent to which a consumer believes that  
the brand possesses the  $j$ th product attribute or  
want satisfying property

$I_j$  = the importance of the  $j$ th product attribute

and  $n$  = the number of salient product attributes

Our use of  $P_j$  resembles Rosenberg's "perceived instrumentality" component, except (as has been discussed before) that Rosenberg has focused more upon a more basic set of "valued states" while our concern (consistent with Sheth and Talarzyk) is more upon the perceived possession of certain specific product attributes. Fishbein's comparable component, "strength of belief," relates to the probability that a concept is associated with the attitude object. Although it is likely that learning has led to or strengthened associations between the object and its most salient properties, Fishbein's approach could tend to place more weight on prominent stimulus characteristics which might generate a set of descriptive beliefs.



These, then, might prove to be more directly useful in object discrimination than evaluation, although the overlap for important characteristics is likely to be substantial. There is less variance in the definitions of the second component, attribute importance. Fishbein treats this concept as the "evaluative aspect" of the aforementioned belief, while Rosenberg terms this factor "value importance" or the amount of affect expected from the particular "valued state."

In order to adequately evaluate the usefulness of the Fishbein-Rosenberg type of approach in consumer research it is necessary to specify clearly the purposes for which the models might be used.<sup>3</sup> To date, two research topics seem to have benefited the most from these approaches: the study of attitude structure and the study of attitude-behavior relationships.<sup>4</sup> In the context of the latter purpose, it is possible to regard investigations of attitude structure (i.e. the extent to which the models actually portray the interrelationships among attitude components) as tests of their validity. If, in this way, it may be established that a valid measure of consumer attitudes has been generated, one may then study the relationship between attitude and behavior with some confidence. In the absence of established validity, a researcher runs the risk that negative findings, especially, are ambiguous (i.e. is the relationship or the method "at



fault?"). Again from the standpoint of a researcher's purposes, the relevant question may not simply be "how much validity?" but "validity for what?" The purposes of Jacoby and Monroe, for example, may not be well served by this type of model.

A growing number of studies by Fishbein and his associates provides impressive evidence regarding the relationship between scores on the Dulaney-Fishbein Model and behavioral intentions (an average multiple correlation of about .85 /Fishbein, 1971/). This may be interpreted as strong evidence of the instrument's validity, at least over the range of attitudes and behavioral intentions studied. In addition, encouraging research has begun to appear using overt behavioral criteria, although many of the experimental settings used to date (e.g. Prisoner's Dilemma Game) may not be comparable to those generally studied in consumer behavior (Ajzen, 1969; Ajzen and Fishbein, 1970).

#### Applications of the Models in Consumer Behavior

Sheth and Talarzyk (1970) and Sheth (1970) have applied a previously discussed modification of the basic Rosenberg-Fishbein approach (though not incorporating the normative component) to the area of consumer behavior. Their research has raised some interesting issues relative to the roles of



(using our terminology) P and I components in determining "attitude" and to some extent behavioral intention and behavior. Research to be reported on in a later section of the paper was strongly influenced by preliminary reports of their findings.

Sheth and Talarzyk (1970) sought "to determine the relative contribution of perceived instrumentality and value importance factors" by running three types of regressions on a measure of affect ("attitude") for each of 30 brands of various products including toothpaste, mouthwash, frozen orange juice, toilet tissue, lipstick, and brassiers. Data came from 1,272 members of the Consumer Mail Panel of Market Facts, Inc. The first regression predicted variance in "attitude" as a function of the sum of the products of the two attitude components (following the previously discussed translation of Rosenberg's "perceived instrumentality" term). The second and third regressions utilized one of the two summed components ("perceived instrumentality" and "value importance" respectively) by itself for the same purpose.

The authors found that the "perceived instrumentality" component model was superior to not only the "value importance"





component model but also the combined model. The former result is not surprising, since "value importance" relates to product class attributes (e.g. for toothpaste: taste/flavor, decay prevention etc.) and should not be an effective predictor of brand preference apart from some estimate of possession scores ("perceived instrumentality") for each brand. That is, it is not enough to know how important certain product benefits are unless we also know to what extent the consumer believes a given brand will provide those benefits.

The second result, however, is quite interesting. The authors express this well by stating that, "There is a clear implication that value importance not only does not have any strong correlation with attitude, but also that it suppresses the prediction of perceived instrumentality."

Is there any other explanation for this unexpected finding? A clue may come from the magnitudes of the  $r^2$ 's presented for each brand. Even with the "best" model, a substantial number of these (12 out of 30) indicate that less than 10% of the variance in "attitude" is being explained. While practically all of the  $r$ 's are statistically significant (when compared to the null hypothesis), in retrospect they seem unusually low for what should be a correlation between



two measures of the same thing, attitude toward a brand. The criterion variable, "affect measured by the preference scale," and the attitude measure derived from the Rosenberg model for some reason do not seem to vary together to the degree they should. Correlations between attitude scores generated by the Fishbein model and those of a measure of behavioral intention developed by Triandis, for example, have averaged .70 thus producing an  $r^2 = .49$  (Fishbein 1967 b). It is not unreasonable, then, to expect two measures of the same attitude to do about as well. In fact, not one of the thirty  $r^2$  in the "perceived instrumentality" regression was nearly this high. When we look at the  $r^2$ 's resulting from the regression using the Rosenberg equation, the lack of relationship is even more remarkable. Only 3 out of 30  $r^2$ 's exceed .10, and a substantial number are practically 0!

To the extent that the criterion measure does not correlate highly with an established measure of attitude, it may be inappropriate to use it to evaluate modifications of the established measure. Not only may the criterion measure not be sensitive enough for this purpose, it may in fact lead to errors in evaluation if the lack of commonality reflects a systematic bias rather than random error. We must conclude, therefore, that though the Sheth-Talarzyk notion regarding the relative contribution of "value importance" warrants serious



consideration, the data provided in support of this contention are not yet convincing. We shall shortly introduce data relevant to this issue. Before doing so, however, we would like to call particular attention to a significant paper by Sheth (1970) and comment on some of his findings which, in part, helped to structure the study to be reported upon.

Of particular interest is Sheth's analysis of evaluative beliefs as separate elements (rather than a summed attitude score) in a set of multiple regression equations. We agree with him that the benefits to be gained by retaining the separate identities of the beliefs forming an attitude are likely to be substantial. Sheth points out that aggregating beliefs is likely to result in a loss of information, possibly even a canceling out of effects. We would go further and suggest that not only for the sake of more accurate behavioral prediction but especially for the analysis of attitude change, insight to be gained by studying the underlying belief structure is likely to be quite substantial.<sup>5</sup> For one thing, individual P and I elements should be more sensitive to changes in product perception (Krugman, 1965) which define the nature of the product. For example, the nutritional value of breakfast cereal may come to assume a greater importance (I) for many people as a result of recent information. Individual brands' possession scores (P) on this product attribute may also change with greater knowledge.



Looking at this another way, it is possible to imagine a profile of competing products in terms of  $P_j$ 's, which together with importance weightings ( $I_j$ 's) tend to describe patterns of similarities in product judgements. Such data might then be used to evaluate market opportunities and segmentation strategies, to design products and product appeals, and to maintain a continuous audit of changing consumer desires and product information. Many of these objectives can be approached using multidimensional scaling techniques without prior specification of attribute dimensions. Although the approach suggested here may be more direct and less subjective (e.g. in interpreting dimensions), a meaningful comparison must await appropriate research. It does seem clear, however, that a great deal of information regarding the bases of consumers' attitudes toward a product can be learned from a disaggregative analysis of belief structure.

Before leaving this point, however, it might be well to re-emphasize our suggestion that, in the absence of definitive data to the contrary, it would be best to continue to examine both components, not merely "perceived instrumentality." Sheth's disaggregative approach utilizes only the latter. Beta weights are then calculated for each of the evaluative beliefs. Sheth reports that this procedure increased predictive power relative to prior summation of beliefs. Our





data will compare this approach with that of calculating beta weights for each  $P_j I_j$  pair.

One way of looking at Sheth's approach is that rather than specifying importance weightings ( $I_j$ 's) through direct measurement, he prefers to determine these from the data in the form of beta weights. While this procedure may provide a good fit for the sample upon which the weights were calculated, the real test of this approach may be its ability to predict an appropriate criterion variable for a new sample. We shall return to this later. A second point to consider in evaluating the contribution of the  $I_j$  terms (or any predictor variable) is that a lack of sample variation (e.g. too high agreement on the relative importance of each product benefit) will greatly dampen the potential effect of that variable. Thus Sheth's work raises the very interesting question as to whether attribute importance is likely to explain as much of the variance in purchase behavior (at least for products on which substantial consensus regarding product benefits exists) as it should for more idiosyncratic behavioral choices.

Sheth's procedure, essentially, was to determine brand attributes (for instant breakfast) from prior interviews. These became the basis for seven bipolar scales of evaluative belief used in a set of regression equations against (1) a 7-point overall liking measure (affect), (2) a 5-point



probability of buying scale (buying intention), and (3) a biweekly diary of reported purchases (buying behavior).<sup>6</sup> As expected, the ability of the evaluative beliefs to explain variation in the criterion variables was in descending order, though it was markedly weaker for actual purchases. The average  $R^2$  varied from approximately .60 for affect, to .27 for buying intention, and to less than .05 for behavior.<sup>7</sup> The substantial drop off between buying intentions and behavior is, of course, somewhat discouraging, though several possible explanations for this are discussed.

#### Research Plan and Procedures

The purpose of our research was to evaluate several alternative ways of treating data from a Fishbein-Rosenberg type of model, namely:  $A_b = \sum_{j=1}^n P_j I_j$ . The following alternatives were to be evaluated:

- (1) Both components multiplied together and summed
- (2) Both components multiplied together but not summed
- (3) Possession scores by themselves and not summed
- (4) Importance scores by themselves and not summed
- (5) Possession scores and importance scores by themselves and not summed

The first three appear to be the more meaningful approaches. The first represents the traditional method of handling the data, while the third has been suggested by research reviewed



in this paper. The second approach seemed to us to be the most appealing of all. This model has the advantages of a disaggregative approach to determining the underlying belief structure without giving up the unit of analysis ( $P_j I_j$ ) which seems the heart of the Fishbein-Rosenberg approach. That is,  $P_j I_j$  represents (in a single score) the extent to which a consumer believes that a brand possesses a product attribute weighted by the perceived importance of that attribute. Approaches four and five are used to provide a more complete analysis of alternatives, although the meaning of a weighted importance score ( $bI_j$ ) is not altogether clear.

Accordingly, a product comparable to those used in related studies (toothpaste) was selected. Interviews with a convenience sample of approximately 40 consumers indicated that essentially the same five attributes or product benefits (appearance, decay-cavity prevention, breath freshness, low price, and taste) as those used by Sheth and Talarzyk (1970) were probably most salient. A questionnaire was developed to establish scores for each of these attributes on the six leading brands of toothpaste sold in the area as well as importance scores on these attributes. Several criterion variables were measured, however our analysis has been confined to "frequency of purchase."<sup>8</sup> Although this variable has the drawback of referring to past behavior (hence it does not seem appropriate to speak of behavioral prediction), it was felt to be the most meaningful



criterion available on which to evaluate the five alternative models. Although based upon recall of past behavior, the criterion (1) represents a pattern rather than an isolated incident (and, therefore, may be more reliable), and (2) was the closest approximation to actual behavior available to us. Frequency of purchase was measured along a five-point scale from "never" to "most of the time."

Figure 1 presents the instrument used to derive brand possession scores. Brand names were randomly rotated around the six positions within each interview (i.e. over the five

Insert Figure 1 about here

charts used). The instrument was designed to provide a visualization of the comparative nature of possession score assignment. We did not wish to allow the frame of reference on, say, low price to shift during the rating process. Respondents seemed to find it relatively easy to grasp the relationship between "closeness to the center" and "greater possession of the attribute marked in the center" as instructed by the interviewer. Respondents were able to keep a picture of the comparative nature of the task in front of them, thus hopefully minimizing individual differences in the ability to conceptualize scale terminology or intervals.<sup>9</sup>

Attribute importance scores were obtained by drawing a ruler to scale, labeling the two ends "not at all important to





me" and "very important to me," giving each "hash mark" a number between one and nine, and instructing respondents to write the appropriate code letter for each attribute on one of the "hash marks." Respondents were told that this was a type of ruler used to measure how important each product benefit or characteristic was to them; the higher the number the more important the benefit or characteristic.

### Results and Discussion

Data from a probability sample of 192 people (more specifically, the person in the household who usually purchased toothpaste) in the Champaign-Urbana area was then tabulated prior to analysis. Frequency distributions revealed marked skewness in the data, especially on the criterion variable. Attitude scores tended to follow this same pattern. Crest, for example, was purchased "most of the time" by almost 50% of the sample, while at the other extreme Macleans was "never" purchased by almost 60% of the sample.  $P_j$  and  $I_j$  scores were much more acceptable although, since the direction of the skewness for any brand was fairly constant, the greater the aggregation the greater the skewness. Several remedies were available, some relying on substantially transformed data and others on distribution free methods of analysis. Since our purpose in conducting the research was essentially comparative within our own data base and did in fact involve not only



degree of association but also the determination of attribute weights for the  $P_j$  and  $I_j$  elements, regression analysis was the preferred statistical method. For this reason we sought to determine the extent to which the skewness might bias regression analysis, especially in a less conservative direction. The procedure used for this determination might be described as "the method of scrambled criterion variables."<sup>10</sup>

Essentially, the procedure involves scrambling respondents' criterion variables so that a "random" association of predictor and criterion variables results (i.e. respondent a's predictor variables are related to respondent b's criterion variable). Since the form of the distributions are unchanged (i.e. the skewness persists) one may test to see if the characteristics of the data themselves are exerting a systematic bias. Table 1 presents the results of 12 scrambled multiple regression runs (2 for each brand) using model 2 (in which P and I are multiplied but not summed). Since this model is a focal point of our analysis and is more skewed than more disaggregative models it seemed particularly appropriate for this purpose. The average adjusted  $R^2$  is .008. In the absence of evidence indicating systematic bias due to

Insert Table 1 about here

skewness, the decision was made to proceed with regression analysis. It is clear however, that one should be cautious in interpreting the results of this analysis.



Table 2 presents a summary of the coefficients of determination for frequency of purchase by model. Each of the  $R^2$ 's has been adjusted downward to provide unbiased estimates (McNemar, 1969). If one is willing to accept the contention that the criterion variable is somewhat closer to being an index of behavior than it is to being a cognitive variable, the magnitude of the relationships is reasonably encouraging. The  $R^2$ 's are substantially higher than those found by Sheth (1970) for the attitude-behavior relationship. In fact they come quite close to the  $R^2$ 's he reports between evaluative beliefs and behavioral intention, both measured during the same telephone interviews.

As expected, model 4 shows very little association with behavior toward brands. Information concerning the importance of an attribute by itself (i.e. in the absence of perceptions regarding attribute possession) seems of little value for predictive purposes.

There is little to choose among the other four models in terms of the  $R^2$  criterion. The only substantial difference among them is model 1's relatively poor performance for Crest and Colgate. It may be recalled, however, that model 1 is the most aggregative of the models and hence is the most likely to be affected by skewness on the predictor variable side of the relationship as well as on the standard criterion



variable. Crest and Colgate, the two most popular brands, are particularly likely to be affected by this.

There is little chance of being carried away by the "success" of the attitudinal model. Over 70% of the variance in behavior (and these data may not be as "hard" as would be desirable) is unexplained by the models. A good deal has been written as to why we should not expect to be able to predict behavior "perfectly" using attitudinal or any other kind of information. Still, we are very far from being perfect.

Our data gives some indication of what may be one quite troublesome "fly in the ointment." In addition to obtaining attribute importance scores relative to the personal needs of the individual in the household who usually purchased toothpaste, we asked that person to give us a second set of attribute importance ratings: namely, for others in the household. Should there be a difference indicative of varying brand preferences, perhaps the normative component of the Fishbein-Dulany paradigm would give more appropriate weight to this source of influence. We might find, for example, that a housewife desires a brand possessing one combination of attributes yet is aware that a teenage daughter and a child, just beginning to brush his teeth, each desire quite different product characteristics. To what extent does the housewife





feel she should satisfy these competing desires? Will she purchase several brands, alternate purchases among brands, or resolve the household conflict by a compromise choice? Table 3 reveals something of what might be termed "household conflict."

Insert Table 3 about here

Unfortunately, it is somewhat easier to observe than to take into account. These results are presented without statistical analysis simply to illustrate a factor which could conceivably tend to suppress predictability of behavior.

Since the avowed purpose of this research is to evaluate alternative ways of treating the type of data developed from a Fishbein-Rosenberg approach, and hence the specific models we have been examining, several additional points should be made. The first, briefly, concerns the role of the coefficient of determination in this type of evaluation. It is well to remember that the multiple correlation coefficient represents an optimal condition, the maximum correlation to be expected between the criterion variable and (a linear combination of) predictor variables. The empirical determination of regression coefficients insures an optimal weighting of variables. The point of all this is that the most appropriate test of a model must lie in its ability to predict with a second sample.

Models 1 and 2 specify meaningful weightings to be applied to possession scores apart from the statistical procedures



involved; namely attribute importance scores. To the extent that beta weights attached to evaluative beliefs (Sheth, 1970) or possession scores in our model 3 incorporate part of the weighting owing to attribute importance, they would appear to be less desirable from the standpoint of prediction (assuming some variability within the population). That is, when estimating attitudes for a different sample, a direct measure of attribute importance (as well as possession scores) should be more accurate and lead to better behavioral predictions than the use of the first sample's beta weights together with newly measured possession scores. This is the tentative conclusion we are led to despite the fact that the  $R^2$ 's and the adjusted standard errors indicate very little difference between, say, models 2 and 3. A more definitive predictive test of the two models would go far toward resolving this issue.

Finally, we should call attention to the beta weights (Table 4) which provide considerable insight into the underlying belief structure of attitudes toward each brand of toothpaste. Models 2 and 3 both provide a means by which a more penetrating analysis of brand attitudes may be pursued. There is little variance among the beta weights by model, although a few brands seem to have been treated differently, most notably Colgate. Much greater differences may be seen across brands. It is not difficult to see the usefulness of



these models in portraying brand differences along meaningful attribute dimensions. As a general approach to the study of attitude-behavior relationships as well as belief structure, models of the form discussed in this paper seem to have much to offer to the field of consumer behavior.

#### Footnotes

<sup>1</sup>Rokeach (1968) makes a similar point regarding the importance of both object and situation. He chooses to assess both A<sub>o</sub> and A<sub>s</sub> (attitudes toward the object and situation respectively) and determine weightings for each.

<sup>2</sup>If behavioral intentions are measured at the same point in time as attitudes using similar measurement techniques, it is not clear that they should be regarded as anything other than a related measure of attitudes.

<sup>3</sup>In addition, of course, one would want to carefully evaluate results of prior research as well as make comparison with alternative models.

<sup>4</sup>There seems good reason to believe that this type of approach can be applied successfully to the study of attitude change. Though this has not been a prime focus to date, the specification of underlying cognitive structure rather than merely degree of affect suggests the possibility of estimating information relevance and effect.



<sup>5</sup>The underlying belief structure should be interpreted to include both P and I elements of our attitudinal model. It appears that Sheth is concerned more at this point with individual evaluative beliefs which combine to form the "perceived instrumentality" components of Rosenberg's model.

<sup>6</sup>It is not possible in a paper of this size to do justice to Sheth's thoughtful conceptualization and detailed analyses. The reader is advised to examine the original paper for the considerable insights to be found there.

<sup>7</sup>No indication is given as to whether the  $R^2$ 's have been adjusted downward to provide unbiased estimates (McNemar, 1969). However, since sample size is large relative to the number of variables in the equations little change should result.

<sup>8</sup>We have data on brand purchased last as well as the likelihood of purchase the next time the product is to be bought.

<sup>9</sup>We often assume that providing a set of numbers between, say, two labeled end points largely eliminates the confusion or lack of standardization we often feel exists with the use of labels per se (e.g. very satisficatory, somewhat satisfactory, etc.) Perhaps this is due to the fact that we are accustomed to working with numbers. It should not escape our attention that many respondents seldom are asked to express





their feelings by translating them in such an abstract manner, may be decidedly uncomfortable in doing so, and may operate upon them quite apart from the properties we are sure they possess (e.g. equal distances between numbers). If, for example, it is important to convey the concept of equal distance we may be better advised to do so less abstractly.

<sup>10</sup>We are indebted to Larry Jones of the Department of Psychology for this imaginative technique, though we take full responsibility for the use of it.

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Table 1

SCRAMBLED MULTIPLE REGRESSIONS

Brand	Adjusted R <sup>2</sup> Run 1	Adjusted R <sup>2</sup> Run 2
Pepsodent	.03	.01
Macleans	-.02	.03
Gleem	-.05	.00
Ultra Brite	-.01	.02
Colgate	-.02	.10
Crest	.03	-.03

$\bar{R}^2 = .008$

N = 96



Table 2

COEFFICIENTS OF DETERMINATION FOR  
FREQUENCY OF PURCHASE

Brand	Model 1	Model 2*	Model 3*	Model 4*	Model 5*
Pepsodent	.24	.24	.23	.01	.22
Macleans	.22	.25	.25	.00	.25
Gleem	.24	.23	.24	.00	.22
Ultra Brite	.37	.37	.39	.07	.41
Colgate	.14	.25	.24	.10	.31
Crest	.10	.31	.31	.08	.31

\*Adjusted  $R^2$  values are presented



Table 3

"SELF" MINUS "OTHER" ATTRIBUTE IMPORTANCE RATINGS

Attribute	Number of Households		Total
	+1σ	-1σ	
Appearance	17	16	33
Decay Prevention	9	13	22
Breath Freshness	18	17	35
Low Price	14	19	33
Taste	19	7	26





Table 4

BETA WEIGHTS FOR ATTRIBUTES

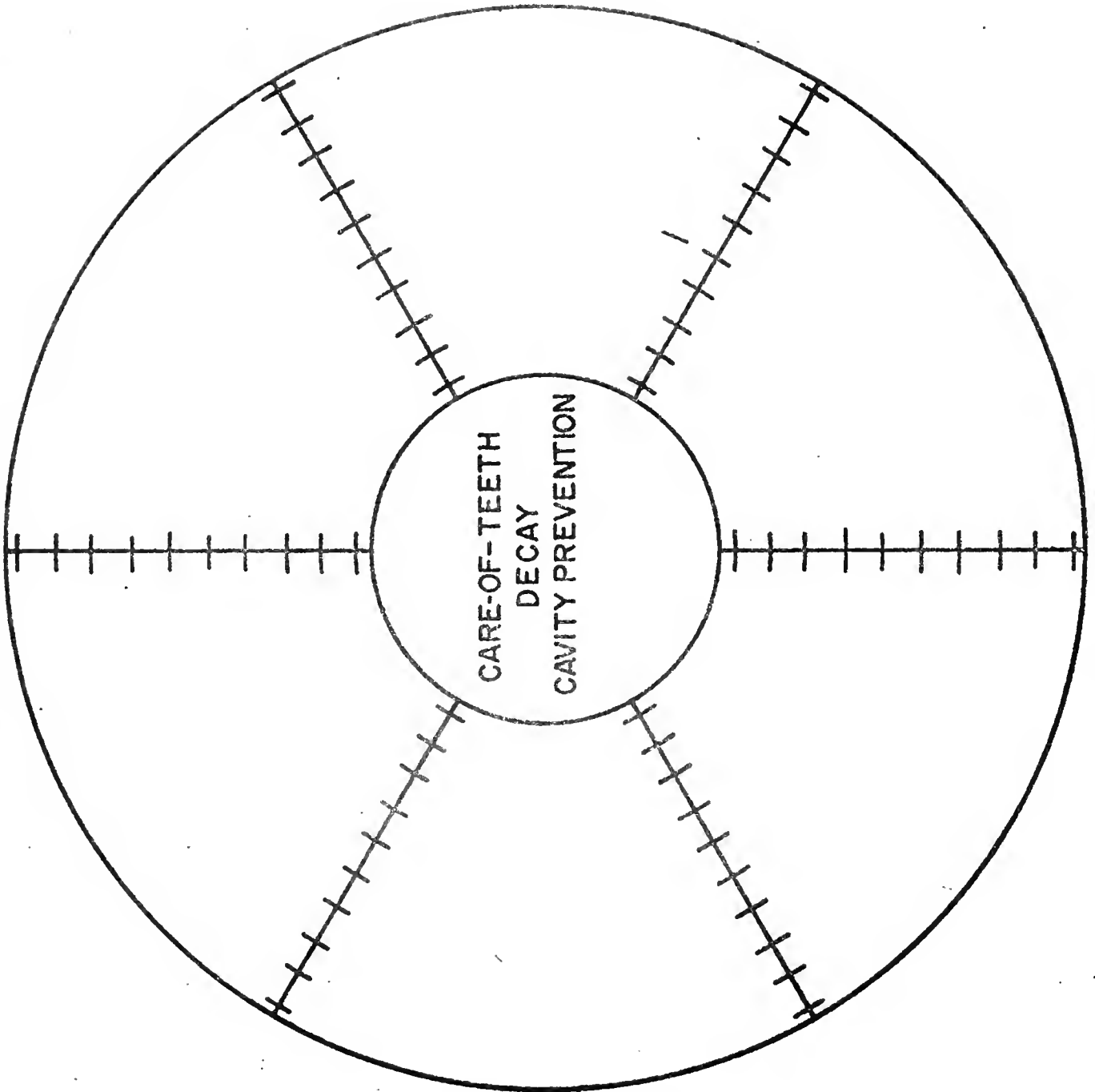
	Pepsodent			MacLeans			Gleem			Ultra Brite			Colgate			Crest		
	Model 2*	Model 3**	Model 3**	Model 2	Model 3	Model 3	Model 2	Model 3	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	Model 2	Model 3	
Appearance	.040	.056	.056	.293	.180	.180	.108	.068	.224	.144	.144	-.028	.103	-.168	-.113			
Decay Prevention	.208	.226	.226	-.052	-.020	-.020	.191	.113	.141	.184	.184	.064	.113	.534	.459			
Breath Freshness	.105	.028	.028	.037	.076	.076	-.023	.148	.033	.055	.055	.260	.261	-.134	-.109			
Low Price	.192	.145	.145	.040	.093	.093	.087	.027	.038	.026	.026	.071	.066	.154	.082			
Taste	.030	.111	.111	.265	.255	.255	.235	.215	.281	.295	.295	.245	.035	.223	.277			

\*p<sub>j</sub> I<sub>j</sub>

\*\*p<sub>j</sub>



FIGURE 1

















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