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A Model of Attitude Structure
And
Attitude-Behavior Relationship

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INTRODUCTION

Several researchers in social psychology have suggested a close relationship between affect (the individual's like or dislike of an object, concept, or act), beliefs (the cognitive structure representing bits of information related to that object, concept, or act), and behavioral intention (the tendency to respond to the object, concept, or act by approaching or avoiding it). Rosenberg (1956, 1960), for example, hypothesized that affect is a function of beliefs related to the perceived instrumentality of an object or concept in attaining or blocking a set of relevant valued states, weighted by the relative importances of those valued states. Fishbein (1967), based on Dulany's (1968) theory of propositional control, considers behavioral intention to be a function of two factors: (1) attitude toward a specific act defined in terms of beliefs about the consequences of performing that act, weighted by the evaluation of those beliefs, and (2) social and personal normative beliefs, weighted by motivation to comply. The reader is referred to Fishbein (1966), McGuire (1969), and Scheibe (1970) for reviews of different viewpoints.

The underlying objective of all these theories and propositions is to search for some invariant linkage among the three broad areas of psychology that deal with cognitions, affect, and conations (Krech, crutchfield, and Ballachey, 1962). Unfortunately, this quest for an invariant relationship is still unattained due to a number of factors:

1. Although extensive theoretical thinking is available, there are relatively few studies.

2. Whatever studies have been carried out have suffered from a number of methodological and analytical limitations.

3. Most studies have been conducted in the controlled environment of the laboratory, which makes substantive inferences to the naturalistic environment difficult.

4. Finally, and probably most important, the linkage between attitude or behavioral intention and actual behavior has been found to be elusive even in laboratory settings. This has generated a great deal of pessimism about attitude's power to predict subsequent behavior (Insko, 1967). Worse yet, others have proposed that the causality may be in the opposite direction: attitudes may indeed be determined by the behavior that precedes the formation and, more important, the change in attitude structure (Cohen, 1964; Festinger, 1964). It seems that we need more realistic theories of attitudes as predictors of behavior in which situational factors are consciously taken into account as mediators between attitude and behavior. Rokeach (1968) has, for example, emphasized the situational aspects in his distinction between attitude-toward-the-object and attitude-toward-the-situation.

There are two major objectives of this paper:

1. To present a conceptual framework that links cognitive, conative, and affective aspects in a more realistic and comprehensive manner.

In particular, it attempts to isolate situational factors that systematically intervene between attitude and behavior.

2. To report a large-scale field study that (a) investigates the

structure of attitude components, (b) causally relates attitude with behavior, and (c) provides some operational measures of situational factors.

A THEORY OF ATTITUDE STRUCTURE AND THE ATTITUDE-BEHAVIOR RELATIONSHIP

Based on the thinking of several researchers, notably Rosenberg (1956, 1960), D. Katz (1960), Dulany (1968), and Fishbein (1967), I have attempted in Figure 1 to develop a conceptual framework of the structure of attitudes and the attitude-behavior relationship. This section describes the conceptual framework.

1. Total Beliefs

At a point in time, it is hypothesized that an individual has a set of beliefs about an object or concept. These are his Total Beliefs (TB). They constitute both the denotative and connotative meanings of the object or concept, if we look at it from the psycholinguistic viewpoint (Carroll, 1964; Osgood, 1962). Thus, Total Beliefs consist of the descriptive, evaluative, and normative knowledge that the individual possesses about the concept or object. The Total Beliefs can be classified into the following six types based on Fishbein's thinking (1967, p. 259):

A. Descriptive Beliefs.

1. Beliefs about the component parts of the object.
2. Beliefs about the object's relation with other objects.
3. Beliefs about the characteristics, qualities, or attributes of the object.

B. Evaluative Beliefs.

4. Beliefs about whether the object will lead to or block the attainment of various goals or valued states.

C. Normative Beliefs.

5. Beliefs about what should be done with respect to the object.
6. Beliefs about what the object should, or should not, be allowed to do.

Alternatively, we can think of Total Beliefs as a belief system serving all the four functions suggested by D. Katz (1960). The descriptive beliefs serve the knowledge function, the evaluative beliefs serve the instrumental, utilitarian function, and the normative beliefs serve the ego-defensive as well as the value-expression function.

Total Beliefs are learned by the individual from both informational sources and personal experiences. The former has been the major area of research among the mass communications researchers such as the Yale group of experimental psychologists (e.g., Hovland, Janis, and Kelley, 1953) and the Columbia group of survey sociologists (e.g., E. Katz and Lazarsfeld 1955). The latter, consisting of cognitive restructuring that arises from behavioral consequences, has been the major thrust of the dissonance theory (Festinger, 1957; Brehm and Cohen, 1962) as well as among the cognitive psychologists who have relied on the learning theory (Doob, 1947; Fishbein, 1967; Osgood, 1957; Osgood, Suci, and Tannenbaum, 1957; Staats, 1967; Rhine, 1958). In Figure 1 the dynamics of the interdependent relationship between behavior and the cognitive world is incorporated in the feedback loop.

2. Evaluative Beliefs

Evaluative Beliefs (EB), by definition, are an element of Total Beliefs. They refer to those cognitions about an object that portray the connotative meaning and knowledge about the object as the goal-object. In other words, Evaluative Beliefs represent the potential of the object to satisfy a set of relevant motives. Evaluative Beliefs as defined here are, therefore, equivalent to the perceived instrumentality component of Rosenberg's (1960) theory of attitude structure. Similarly, the belief structure underlying N. E. Miller's (1959) approach-avoidance gradients would constitute Evaluative Beliefs. Finally, Howard and Sheth (1969) consider Evaluative Beliefs to be the profile of assessment of an object relative to competing object on a set of choice criteria.

Evaluative Beliefs are the primary determinants of the individual's affective reactions toward an object or concept. In other words, a person has a favorable-unfavorable, like-dislike, love-hate, or good-bad reaction toward an object or concept because of the connotative meaning of that object as a relevant or salient instrument of satisfying some motive. We are here ignoring the development of those affective tendencies due solely to habit or conditioning as suggested by, for example, D. Katz and Stotland (1959). Later we shall incorporate affective tendencies both with and without a cognitive structure.

Evaluative Beliefs are likely to vary in both complexity and intensity from object to object. Furthermore, it is presumed that in repetitive goal-directed behaviors, the structure of Evaluative Beliefs becomes more streamlined and stable as learning of the behavior becomes greater.

Evaluative Beliefs are, however, at least multivariate (several distinct although interrelated cognitions) with some fundamental underlying multidimensional structure.

3. Affect

Affect (A) represents the positive or negative predisposition toward the object as a goal-object. To that extent, affective tendencies not anchored to the goal-attaining or blocking properties of the object are ignored here. Affect as defined here is, therefore, close to the classic definition of attitude as "a disposition to evaluate certain objects, actions, and situations in certain ways [Chein, 1948]."

As stated earlier, Affect is a function of Evaluative Beliefs. However, I also believe that affective tendency exists without a structure of Evaluative Beliefs because it is likely to be determined by the habit or conditioning process (H). Affective tendency is likely to be especially common among infants and young children.

Affect is likely to be determined differentially by each Evaluative Belief. It is, therefore, possible to examine the structure of Evaluative Beliefs in terms of the degree to which each Evaluative Belief, relative to others, governs affective tendency. I presume that only a handful of Evaluative Beliefs typically determine and, therefore, correlate with Affect; even though theoretically one can find a large number of "salient" Evaluative Beliefs. This phenomenon can be partly explained in terms of George Miller's (1956) theory of "The Magical Number Seven." Another point to keep in mind is the possibility that there may be individual differences in regards to whether Evaluative Beliefs are greater or lesser

Affect is presumed to be univariate and unidimensional, although we should realize that there is a complex cognitive structure underlying it.

The algebraic function of Affect is stated as

$$A_{ij} = f(EB_{ijk}, H_{ij}) \quad (1)$$

Where A_{ij} = individual i 's affect toward object j ,

$$EB_{ijk} =$$

The above general equation can be made more explicit in a specific investigation by determining a priori a finite number of criteria that the individual utilizes to evaluate the object or concept as the goal-object. However, we often lack such a priori judgment, in which case we must rely on the empirical findings regarding which Evaluative Beliefs correlate with Affect.

It is also possible to think that each Evaluative Belief partially and incrementally contributes toward a fuller determination of Affect. Furthermore, Evaluative Beliefs may be positively or negatively related to Affect because most choice situations tend to be of the approach-avoidance type: the goal-object both attains and blocks a set of motives or goals underlying the choice criteria. To bring these things into focus, we can reformulate the above equation in terms of a linear additive model:

$$A_{ij} = b_1[EB_{1ij}] + b_2[EB_{2ij}] + \dots + b_n[EB_{nij}] + b_{n+1}[H_{ij}] \quad (2)$$

In formulating this linear additive model, I am departing from the standard thinking in social psychology (e.g., Fishbein, 1967; Rosenberg, 1960) of summing the beliefs to produce a univariate attitude score, which is then correlated with Affect. I have found elsewhere (Sheth, 1973) that this prior summing of beliefs consistently lowers the correlation between Evaluative Beliefs and Affect. In addition, we can give at least

the following arguments against the summing of beliefs:

1. There is no reason why we should not expect the individual to retain a profile of his beliefs rather than a sum score. Most evidence in the literature on information processing would support the argument that the individual distinctly retains or files his beliefs about the object
2. Beliefs are typically measured on a bipolar scale; therefore, summing them entails a compromise (average) value that may be nothing more than a statistical artifact
3. Beliefs can be positive or negative. Summing them presumes that one cancels out the other. Another major difference is the explicit possibility of Affect being present in some situations without a cognitive structure. Such a possibility was first systematically suggested by D. Katz and Stotland (1959) and amplified by Triandis (1971).

4. Behavioral Intention

Behavioral Intention (BI) refers to the plan or commitment of the individual expressed at time t about how likely he is to behave in a specific way toward the object or concept at time $t+1$. We must remember that the individual can behave in many different ways with respect to an object or concept; however, we are primarily concerned with his behavior that treats the object or concept as the goal-object. In other words, we are concerned with that behavior toward the object or concept which will lead to attaining or blocking a set of motives or goals.

Behavioral Intention is hypothesized to be a function of (1) Evaluative Beliefs about the object and, therefore, also Affect toward the object; (2) the Social Environment (SE) that surrounds the individual and normatively guides his behavior regarding what he should and should not do; and (3) the Anticipated Situation (AS), which includes those situational factors related to behavior that he could anticipate and, therefore, forecast at the time of expressing his plan or commitment.

Implicitly, therefore, Behavioral Intention is a qualified expression of behavior: given such and such environment and other contingencies to happen at $t+1$, when behavior is likely to be manifested, the individual estimates at t whether he would or would not behave. This is important to emphasize because it is possible that we may predict Behavioral Intention very well but not the actual behavior since (1) anticipated social and situational factors may change and, therefore, behavior may not materialize as planned or forecasted, and (2) other unanticipated factors may impinge on behavior in a manner considerably deviant from the individual's plan.

Evidently, the influence of anticipated and unanticipated social and situational factors can be minimized if the time interval between Behavioral Intention and actual behavior is reduced. Theoretically, we can produce a very high positive correlation between Behavioral Intention and actual behavior if the two are measured contiguously in time and space because then we allow no freedom for outside factors to intervene and mediate.

Algebraically, we can write the following function of Behavioral Intention:

$$BI_{ij} = f(EB_{ijk}^1, SE_{ij}, AS_{ij}) \quad (3)$$

where BI_{ij} = individual i's plan to behave in a certain way toward object j,

EB_{ijk}^1 = individual i's belief k about object j,

SE_{ij} = individual i's Social Environment impinging on his behavior toward j, and

AS_{ij} = individual i's anticipation of events at the time of his behavior toward j.

It is possible that the three factors (EB, SE, and AS) may act as opposing forces resulting in some sort of conflict. For example, an individual may very much like to buy and use a Rolls Royce but he cannot afford it; or he may like a Cadillac and can afford it, but his social environment may inhibit him because a Cadillac may be socially unacceptable as a goal-object. In consumer psychology, it is common among working housewives to find such a conflict toward many convenience (instant) foods. Reciprocally, it is also possible for the three factors additively to contribute or facilitate the qualified expression of behavior. Perhaps it is more common to find this facilitating or supportive role.

We can express the facilitating or inhibiting relationship among the three factors with respect to the determination of Behavioral Intention by writing the general equation as a linear additive model:

$$BI_{ij} = b_1 [EB_{ijk}^1] + b_2 [SE_{ij}] + b_3 [AS_{ij}] \quad (4)$$

It should, however, be pointed out that the above model is simply a hypothesis that should be tested because we do not know how the three

1. It is possible to use Affect as a surrogate for Evaluative Beliefs since it is determined by the latter. In fact, in those situations where Affect is primarily determined by conditioning, it may be superior to Evaluative Beliefs as a predictor variable.

factors interact with one another.

5. Social Environment

Social Environment (SE) includes all the social factors that are likely to impinge on and provide a set of normative beliefs to the individual about how he should behave toward the object or concept at time $t+1$. Most of these social factors are likely to be anchored to the demographic, socioeconomic, and role-oriented images of the object or concept. For example, the individual may have the image of hair spray as a feminine product, concentrated in lower socioeconomic class and clerical workers. In consumer psychology, we think the following specific factors and their categorizations may be relevant: (1) sex, (2) age, (3) education, (4) occupational styles, (5) wealth, (6) life cycle, (7) family orientation, and (8) life styles. This list is by no means exhaustive, nor is it postulated that all the factors are impinging on a specific behavior. Indeed, it would be suggested that beliefs about the influence of the Social Environment should be empirically determined for each situation under investigation. However, Social Environment clearly includes a brand's stereotype.

6. Anticipated Situation

The Anticipated Situation (AS) factor includes all the other activities that the individual is likely to engage in at the time of actual future behavior as he perceives and forecasts them now when expressing his plan or intention to behave. These anticipated events may either enhance or inhibit the Behavioral Intention as determined by Affect or Social Environment or both. For example, because of a planned move to a large metropolitan area, the individual may commit himself to riding on the mass transit system

even though he dislikes it and his social environment is neutral to the situation. Similarly, the individual may desire a new personal luxury car and his social environment may also support this desire, but the financial constraints as projected to the next one or two years inhibit his intention to buy it.

The Anticipated Situation factor is presumed to be much more situation bound and ad hoc than the Social Environment factor. Accordingly, it is very difficult to develop an invariant list of variables as indicators of the Anticipated Situation factor. Once again, we must empirically determine the presence or absence of this factor in each investigation. However, based on some existing empirical evidence, it is possible to list the following general causes that lead to the presence of Anticipated Situation affecting the neat relationship between Evaluative Beliefs or Affect and Behavioral Intention: (1) cyclical phenomena such as holidays, vacations, birthdays, schooling, and education; (2) anticipated mobility (in view of the fact that mobility is very prevalent and increasing, a number of buying decisions may be strictly due to this factor); and (3) financial status of the decision maker, including anticipated incomes and expenditures.

7. Behavior

Behavior (B) refers to a specific act under investigation that is manifested at a specific time and under a specific situation. For example, in the buyer behavior area this may mean the purchase of a brand of television set from a particular store on a particular day. We are, therefore, not interested in predicting some generalized behavior that has no situational influences. For example, brand loyalty of the individual in buyer behavior, measured either by actual observations of repeat patterns of purchases or by a verbal self-reporting scale, is likely to be a generalized act in which

situational influences at each purchase occasion are ignored or at least deemphasized.

Behavior is hypothesized to be a function of the individual's Affect (with or without cognitive structure), Behavioral Intention, and a set of Unexpected Events (UE) that impinge on Behavior and that the individual could not predict at the time of verbally expressing his Behavioral Intention. By definition, if Affect and Behavioral Intention were expressed just prior to the act of behavior, we would be likely to find an absence of the Unexpected Events factor. Thus, in most laboratory experimental studies, both Affect and Behavioral Intention may be treated as equivalent to Behavior because they are expressed contiguously to Behavior both in time and space so that there are very few nonpredictable or unexpected events that deviate Behavior from the verbally expressed Behavioral Intention. However, in the naturalistic settings of the real world, we must expect a lack of contiguity between Behavioral Intention and Behavior due to the problems of data collection. This enables the Unexpected Events factor to exert an influence on Behavior. The greater the lack of contiguity in time and space, the greater should be the opportunity for the Behavior to be also influenced by the Unexpected Events factor. In buyer behavior, considerable empirical evidence exists in the area of durable appliances to support this hypothesis.

Mathematically, we can state that

$$B_{ijt} = f(A_{ij, t-n}, BI_{ij, t-n}, UE_{ijt}) \quad (5)$$

where B_{ijt} = a specific act of behavior manifested by individual i at time t toward object j ;

$A_{ij, t-n}$ = Affect toward the object (with or without cognitive structure), expressed at time $t-n$;

$BI_{ij, t-n}$ = individual i 's plan to behave in a certain way toward object, as expressed at some time interval n , prior to actual behavior; and

UE_{ijt} = Unexpected Events experienced by individual i at the time of behavior t toward object j .

We also presume that Affect and Behavioral Intention are uncorrelated with Unexpected Events and that Unexpected Events can either enhance or inhibit the conversion of Affect and Behavioral Intention into actual Behavior. Under these assumptions, the following linear additive model can be established:

$$B_{ijt} = b_1 [A_{ij,t-n}] + b_2 [BI_{ijt,t-n}] + b_3 [UE_{ijt}] \quad (6)$$

It is my belief that the reason for the failure of attitudes (Affect or Behavioral Intention) to predict subsequent Behavior is primarily due to the presence and influence of the Unexpected Events factor and not simply due to the problems of definition and measurement as suggested in social psychology.

The above model also provides an explanation for habitual behavior based on conditioning, reasoning (intentional behavior), and unplanned or random behavior. Therefore, it allows for the possibility of behavior being determined both by a plan and by random events.

8. Unexpected Events

The Unexpected Events (UE) factor refers to the antecedent and contiguous stimuli that impinge on the individual at the time of the behavior under investigation. In other words, it refers to the situational environment surrounding the specific act of behavior. In buyer behavior, the Unexpected Events factor can be illustrated by the announcement of the sale of a competing brand in the supermarket, which influences the purchase plan of the housewife. It is my contention that in buying behavior, the influence of Unexpected Events is very much underrepresented because of our zeal to give some rational explanation for all behavior.

In other words, in buyer behavior we have based our thinking on the assumption that all buying decisions are intentional behavior. We all know very well that this is not the case. It is, therefore, critical to examine more fully the nature and typology of the Unexpected Events factor. Some research has already been directed toward this under the rubric of impulse purchase behavior, novelty seeking, and venturesomeness of the buyer.

CANONICAL CORRELATIONS FORMULATION

In the preceding section, I have described the conceptual model of the structure of attitudes and the attitude-behavior relationship. We may test each of the linkages in the model by simply obtaining relevant data for each of the equations in the preceding section (see Sheth, 1971). However, it is obvious that the conceptual theory has a set of constructs which are in a sequential form so that a given construct both is determined by other constructs and determines some other constructs. This enables us to use the method of canonical correlations to test simultaneously all the relationships proposed in the theory. The rationale is developed below.

In Figure 1, Behavior (b) is a function of Affect (A), Behavioral Intention (BI), and Unexpected Events (UE). Thus,

$$B = f(A, BI, UE) \quad (7)$$

Behavioral Intention (BI) itself is a function of Evaluative Beliefs (EB), Anticipated Situation (AS), and Social Environment (SE). Hence,

$$BI = g(EB, AS, SE) \quad (8)$$

Finally, Affect (A) is a function of a set of Evaluative Beliefs (EB). Therefore,

$$A = h(EB_k, k = 1, 2, \dots, n) \quad (9)$$

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It is obvious that Evaluative Beliefs are central both to the understanding of various dimensions of attitude structure and to the prediction of behavior. If we assume that all the above functions are at least monotonic and probably also linear, it is possible to set up a canonical correlation function in which B, BI, and A are all simultaneously a function of the set of Evaluative Beliefs. Thus,

$$(B, BI, A) = p (EB_1, EB_2, \dots EB_n) \quad (10)$$

In view of the fact that SE, AS, and UE are also determinants of BI and B but not of A, it is logical to assume that Evaluative Beliefs will predict Affect much better than they will predict Behavioral Intention, and that they will predict the latter better than they will predict Behavior. In order to see the difference in predictive power, we can set up another canonical correlation function that includes these environmental factors. Therefore,

$$(B, BI, A) = f (EB_1, EB_2, \dots EB_n, SE, AS, UE) \quad (11)$$

The above equation represents a full test of the conceptual theory. In order now to include the individual differences and lack of contiguity between behavior and attitudes, this equation can be made specific to an individual *i* behaving toward an object *j* at time *t*:

$$(B_{ijt}, BI_{ij,t-n}, A_{ij,t-n}) = f (EB_{1ij,t-n}, EB_{2ij,t-n}, \dots EB_{nij,t-n}, SE_{ij,t-n}, AS_{ij,t-n}, UE_{ijt}) \quad (12)$$

The canonical function in equation (12) represents a full test of the model.

DESCRIPTION OF DATA AND OPERATIONAL DEFINITIONS

The empirical investigation of the relationships among beliefs, affect, behavioral intention, and behavior is based on data collected in a large-scale study that attempted to test the Howard-Sheth (1969) theory of buyer behavior. The theory of buyer behavior provides a description and explanation of the consumer's brand choice process and the development

of brand loyalty over time. At the core of the theory is the concept of expectancy developed primarily by the process of learning from informational and experiential sources.

Based on standard probability sampling procedures, a longitudinal panel of 954 housewives was established. The panel members recorded in diaries their purchases of several convenience food products, including instant breakfast, for a period of five months beginning in May and ending in October, 1966. In addition to recording their buying behavior, including the place of purchase, the time, the amount, and the price of the products, the panel members were interviewed four times. The first time involved a mail questionnaire sent out at the time of recruiting, which asked information on such things as the housewife's home involvement, her family's breakfast eating habits, and her attitudes and opinions on several milk additive products including instant breakfast. One month later, a telephone interview was conducted in which information was obtained on her awareness, knowledge, preference, and intentions regarding three brands of instant breakfast. Two of these brands were newly introduced to the market soon after the recruitment and establishment of the panel, whereas the third brand was well known because it had been on the market for at least two years prior to the study. The second and third interviews were also conducted by telephone and essentially obtained the same information as the first telephone interview.

The data relevant to this study pertain to a well-known brand of instant breakfast, which we shall call CIB. The object in question is, therefore, a brand of instant breakfast, and this investigation examines the interrelationships among Evaluative Beliefs, Affect, Buying Intention, and buying Behavior toward the CIB brand of instant breakfast. The attitudinal data utilized in this study came from the mail questionnaire

and the first two telephone interviews. The behavioral data came from the recorded diaries.

The following are the operational definitions of Affect, Buying Intention, Evaluative Beliefs, buying Behavior, Social Environment, Anticipated Situation, and Unexpected Events.

1. Affect (A)--Overall like or dislike of a brand of instant breakfast at the time of interview. The specific rating scale used was the following:

In general, I like it very much ☐ ☐ ☒ ☐ ☐ ☐ ☐

In general I don't like it

2. Buying Intention (BI)--Verbal expression of intent to buy the brand of instant breakfast within some specified time period from the time of interview. The particular scale used was the following:

How likely are you to buy _____ in the next month?

- ☐ Definitely will
- ☐ Probably will
- ☐ Not sure on way or the other
- ☐ Probably will not
- ☐ Definitely will not

3. Evaluative Beliefs (EB)--Evaluation of a brand of instant breakfast in terms of certain characteristics that are anchored to blocking or attaining a set of valued states or choice criteria. A total of seven Evaluative Beliefs were obtained from the respondent about each of the three brands of instant breakfast during each of the three telephone interviews. The particular characteristics of the

brands and the associated criteria of choice were based on a prior depth-interviewing of 100 housewives on milk additive products including instant breakfast. The seven Evaluative Beliefs about a brand were obtained by the following bipolar rating scales:

- | | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|
| Delicious tasting | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not delicious tasting |
| Good substitute for meal | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Poor substitute for meal |
| Very nutritious | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Somewhat nutritious |
| Very good for a snack | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not good for a snack |
| Very filling | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not very filling |
| Good buy for the money | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not a good buy for the money |
| Good source of protein | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Poor source of protein |

4. Behavior (B)--Purchase of a brand of instant breakfast during the five months of panel operation was the specific act of behavior under investigation. It was operationally measured from the reported purchases of a brand of instant breakfast as recorded in the diary that panel members filled out every two weeks. Two types of measures were used in this study. One was the number of purchases of a brand between two telephone interviews; the other was a classifactory measure of buying at least once or not buying at all. The latter is utilized in the canonical function tested in the next section.
5. Social Environment (SE)--Social normative beliefs about the appropriateness of buying and consuming instant breakfast. These

normative beliefs were obtained from a projective-type question in which respondents were asked to agree or disagree with the following characterizations of persons who consume instant breakfast:

- (a) people who are health conscious
- (b) people who have a health problem
- (c) people who want quick energy
- (d) people who are in a hurry at meals
- (e) people who like snacks
- (f) people who are lazy
- (g) people who don't like breakfast

6. Anticipated Situation (AS)--Those anticipated situational factors that are likely to impinge on the purchase of CIB. Howard and Sheth (1969, chap. 4) present a number of "inhibitors" that presumably dampen a buyer's affect in expressing behavioral intention. The following factors were extracted from the mail questionnaire as indicators of AS:

- (a) Budget determines what we eat
- (b) Do check prices of food items
- (c) Differences in price among brands are interesting to compare
- (d) Go to other stores for sale items

7. Unexpected Events (UE)--Those situational factors impinging on the purchase of CIB that the respondent could not anticipate or forecast. The factors were obtained by direct questioning of the respondent if she did not buy CIB although she expressed an intention to buy it. Two such factors were used in this study:

- (a) Tried to buy, but CIB wasn't available
- (b) Number of hours per week the housewife works

It must be pointed out that while the operational definitions of B, BI, A, EB, and SE seem quite satisfactory, those of AS and UE are probably not fully exhaustive. To that extent, the study suffers from weak data. However, it should also be kept in mind that both AS and UE are very much situation bound and mostly empirical. They are, therefore, most difficult to observe and measure.

There seem to be several advantages in using data from this large-scale, naturalistic study compared to several experimental studies found in social psychology. These advantages are as follows:

1. The study was conducted in naturalistic environment that dealt with a real situation. It was conducted in cooperation with a large grocery company that was test marketing one of the brands of instant breakfast. It thus reduced the burden of substantive and statistical inference from a simulated laboratory-type situation to reality. In short, many of the differences that Hovland (1959) pointed out between experimental and survey findings are absent here.
2. The sample size of this study was large enough to put statistical faith in the findings. In addition, the sample was based on standard probability sampling procedures.
3. Due to the cooperation of the company, a unique situation was created in which beliefs, affect, and behavioral intention preceded actual behavior since the product was not even introduced to the market at the time of the first interview

and, therefore, no one could buy it.

4. This was a longitudinal study in which we could use time as a factor to build the direction of causation between attitude and behavior. It was, therefore, possible to measure prior attitudes for predicting subsequent behavior and also use prior behavior as a predictor of subsequent attitudes.

FINDINGS AND DISCUSSION

The model presented earlier was tested in two stages. The first stage consisted of the canonical correlation of Affect, Behavioral Intention, and Behavior only on Evaluative Beliefs. This was done primarily to examine the relative predictive power of Evaluative Beliefs across three criterion variables. The model appropriate for this stage of the analysis is, therefore, given in equation (10).

Three separate canonical analyses were performed by utilizing measurements of (1) Evaluative Beliefs, Affect, and Behavioral Intention from the mail questionnaire and the first two telephone interviews, and (2) Purchase Behavior from the biweekly diary records between the mail questionnaire and the first telephone interview, between the first and the second telephone interviews, and finally between the second and the last telephone interviews.

If the conceptual theory and the mathematical models are correct, from a set of Evaluative Beliefs we should expect to predict Affect best, Behavioral Intention less well, and Purchase Behavior even less well. This is because Behavioral Intention is also governed by other factors and Behavior

is governed by still one more factor, as shown in Figure 1.

Results of the canonical analysis are presented in Table 1. The first two canonical correlations were found to be significant at least at the 5-percent level and, therefore, they are retained for interpretation and discussion. However, the canonical correlation of the second linear compound is only around 0.200 and explains only about 5 percent of the additional variance in the criterion set. Therefore, it obtains its significance status primarily due to the large number of degrees of freedom that result in the chance expectation of near-zero canonical correlation.

Examination of the variance explained in each of the criterion variables pretty much confirms the expectations of the model. The variance in Affect is explained the most (between 53 and 65 percent), in Behavioral Intention the second most (between 32 and 37 percent), and in Purchase Behavior the least (between 8 and 10 percent). The extreme drop in the ability of Evaluative Beliefs to predict Purchase Behavior simply confirms the findings of other studies conducted in naturalistic settings regarding the limitation of attitudes to predict subsequent behavior. Evidently, a lot of Unexpected Events or random factors vitiate the presumed neat attitude-behavior relationship so popular in experimental and social psychology.

Another aspect of interest in the canonical analysis is the structure of the relationship between the predictor and the criterion variables. In other words, which Evaluative Beliefs are more salient as determinants of Affect, Behavioral Intention, and Behavior? Do the same Evaluative Beliefs have equal saliency for the prediction of all the three dependent variables or is there a classification (typology) of beliefs so that some are determinants of Affect, others of Behavioral Intention, and still others of Purchase Behavior? According to the theory presented in Figure 1, we

should expect some beliefs to determine Affect and others to determine Behavioral Intention, but both types of beliefs to determine Behavior by being mediated through either Affect or Behavioral Intention.

In order to examine the typology or structure we need two things. First, the Evaluative Beliefs must be uncorrelated in order to avoid the problem of multicollinearity. Fortunately, this was very true in our data since we had eliminated six other Evaluative Beliefs, such as flavor, reasonable price, and calories, based on the high intercorrelations with the seven beliefs kept in the analysis. Second, the canonical axes solution suffers from the same problem of lack of invariance as does factor analysis or discriminant analysis because all are special cases of each other and utilize the same theory of characteristic equations. The only difference among these three multivariate methods is the manner in which the researcher partitions his data matrix. In factor analysis, the variance-covariance of the total matrix is maximized; in discriminant analysis, the sampling observations are partitioned into mutually exclusive and exhaustive groups based on some theory of group differences; and in canonical correlation analysis, the variables are partitioned into two or more groups based on some theory of the structure of variable relationships. In all of these methods, we need to utilize some principles of judgment that will enable the researcher to choose the one set of canonical coefficients that is most meaningful from a certain viewpoint. These judgments are Thurstone's principles of simple structure for rotating axes in such a way as to bring out in bold relief the structure of relationships among variables. Accordingly, a rotation was performed on the canonical analysis results given in Table 1 with the use of orthogonal varimax rotation.

The rotated canonical coefficients are presented in Table 2. An examination of the large coefficients in that table suggests that Affect was primarily determined by "taste" and somewhat by "protein source" and "filling quality of the instant breakfast." On the other hand, Behavioral Intention and to some extent Purchase Behavior were primarily determined by "good buy" and "meal substitute" and somewhat by "nutritious" and "filling quality of the instant breakfast." Finally, Affect lies in one domain of the two dimensional space and Behavioral Intention and Purchase Behavior lie in some other domain. In other words, if Affect and Behavioral Intention were themselves to be used as predictors of Purchase Behavior, Behavioral Intention would prove a better predictor than Affect. This is also expected from the model presented earlier in the paper.

A final point to discuss is the role of feedback from Purchase Behavior in the development of habit or conditioning. As the consumer buys the product, he should develop some conditioning effects that must at least strengthen the relationship of Affect and Behavioral Intention with Evaluative Beliefs. We see this from the slight increase in the explained variance in the second telephone interview as compared to the mail questionnaire.

Having examined the magnitude and structure of the relationship between Evaluative Beliefs and Affect, Behavioral Intention, and Purchase Behavior, let us test the full model presented in Figure 1 and equation (12). We should expect an increase in the explained variance of the criterion set by including variables related to Social Environment, Anticipated Situation, and Unexpected Events. Furthermore, the increase in the explained variance should come primarily in Behavioral Intention and Purchase Behavior since these are all directly related to the three added factors. In short, the variance explained in Affect should remain unchanged but the explained

variance should increase in Behavioral Intention or Behavior or both depending on the impact of the three factors.

A second set of canonical analyses was performed on a smaller set of individuals in which the criterion set remained the same but the predictor set now consisted of Evaluative Beliefs, Social Environment, Anticipated Situation, and Unexpected Events. The results are summarized in Table 3. All the three canonical axes were significant at least at the 5-percent level even though the last canonical correlation hovered around 0.200 and the additional variance explained by the third canonical axis was only around 5 percent. Once again the significance was achieved due to the large number of degrees of freedom in the data.

As can be seen from the explained variances of each of the criterion variables, the variance explained in Affect remained virtually the same despite the additional predictor variables included in the analysis. This is clearly a very good support for part of the full model specified in Figure 1. The amount of variance explained in Behavioral Intention jumped somewhat so that the additional variables contributed toward an increase of about 10 percent in the explained variance. Thus, Behavioral Intention's variance changed from around 35 percent with Evaluative Beliefs alone to around 45 percent with the additional variables.

Finally, the variance explained in Purchase Behavior jumped considerably with the utilization of the full model. From an average of about 9 percent with Evaluative Beliefs alone, the explained variance is around 24 percent with the additional variables.

In order to examine the source and structure of covariances with the predictor variables, the canonical axes were rotated with the use of orthogonal varimax rotation. The rotated canonical coefficients are given in Table 4. Examination of the third canonical axis on which Affect

loads heavily shows that none of the additional variables relate significantly to Affect through it. This is what we should expect if the full model is correctly specified.

Examination of the canonical axis on which Behavioral Intention loads heavily reveals that a number of variables from the Social Environment and Anticipated Situation factors are loaded on it. These include "lazy," "have health problem," "like snacks," "want quick energy," and "don't like breakfast" from the Social Environment factor, and "brand price differences interesting" and "check food prices" from the Anticipated Situation factor. Unfortunately, there is no stability among the three separate analyses. This may be due to the likelihood of multicollinearity among the variables comprising the two factors.

Finally, most of the increased variance in Purchase Behavior comes from a single situational variable, namely, nonavailability of CIB brand of instant breakfast. This is a dramatic example of the role of the Unexpected Events factor in the prediction of behavior in natural settings. Unfortunately, there are too many situational events that inhibit or precipitate actual behavior, often contrary to the cognitive structure about the object and the situation.

In addition, some of the variables in the Social Environment and Anticipated Situation factors also seem to contribute toward the prediction of Purchase Behavior. These include "rushed at meals," "like snacks," and "brand price differences interesting." All of these variables seem to be compensatory to Evaluative Beliefs so that even a negative evaluation of the brand is not enough to stop Purchase Behavior due to these variables.

Once again we see that the explained variance in Affect and

Behavioral Intention improves slightly in the second telephone interview analysis compared with the mail questionnaire analysis. This somewhat supports the feedback aspects of the model.

It may appear from the above results that the model is supported and validated by empirical evidence. However, this is not completely true. In order for the model to be validated, we should have obtained a much larger percentage in the explained variance for both Behavioral Intention and Purchase Behavior. It should have been at least comparable to that obtained for Affect. Why is this not the case in the study? There are several explanations, but the most obvious and critical explanation lies in the weaknesses of the variables chosen to measure Social Environment, Anticipated Situation, and Unexpected Events. As stated earlier, many of them are at best surrogates for the type of variables that comprise these three factors in the model. A second explanation is related to the low explained variance of Purchase Behavior. The addendum to the diary asked the housewife to record the reasons for the discrepancy between intentions and actual behavior. The listing of these reasons is large and specific to each customer. The only common variable that could be isolated was the lack of availability of the brand. If we had specified other reasons as binary variables, it is certain that the model could have been considerably improved in its empirical validation.

One last point on the validation of the model. In an attempt to relate cognitive aspects of attitudes and the attitude-behavior relationship, this paper has ignored the role of conditioning or habit in determining Affect and Behavior. We need to examine carefully whether cognitively determined Affect and Behavior or habitually determined Affect and Behavior are more prevalent in consumer behavior. This is critical in building any control

models from the point of view of the marketing management. The cognitively determined attitudes and behavior will suggest the usefulness of persuasive communication as the strategy of change while the behaviorally determined attitudes and behavior will suggest the strategy of some form of behavior modification.

To conclude, the model of attitude structure and the attitude-behavior relationship presented in this paper is not a definite, final viewpoint or theory. It simply represents an advanced stage of evolutionary thinking that began at the time of writing the Howard-Sheth theory of buyer behavior. I hope that it will not be mistaken for a final invariant position on my part.

Figure 1

A Conceptual Theory of Attitude Structure and
Attitude-Behavior Relationship

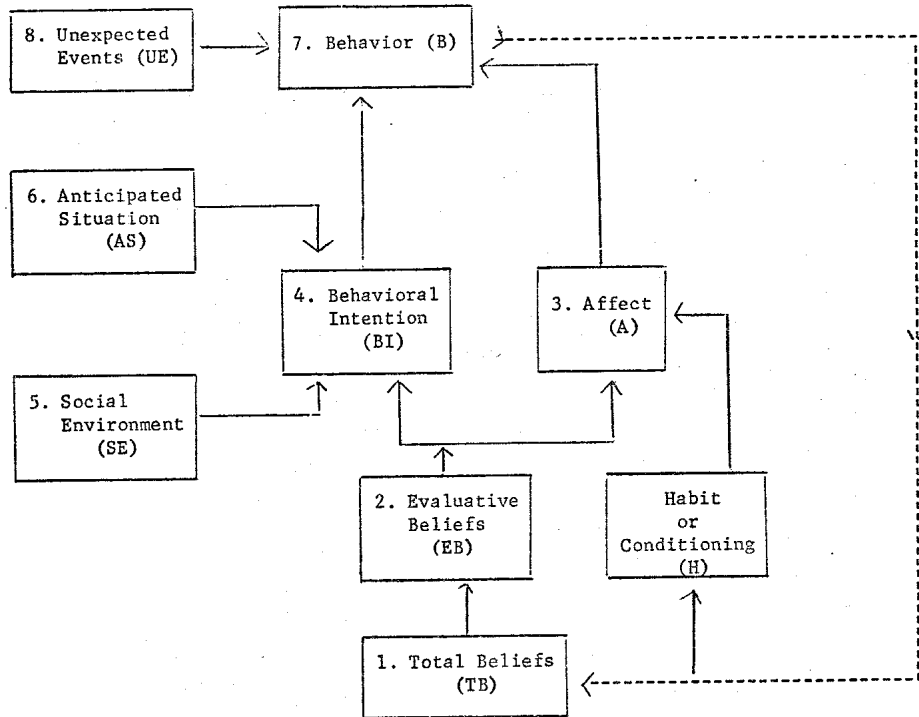


Table 1

Canonical Analysis of Affect, Behavioral Intention, and
Purchase Behavior As a Function of Evaluative Beliefs

	Mail Questionnaire			First Telephone Interview (T ₁)			Second Telephone Interview (T ₂)		
	Canonical Axes			Canonical Axes			Canonical Axes		
	I	II	R ²	I	II	R ²	I	II	R ²
<u>Criterion Set</u>									
Affect	.873	-.983	.528	.806	-.935	.538	.850	-.736	.646
Behavioral Intention	.166	1.239	.322	.281	1.010	.345	.237	.716	.367
Purchase Behavior	.029	.124	.103	-.004	.391	.080	-.025	.682	.084
<u>Predictor Set</u>									
Delicious tasting	.617	-.653		.710	-.670		.701	-.676	
Good buy	.195	.678		.176	.754		.213	.399	
Meal substitute	.176	.695		.121	.518		.118	.617	
Snack	.141	.168		.072	.190		.123	.383	
Protein source	.097	-.501		.082	-.271		.010	.453	
Filling	.094	-.101		.116	.238		.101	-.737	
Nutritious	.015	.013		.020	-.415		-.017	-.008	
Canonical R	.733*	.236*		.751*	.181*		.818*	.200*	
Canonical R ²	.537	.056		.564	.033		.669	.040	
	N=668			N=604			N=553		

* Significant at .05 level

Table 3

Canonical Analysis of Affect, Behavioral Intention, and Purchase Behavior As a
Function of Evaluative Beliefs and Social and Situational Factors

	Mail Questionnaire				First Telephone Interview (T ₁)				Second Telephone Interview (T ₂)			
	Canonical Axes				Canonical Axes				Canonical Axes			
	I	II	III	R ²	I	II	III	R ²	I	II	III	R ²
<u>Criterion Set</u>												
Affect	.731	-.990	.440	.555	.715	-.771	-.727	.582	.806	-.676	-.698	.681
Behavioral Intention	.307	.794	-1.098	.439	.328	.404	1.233	.445	.268	.481	1.191	.459
Purchase Behavior	.094	.605	.960	.242	.111	.865	-.675	.241	.026	.842	-.679	.233
<u>Predictor Set</u>												
Delicious tasting	.500	-.501	.592		.591	-.551	-.457		.647	-.528	-.440	
Good buy	.175	.121	-.449		.190	.323	.533		.186	.072	.186	
Meal substitute	.162	.241	.260		.076	.171	.079		.130	.217	-.100	
Snack	.080	-.023	.015		.073	-.009	.046		.118	.064	.102	
Protein source	.095	-.254	.317		.020	-.204	.169		.017	.214	.144	
Filling	.062	-.263	-.262		.092	-.090	.290		.055	-.355	-.137	
Nutritious	.024	.052	.085		.013	-.194	-.407		-.016	-.062	.454	
Lazy	.096	-.074	-.485		.115	-.359	.499		.059	-.291	.397	
Have health problem	.062	-.027	.113		.070	.475	.297		-.010	.234	-.142	
Health conscious	.051	.158	-.211		-.023	-.311	-.482		-.074	-.160	-.270	
Like snacks	.033	-.059	-.211		-.120	-.208	.571		.028	-.291	.929	
Want quick energy	.019	.095	-.190		.136	.284	.394		.081	.361	.345	

Table 3 (continued)

Canonical Analysis of Affect, Behavioral Intention, and Purchase Behavior As a

Function of Evaluative Beliefs and Social and Situational Factors

Predictor Set	Mail Questionnaire				First Telephone Interview (T ₁)				Second Telephone Interview (T ₂)			
	I	II	III	R ²	I	II	III	R ²	I	II	III	R ²
Rushed at meals	-.026	.057	.278		-.001	.522	-.540		.037	.356	-.658	
Don't like breakfast	-.113	.006	.432		-.115	-.049	-.276		-.186	.141	-.710	
Brand price differences interesting	.003	-.075	.006		.002	.258	-.380		.028	.199	.688	
Switch stores for sales	-.015	.001	-.252		-.049	-.054	.147		-.011	-.302	.035	
Budget determines menu	-.070	.003	.262		.072	.072	-.011		.002	.069	.181	
CIB unavailable	.276	.800	.280		.301	.747	-.256		.184	.789	-.073	
Hrs./wk. wife works	.044	.065	.057		.071	.001	-.354		-.005	-.042	-.162	
Check food prices	.022	-.196	-.171		-.015	-.619	-.221		.009	-.294	-.416	
Canonical R	.765	.448	.219		.793	.390	.223		.843	.447	.203	
Canonical R ²	.585	.201	.048		.629	.152	.050		.711	.200	.041	
	N = 631				N = 502				N = 454			

Table 4

Rotated Canonical Analysis of the Model

	Mail Questionnaire				First Telephone Interview (T ₁)				Second Telephone Interview (T ₂)			
	Rotated Axes				Rotated Axes				Rotated Axes			
	I	II	III	R ²	I	II	III	R ²	I	II	III	R ²
<u>Criterion Set</u>												
Affect	-.36	-.37	1.20	.555	-.71	.06	1.05	.582	-.01	-.27	1.23	.684
Behavioral Intention	1.31	.19	-.41	.439	1.19	-.60	-.07	.445	-.24	1.18	-.50	.459
Purchase Behavior	-.55	.99	.04	.242	.16	1.08	-.04	.241	1.06	-.15	-.08	.233
<u>Predictor Set</u>												
Delicious tasting	-.43	.04	.82		-.44		.82		-.06	-.12		
Good buy	.49	-.07	-.03		.63	-.15	-.03		-.01	.27		
Meal substitute	-.06	.37	.09		.19	.06			.25	.08		
Snack	.01	.01	.08		.05	-.03	.06		.01	.16		
Protein source	-.30	-.02	.28		-.02	-.26	.05		.09	.19		
Filling	.15	-.32	.10		.16	-.26	.06		-.20	-.19		
Nutritious	-.04	.09	.01		-.39	.17	.15		-.32	.29		
Lazy	.42	-.27	-.01		.13	-.60	.12		-.45	.21		
Have health problem	-.07	.05	.09		.53	.11	-.14		.26	.02		
Health conscious	.25	.04	-.09		-.52	.14	.17		.01	-.29		
Like snacks	.17	-.14			.19	-.57	-.16		-.75	.57		
Want quick energy	.20	-.01	-.08		.50	-.08	-.04		.11	.43		

Table 4

Rotated Canonical Analysis of the Model

	Mail Questionnaire				First Telephone Interview (T ₁)				Second Telephone Interview (T ₂)			
	Rotated Axes			R ²	Rotated Axes			R ²	Rotated Axes			R ²
	I	II	III		I	II	III		I	II	III	
<u>Criterion Set</u>												
Affect	-.36	-.37	1.20	.555	-.71	.06	1.05	.582	-.01	-.27	1.23	.684
Behavioral Intention	1.31	.19	-.41	.439	1.19	-.60	-.07	.445	-.24	1.18	-.50	.459
Purchase Behavior	-.55	.99	.04	.242	.16	1.08	-.04	.241	1.06	-.15	-.08	.233
<u>Predictor Set</u>												
Delicious tasting	-.43	.04	.82		-.44		.82		-.06	-.12		
Good buy	.49	-.07	-.03		.63	-.15	-.03		-.01	.27		
Meal substitute	-.06	.37	.09		.19	.06			.25	.08		
Snack	.01	.01	.08		.05	-.03	.06		.01	.16		
Protein source	-.30	-.02	.28		-.02	-.26	.05		.09	.19		
Filling	.15	-.32	.10		.16	-.26	.06		-.20	-.19		
Nutritious	-.04	.09	.01		-.39	.17	.15		-.32	.29		
Lazy	.42	-.27	-.01		.13	-.60	.12		-.45	.21		
Have health problem	-.07	.05	.09		.53	.11	-.14		.26	.02		
Health conscious	.25	.04	-.09		-.52	.14	.17		.01	-.29		
Like snacks	.17	-.14			.19	-.57	-.16		-.75	.57		
Want quick energy	.20	-.01	-.08		.50	-.08	-.04		.11	.43		

Table 4 (continued)

Rotated Canonical Analysis of the Model

Predictor Set	Mail Questionnaire				First Telephone Interview (T ₁)				Second Telephone Interview (T ₂)			
	Rotated Axes				Rotated Axes				Rotated Axes			
	I	II	III	R ²	I	II	III	R ²	I	II	III	R ²
Rushed at meals	-.22	.18	.03		-.26	.75	.06		.67	-.31	.13	
Don't like breakfast	-.41	.18	.02		-.08	.16	-.03		.50	-.51	.16	
Brand price differences interesting	-.03	-.05	.04		.04	.45	-.05		-.22	.58	-.35	
Switch stores for sales	.20	-.13	-.08		.07	-.15	.04		-.26	-.09	.12	
Budget determines menu	-.25	.12	.01		.43	.06	.04		-.04	.15	-.10	
CIB unavailable	.16	.87	-.07		-.55	.71	.08		.71	.35	-.18	
Hrs./wk. wife works	-.01	.09	.02		-.56	-.26	.23		.06	.13	.31	
Check food prices	.09	-.24	.06				.23			-.41	.31	
	N = 631				N = 502				N = 454			

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