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2017

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and Value Importance Components in
Determining Attitudes

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FACULTY WORKING PAPERS

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University of Illinois at Urbana - Champaign

June 16, 1971

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RELATIVE CONTRIBUTION OF PERCEIVED INSTRUMENTALITY
AND VALUE IMPORTANCE COMPONENTS IN DETERMINING ATTITUDES*

Consumer attitudes have been extensively researched for quite some time now [4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 25]. One major approach to understanding development of and change in attitudes of consumers has been to examine the cognitive structure that is hypothesized to underlie attitudes [1, 3, 4, 5, 6, 8, 9, 10, 21, 24, 25, 27, 28]. Cognitive dissonance theory as it relates to attitude, for example, has been one such theory [1, 23]. However, only in the last three to four years has a serious and concerted effort been made by several researchers to functionally relate attitudes with underlying cognitive structure [4, 6, 9, 10, 24, 25, 28] by applying Rosenberg's two-factor theory [21].

Rosenberg's two-factor theory is formally stated as follows:

$$A_{ik} = f \left[\sum_{j=1}^n (PI_{ijk} \cdot VI_{jk}) \right]$$

where:

A_{ik} = attitude toward an object k expressed in terms of an individual i's degree of like-dislike (affect) of that object

PI_{ijk} = individual i's perceived instrumentality of kth object toward attaining or blocking jth goal or value

VI_{jk} = value importance to an individual i of jth goal or value

In other words, attitude toward an object or concept k is considered to be a function of the weighted sum of beliefs about the object (i.e. perceived instrumentality) as blocking or attaining certain values or goals, in which

the weights are the relative importances of the respective values or goals (i.e. value importance). In consumer behavior, the theory is translated to state that attitude toward a brand is a function of (1) buyer's beliefs about the brand (perceived instrumentality) regarding its ability to satisfy or block a set of consumption and usage motives, and (2) the relative importance of these motives (value importance) to the buyer.

There is a vitally important but as yet unresolved question about the two-factor theory of attitude: Which component -- perceived instrumentality or value importance -- is more important in determining a buyer's attitude? Or are they equally important? In Rosenberg's classic study [21], it was found that perceived instrumentality contributed more toward determining the attitude than value importance. However, according to Rosenberg, his data leave it an open question as to whether this is an artifact of the measurements or computations employed or whether, on the other hand, "perceived instrumentality" actually controls more variance in attitudinal affect than does "value importance" (p. 371).

Due to the multiplicative relationship suggested by Rosenberg it is not possible to directly determine the dominance of one factor over the other. On the other hand, answers to these questions seem to have important implications for advertising and promotion. As Howard and Sheth [10, Chapter 9] point out, symbolic communication including advertising and promotion can basically influence the buyer in two ways. First, they can change a buyer's perception of the brand by providing certain connotative meanings about the brand which make it a better perceived instrument to satisfy certain goals. For example, by proper symbolic communication, a

Jessert item such as Jell-o is projected as an appropriate instrument in making salads for lunch time. Secondly, symbolic communication can change relative intensities of various goals in the motive structures of buyers. For example, buyers may consider taste and convenience as more important goals in the consumption of cereals than calories and nutrition. A particular brand of cereals may attempt to change this by intensifying the need for nutrition and low calories.

It will be seen that if perceived instrumentality (PI) is more important in determining attitudes, then the first approach seems more suitable in which the relative superiority and appropriateness of a brand's specific attributes are emphasized. On the other hand, if value importance (VI) is more important, the second approach seems more suitable in which certain goals are emphasized as more relevant than others in the consumption of a product. One can also detect the implicit public policy issue underlying the two approaches: The first approach almost suggests offering what the market needs irrespective of what these needs may be, while the second approach is more normative in which attempts are made to reorganize the needs of customers.

This paper is an attempt, on a large scale, to empirically find out whether any one of the two factors (PI and VI) is more dominant over the other in the determination of attitudes.

DESCRIPTION OF DATA¹

The Consumer Mail Panel of Market Facts, Inc. was the sample basis for this study. A national sample of 2,000 female head of household panel

members was selected. This panel provided a balanced sample to parallel census data for the United States with respect to geographic division, and within each division by total household income, population density and degree of urbanization, and age of panel member.

Out of the total sample of 2,000 households, 78.5 percent responded to the mail questionnaire and 63.6 percent of the total sample returned questionnaires which were usable for the entire analysis. Socio-economic segments were represented in this final sample of 1272 respondents in approximately the same proportions as represented in the panel.

Measures of affect, perceived instrumentality and value importance were obtained on a representative set of brands for six product categories: frozen orange juice, mouthwash, toothpaste, toilet tissue, lipstick, and brassieres. Five product attributes were specified for each product category on the basis of earlier informal interviews with consumers to obtain value importances. The study was limited to five brands in each product category. Table 1 indicates the product attributes and the individual brands studied for each of the six product categories.

The value importance component of attitude was measured by asking respondents to provide a scaled value from 1 to 6 which would reflect the importance of each attribute in designing an ideal brand for the product category. Exhibit 1 shows the actual question asked, the scaling method and the attributes for two of the six product categories studied.

A similar scaling method was utilized to obtain the perceived instrumentality component of attitude. Exhibit 2 displays an example of this questioning with two of the five attributes actually used to study

toothpaste. Respondents were also asked to give rank preferences of the five brands in each product category.

METHODOLOGY AND RESULTS

In order to determine the relative contribution of perceived instrumentality and value importance factors, three simple regressions were performed on each of the 30 brands. The first regression predicted variance in attitude (affect measured by the preference scale) from the weighted sum scores of respondents derived by multiplying each perceived instrumentality (PI_{ijk}) with the value importance (VI_{ij}) of a characteristic j and then summing these weighted values across all the characteristics. In other words,

$$A_{ik} = f\left[\sum_{j=1}^n (PI_{ijk} \cdot VI_{ij})\right]$$

This is identical to Rosenberg's theory. It implies that an individual's like-dislike (affect) of a brand is determined by both how important the characteristics of a product are to him and how strongly he evaluates the brand on these characteristics. Thus, the more important the characteristics and more favorable the evaluations of a brand, the greater the affect toward that brand, and vice versa. However, the above equation also implies that an individual with greater value importance and less favorable evaluations of a brand will manifest his affect to the same extent as an individual with less value importance and more favorable evaluations of the same brand.

The second regression predicted variance in affect (attitude) from just the sum of beliefs (PI_{ijk}) representing the perceived instrumentality

factor. Thus,

$$A_{ik} = f\left(\sum_{j=1}^n PI_{ijk}\right)$$

Here, it is assumed that all the value importances (VI_{ij}) are equal, and statistically take the value of one. Since there is no variability in the value importances among individuals, the variability in affect (attitude) among individuals can only covary with the variability of the sum of beliefs among the individuals. Therefore, if both the components are determinants of individual's affect, we should expect the predictive power of the second regression less than that of the first equation. The difference in the two predictive powers, if any, can be attributed to the value importance factor.

The third regression predicted variance in affect (attitude) from the sum of relative importances of characteristics (VI_{jk}) of a product class. This sum represents the value importance component. Thus,

$$A_{ik} = f\left(\sum_{j=1}^n VI_{ij}\right)$$

In the above equation the perceived instrumentalities of a brand (PI_{ijk}) are all held constant, and statistically they assume a value of one. However, this makes the equation less meaningful from a conceptual viewpoint since it suggests that affect toward any brand in product class is a function of the individual's value importance of that product class. There are, however, several reasons for this type of analysis. First, Rosenberg [21] also attempted to correlate only the value importance component with affect by holding perceived instrumentalities constant. Since our attempt is to replicate his study albeit in a marketing situation, this equation is utilized in analysis. Second, the equation hypothesizes

that an individual with greater value importance of a product class will tend to manifest greater like-dislike (affect) toward a brand in that product. This hypothesis has been suggested by a number of researchers who consider perceived risk, ego involvement, commitment and importance of purchase as an important determinant of brand preference and brand loyalty [10, Chapter 3]. Finally, and probably most importantly, the equation is used as a statistical barometer to gauge the relative contribution of the two components (PI and VI) even though the conceptual meaning is not fully compatible.

In Table 2, the results of a total of 90 regressions (6 products x 5 brands x 3 types) are summarized in terms of the coefficient of determination (r^2). A careful examination of these results points to several consistent findings across all the 30 brands. Since the sample size and the number of variables are the same across all the brands, the predictive aspects are directly comparable.

First, without a single exception, the perceived instrumentality factor has greater predictive power compared to the value importance factor. In fact, the value importance factor seems to be almost uncorrelated with affect (attitude) as implied from the very small positive correlations in Table 2. The only exception is in the case of MacLeans toothpaste. This very small correlation between affect and value importance is somewhat surprising because the five brands in each product class were specifically selected to represent alleged segments of the market loyal to particular brands due to their distinctiveness on a single characteristics. We had also hoped to obtain significant variations in the coefficient of determination across the

five brands within a product class and across the six product classes. Again, this is not borne out by the data. Finally, we find no variation in the predictive power between private and national brands although they were chosen for the study in the hopes that value importance would manifest differential predictive powers between them.

Second, the perceived instrumentality factor has a wide range of predictive power across the five brands within a product class. However, there are no systematic differences between private label and national brands. Similarly, there are no systematic differences in this range between personal and family products or between intimate and non-intimate products.

Third, if we examine the differences in average coefficients of determination among the six product classes, at least two results are worth reporting: (i) the average r^2 of the perceived instrumentality factor (first column) tends to covary with that of the value importance factor (second column). For example, the respective highest averages are in brassieres, the second highest in frozen orange juice, etc. The only exception from this rank order correlation is mouthwash; (ii) the average r^2 of the weighted perceived instrumentalities (third column) does not covary with average r^2 of individual components. In fact, the lowest average r^2 is in lipstick and brassieres (both are intimate products) even though they are at the extreme poles on the individual components. We think these results are due to some of the speculative hypotheses presented in the discussion section of the paper.

Fourth, the predictive powers of even the simple perceived instrumentalities (first column) are systematically small across the 30

brands. For example, the highest r^2 is only .407 in the case of MacLeans toothpaste, and the average of all the 30 brands is only .148. Sheth [26] has suggested that partly this is due to the summing of perceived instrumentalities prior to regressing the dependent variable. He suggests that it is better to perform a multiple regression in which each perceived instrumentality is treated as a separate independent variable.

The fifth and probably the most surprising, finding is the consistent lowering of the predictive power when the perceived instrumentalities are weighted by the value importances. This can be observed by comparing the coefficients of determination of the first and the third regressions. There is a clear implication that value importance not only does not contribute toward the determination of the consumer's affect toward a brand but also that it suppresses the determinant power of the perceived instrumentalities. On reexamination of the Rosenberg study, we find that his results also indicate this suppressing effect even though his analysis was different than ours: The chi-squared values of the first 20 weighted perceived instrumentalities amounted to only _____ as compared to _____ in the case of unweighted perceived instrumentalities [21, pp. 368-370].

DISCUSSION

In some sense this study raises more questions in the process of answering other questions. Although, it is repeatedly found that perceived instrumentality is the more dominant factor in the determination of the consumer's affect (attitude) toward a brand, it is not at all clear why value importance has very small correlations with affect or why it tends to suppress the determinant power of perceived instrumentality in the

process of prior weighting. On the other hand, it seems very plausible to think that the saliency of various characteristics of a product class should be useful discriminators in determining attitudes toward various brands in that product class. We speculate that a number of conceptual and methodological factors are causal to this peculiar interaction between the perceived instrumentality and value importance components in Rosenberg's theory.

Let us first enumerate the conceptual explanations: (i) It is very probable that when the respondent expresses his perceived instrumentality on a scale, the value importance of that scale is taken into consideration by the respondent in this expression. Osgood [19] has argued for quite some time now that the greater the extremity of reaction away from the midpoint (neutral) on a semantic differential scale, the higher the learning and involvement of the concept represented on that scale. This is indicated in our data to some extent by the sizable correlations between each perceived instrumentality and its value importance. It would also be possible to test this hypothesis by classifying respondents into categories based on their extremity of evaluations on a set of scales and then discriminating these categories of respondents with respect to their profile on value importances. We are currently engaged in this research. (ii) Second, and perhaps a weaker explanation, is that value importances are not specific to a brand but rather general for a product class. Why should they, therefore, be predictive of variances in the affect toward specific brands? By the same token, if affect were obtained in terms of liking of a product class, we should expect stronger relationship with the value importance factor.

Several methodological factors may have also contributed toward the peculiar results obtained in this study: (i) the low correlations in general found can be partly attributed to the procedure of summing the perceived instrumentalities and value importances prior to the regression. The first author is currently investigating the nature and magnitude of this effect; (ii) affect is measured by ordinal rank orderings of the five brands in a product class. It is possible that this ordinal nature of data with the loss of one degree of freedom may confound the regression results; (iii) any weighting procedure usually tends to cluster the distribution of the sample. Furthermore, summing the weighted values may increase this tendency. Perhaps, therefore, this distribution of the independent variable is such that it tends to covary much less with the dependent variable than it should; and (iv) the analysis is performed for the aggregate sample. It is possible that there may be heterogeneity among groups of respondents due to factors such as past usage and preference of specific brands and product categories or the demographic and socio-economic differences.

TABLE I
 PRODUCT ATTRIBUTES AND BRANDS USED IN THIS STUDY

<u>Frozen Orange Juice</u>	<u>Mouthwash</u>	<u>Toothpaste</u>
Taste/Flavor	Kills Germs	Decay Prevention
Price	Taste/Flavor	Taste/Flavor
Texture	Price	Freshens Mouth
Nutritional Value	Color	Whitens Teeth
Packaging	Effectiveness	Price
Minute Maid	Micrin	Pepsodent
Snow Crop	Cepacol	Crest
Birds Eye	Listerine	Gleem
A and P	Lavoris	Colgate
Sunkist	Colgate 100	MacLeans
<u>Toilet Tissue</u>	<u>Lipstick</u>	<u>Brassieres</u>
Texture	Color	Style
Color	Taste/Flavor	Price
Price	Prestige Factor	Comfort
Package Size	Container	Fit
Strength	Creaminess	Life
Aurora	Hazel Bishop	Pennys
Delsey	Max Factor	Playtex
Northern	Avon	Lovable
Scot Tissue	Coty	Maidenform
Charmin	Revlon	Sears

EXHIBIT 1

VALUE IMPORTANCE SCALES FOR PRODUCT ATTRIBUTES

Attributes for each of the product categories are listed below. I'd like to know how important each of these attributes would be to you if you were designing an ideal brand for the category. The lower the number you circle the more important you think it is; the higher you circle, the less important you think it is.

FROZEN ORANGE JUICE

	<u>IMPORTANT</u>			<u>UNIMPORTANT</u>		
Taste/Flavor	1	2	3	4	5	6
Price	1	2	3	4	5	6
Texture	1	2	3	4	5	6
Nutritional value	1	2	3	4	5	6
Packaging	1	2	3	4	5	6

LIPSTICK

	<u>IMPORTANT</u>			<u>UNIMPORTANT</u>		
Color	1	2	3	4	5	6
Taste/Flavor	1	2	3	4	5	6
Prestige Factor	1	2	3	4	5	6
Container	1	2	3	4	5	6
Creaminess	1	2	3	4	5	6

EXHIBIT 2

PERCEIVED INSTRUMENTALITY FOR ATTRIBUTES OF TOOTHPASTE BRANDS

Please circle a 1 if you think the brand is very satisfactory in the attribute, 6 if you think it is very unsatisfactory in the attribute, or somewhere inbetween depending on how well you are satisfied with the brand.

DECAY PREVENTION

	<u>Very Satisfactory</u>			<u>Very Unsatisfactory</u>		
Pepsodent	1	2	3	4	5	6
Crest	1	2	3	4	5	6
Gleem	1	2	3	4	5	6
Colgate	1	2	3	4	5	6
MacLeans	1	2	3	4	5	6

TASTE/FLAVOR

	<u>Very Satisfactory</u>			<u>Very Unsatisfactory</u>		
Pepsodent	1	2	3	4	5	6
Crest	1	2	3	4	5	6
Gleem	1	2	3	4	5	6
Colgate	1	2	3	4	5	6
MacLeans	1	2	3	4	5	6

TABLE 2

REGRESSIONS OF ATTITUDE ON PERCEIVED INSTRUMENTALITY,
VALUE IMPORTANCE AND BOTH

(Coefficients of Determination)

Product Description	Sum of Perceived Instrumentality $A_i = f \left(\sum_{j=1}^n PI_{ij} \right)$	Sum of Value Importance $A_i = f \left(\sum_{j=1}^n VI_j \right)$	Sum of Perceived Instrumentality Weighted by its value importance $A_i = f \left[\sum_{j=1}^n (PI_{ij} \cdot VI_j) \right]$
<u>Frozen Orange Juice</u>			
Minute Maid	.065	.003	.028
A & P	.189	.077	.008
Snow Crop	.171	.051	.032
Sunkist	.278	.044	.162
Bird's eye	.144	.045	.056
Average r^2	.169	.044	.057
<u>Toilet Tissue</u>			
Aurora	.190	.033	.104
Delsey	.024	.001	.013
Northern	.209	.045	.083
Scott	.085	.015	.001
Charmin	.267	.043	.067
Average r^2	.155	.027	.054
<u>Toothpaste</u>			
Pepsodent	.055	.025	.000
Colgate	.106	.008	.060
Gleem	.027	.000	.012
MacLean's	.407	.103	.189
Crest	.098	.000	.023
Average r^2	.139	.027	.057
<u>Mouthwash</u>			
Micrin	.152	.009	.076
Lavoris	.127	.003	.064
Listerine	.094	.000	.030
Colgate 100	.131	.008	.054
Cepacol	.285	.077	.049
Average r^2	.158	.019	.055
<u>Lipstick</u>			
Revlon	.062	.028	.002
Coty	.051	.032	.001
Hazel Bishop	.082	.006	.029
Avon	.200	.013	.053
Max Factor	.062	.027	.002
Average r^2	.091	.021	.017

Brassieres

Playtex	.194	.014	.019
Maidenform	.075	.006	.003
Lovable	.149	.072	.000
Sears	.173	.050	.007
Penney's	.304	.082	.038
Average r^2	.179	.055	.013

FOOTNOTES

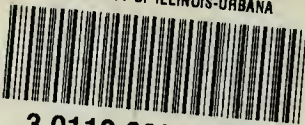
1. The data utilized in this study came from a research project financed by a grant from the Education Foundation of the American Association of Advertising Agencies to Professor Frank M. Bass, Krannert Graduate School of Industrial Administration, Purdue University. For a complete description, see Talarzyk [28].

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