Effects of Unexpected Situations on Behavior-Intention Differences: A Garbology Analysis*

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This study explores the usefulness of unanticipated situational occurrences for explaining the disparity between stated intention and actual behavior for 15 commonly consumed food and beverage products. Unlike previous research on unexpected situations, actual situational occurrences were monitored for effects on actual consumption (measured by garbage analysis and self-report). The results show that behavior-intention inconsistency is partly attributable to unexpected situations.

Consumer analysts have frequently predicted consumer behavior on the basis of stated intentions and past behavior. Unfortunately, neither of these has been a particularly reliable indicator of actual behavior (Belk 1985 in press; Ryan and Bonfield 1975). Situational influences have been suggested as useful for explaining disparities between behavior and stated intentions to behave in a particular manner (Belk 1974a, 1985 in press; Wicker 1971).

Presumably, expected and unexpected situations influence behaviors and intentions in different ways. We might expect situations that are anticipated when the behavior-intention measure is taken to be included in the stated intention. Thus, if we were to ask people who were planning to attend a party about their intended beer consumption for the next week, they would include consumption at the party as part of their estimate. However, the expected situational influences may not materialize. Situations that were not expected may occur (an old friend pays a surprise visit) or expected situations might not materialize (the respondent skips the party due to a cold). Both are termed unexpected situations and should lead to discrepancy between stated intention and actual behavior. Accounting for these effects should reduce the inconsistency between behavior and intentions (Sheth 1974).

Although several studies have investigated situational influences, much of the research has failed to examine the effects of unexpected situations. Wicker (1971) and Greer (1977) are exceptions, in that both studies attempted to determine the influence of unexpected situations, but in both cases unexpected situations were operationalized as the expectation of some unplanned situations affecting behavior. There have been no studies that examine the actual unexpected occurrence or nonoccurrence of situations.

Another problem has been the use of situation scenario inventories of the type developed by Endler and Hunt (1966), where a subject responds to the description of an imaginary situation, such as, "When really thirsty" or "Reading the paper in the morning" (Sandell 1968). The scenario methodology has been used extensively in situational consumer research (Belk 1979 is an exception). A major problem with this methodology is the occurrence of demand effects (Reingen 1976). In addition, it uses unrealistic and incomplete descriptions that may bias responses in unknown ways (Wicker 1975).

This study examines how well unexpected situations explain the inconsistency between intention and behavior and provides an empirical test of the effects of unexpected situations on behavior-intention consistency. Rather than rely on hypothetical expectations about the effects of unexpected situations as past

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studies have done, this study considers the difference between the anticipation of situations and their actual occurrence, and examines both the occurrence of an unexpected situation and the nonoccurrence of an expected situation, using (as suggested by Hornik 1982) real behaviors and situations. To assess actual consumption, the study employs the garbology methodology (Rathje 1978). In addition, rather than rely on scenarios, the study uses subjects to experience the occurrence (or nonoccurrence) of actual situations.

METHODOLOGY

A five-week examination of the food consumption of 61 households employed the contemporary anthropological technique of garbology. Garbage analysis has been an ongoing project at the University of Arizona since 1970. Garbage analysis begins by having the Tucson Department of Sanitation collect the garbage twice weekly. Each household's garbage is placed in a specially marked plastic bag and transported to a sorting area. Experienced sorters record the contents by noting the subject code, the census location of the household, the date, and the names of the sorters. The bag is then weighed and the contents spread on a table. A sorter wearing protective gloves carefully removes each item in the garbage, examines it, and gives the following information to a partner who records it on a special coding sheet:

- The class of product by code number (e.g., 001 for beef)
- The number of items for that product
- The amount of the product or the amount of product contained in the original container (fluid ounces for liquids and weight for solids)
- Price of the product if recorded on the container
- Amount of wasted product
- The brand name of the product
- The product type (e.g., ground beef or T-bone steak)
- The material composition of the container

All items are then placed in a separate bin depending on the material composition of the item. After all the items have been recorded, the bins are weighed and compared to the original weight. Prepackaged food such as frozen dinners and canned meals are recorded as a unit; i.e., individual ingredients are not recorded separately.

To illustrate, suppose a sorter picks up a plastic wrap with a white tag on it (similar to the type used to wrap meat or cheese) that indicates that the wrapper was used for hamburger. The recorder would note that the product class was one item of beef. The tag might also provide information about the weight contained in the package, the total cost of the product, and the store where the hamburger was purchased (by dint of brand). The recorder would indicate that the wrapper was made of plastic and paper, deposit the wrapper in the plastic bin, and proceed to the next item. For a detailed discussion of the garbology technique see Hughes 1984; Rathje 1978; Rathje and Harrison 1978; and Wallendorf and Reilly 1983.

For this study, the sanitation department collected garbage from 20 households twice a week for a two-week period. The garbage was not identified by household per se, but was collected in the same order each time and identified by a subject number. After two weeks, the member of the household most involved with food preparation was offered $20 to participate in the study and have their garbage analyzed. Subjects who agreed to participate were interviewed in depth about their food consumption habits and attitudes and about the possible occurrence of various situations in the next week. Various demographic and ethnographic information was collected as well.[1] At a prearranged time one week after the first interview, the subjects were recontacted by phone. During the second interview the subjects reported on their consumption of 15 foods for the past week and on situations that had occurred in the past week. Garbage analysis continued for two weeks after the second interview for a total of five weeks. This procedure was repeated eight times over a one-and-a-half year period for a total of 160 households, of which 61 agreed to participate in the study.[2] Of these, three could not be recontacted for the second interview and were dropped from the analysis. A fourth was dropped because of unusable responses.

Development of Situations

An objective definition of situations was used to permit greater generalizability (Belk 1974b; Miller and Ginter 1979). Since this study investigated food and beverage use, the following definition of situations was used:

> Situations are stimuli, external to the individual and the object of consumption, that are likely to influence home food and beverage use.

Situations must be external to the individual. This prevents confusion between intrapersonal factors such as personality traits and situations that are not part

[1]The method used to measure the food consumption variable replicated the method used by the U.S. Department of Agriculture National Household Food Consumption Surveys (NFCS), which have been administered to large samples of households approximately every 10 years since 1936, the most recent sample being in 1977. For information about the reliability of this and other methods of assessing food intake see Bazzarre and Yuhas 1983; Morgan et al. 1978; and Ritenbaugh and Harrison 1984.

[2]This sample size is relatively small. The time and resource requirements of garbage analysis limited the number of subjects that could be analyzed during a five-week period. However, other studies in this area have used small sample sizes (Belk 1974b and 1975, groups of 50 or 100 students; Sandell 1968, 31 students).

TABLE 1

THE OCCURRENCE OF UNEXPECTED SITUATIONS

Situations	Occurred when not expected	Did not occur when expected
1. Having guests or a celebration	6	7
2. Using a new recipe or trying new foods	3	10
3. Being very busy	11	14
4. Having a sick family member	10	2
5. Changing food use because of a change in price (up or down)	6	9
6. Shopping for food with family members or others	13	7
7. Celebrating a holiday	6	4
8. Weather	7	10
9. Foods coming into season	7	20
10. Someone in the family requesting a special meal	5	10
11. Using food from home gardens or tree	7	6
12. Finding especially high quality foods	5	7
13. Recently reading article about the healthfulness of certain foods	5	20
14. Other situations	17	0

of the person. The requirement that situations be "likely to influence home food and beverage use" is included to limit the list of external stimuli to the pertinent behaviors examined in this study. In addition, behavior is defined as being place-specific (home use only). This also enabled some control over the respondent's ability to report household consumption accurately.

Unexpected situations must reflect differences between situational expectations at the time intentions are stated and the occurrence of situations at the time behavior takes place. An unexpected situation is defined as the occurrence (nonoccurrence) of a situation at the time of consumption that the subject had not anticipated at the time intentions were measured. Unexpected situations are unanticipated changes in stimuli external to the individual and the object of consumption that may likely cause deviations from planned behavior.

The first step toward measuring situations was the isolation of types of external stimuli that could influence in-home food and beverage consumption levels. A specific list of situations was developed with the procedure outlined by Scheidt and Schaie (1978). Focus-group interviews were conducted with six groups, each consisting of five to eight women and men from Tucson church and community groups. Groups were asked to discuss anything that might affect their food purchase, preparation, or consumption. The resulting list of factors that affect food use was screened by the authors, and only situations that fit the definition given earlier were retained. Fourteen situations were selected (see Table 1).

To assess the impact of unexpected situations, subjects' anticipations about the probability of situational occurrences were determined. During the first interview, subjects were asked to indicate whether or not they expected each of the 14 situations to occur in the next seven days. The actual occurrence or nonoccurrence of the situations was assessed in the follow-up telephone interview in which subjects were asked if any of the 14 situations had occurred in the past seven days. Fourteen situational variables were constructed for each respondent to reflect discrepancies between the situations that were expected and those that actually occurred. Unexpected situations were assigned a value of 0 if the situation occurred (didn't occur) as expected. Unexpected situations were assigned a value of 1 if a situation was not expected to occur but did, and a value of -1 if the situation was expected to occur but did not. For example, if a person expected to have a busy week but, during the second interview, reported that s/he did not have a busy week, the situational variable would be scored as a -1.

Measures of Consumption

Although the garbage analysis provided information on hundreds of products, only 15 commonly used food products were examined in depth. These products were selected because they were easily tracked in the garbage and exhibited sufficient variability that situational impacts could be meaningfully assessed. For each product, measures of intended consumption, usual consumption, and actual consumption were obtained. Both garbage analysis and self-reports were used to measure usual and actual consumption. The self-reported measures (to be discussed) were identical to the USDA procedure for obtaining the national estimate of household food consumption (Harrison et al. 1983).

Intended consumption was measured during the first interview. Respondents indicated the volume of each product they felt the household would consume in the home in the next seven days. The volume measure was used since the products examined were used regularly, but in different amounts. The self-reported measure of usual consumption was also administered during the first interview. Respondents indicated the volume of each product the household consumed (at home) during a typical week. The average weekly volume consumed during the first two weeks and during the last two weeks was used for the garbology measure of usual consumption.

The self-reported measure of actual consumption was administered during the second interview. Re-

spondents reported the volume of each product consumed by the household (at home) in the past seven days. The garbage measure of actual consumption consisted of the volume of each product recorded during the two pick-ups between the first and second interview.

Measures of Attitudes

Attitudes were measured using a single-item measure designed to assess the household's attitude toward the product. The respondent indicated how the family felt about each of the products on a 9-point scale anchored with: "everyone likes it; most like it; some like it, some don't; most dislike it; and everyone dislikes it."[3]

Methodological Constraints

While garbology represents a powerful and unobtrusive measure of behavior, it is not without limitations (Cote 1984). Numerous problems such as recycling, returnable containers, not finishing packages within specific time periods, out-of-home usage, and delays between initial use of the product and its appearance in the garbage can cause errors in measurement. Some of these limitations can be controlled—e.g., examining packing material such as stay-cold packs, egg cartons, and pull tabs—but others are difficult to control. Therefore, it should be recognized that the garbage measure does contain error. Although the correlation between the garbage measures and self-reported measures was low (Table 2), it is not clear that either of the measures is superior (Cote, Reilly, and McCullough 1984). The effect of unexpected situations was assessed separately with three different measures of usual and actual consumption: (1) self-reports only, (2) garbage analysis only, and (3) an average of the self-reports and garbage analysis. The estimated situational effects were not statistically different for any of the three analyses (Cote 1983). For simplicity, the only analysis reported uses the average of the self-reported measures and garbage measures of consumption.

Analysis

Bentler and Speckart (1979) have argued that past behavior can affect behavior directly as well as through intentions. To provide a rigorous test of our hypothesis, a backward regression was performed with behavior as the dependent variable, and intentions, past behavior, attitudes, and the unexpected situational variables as the independent variable. The form of this model is as follows:

$$B = b_0 + b_1 BI + b_2 PB + b_3 Att + \sum_{i=1}^{14} b_{3+i} Sit_i$$

where

B = behavior

BI = intentions

PB = past behavior

Att = attitudes

b_i = empirically determined regression weights

Sit_i = unexpected situations 1–14 (see Table 1)

The effect of unexpected situations on behavior for this analysis is indicated by the increase in adjusted R^2 associated with the situational variables.

TABLE 2

CORRELATION BETWEEN SELF-REPORTS AND OBSERVED MEASURES

Product	Actual consumption	Usual behavior
Meat	.276*	.474*
Cheese	−.057	.290
Vegetables	.201	.403*
Juice	.482*	.554*
Cereal	.183	.324*
Crackers	.262*	.430*
Soup	.615*	.668*
Frozen dinners	.268*	.367*
Hamburger	−.084	.513*
Chicken	.337*	.362*
Bacon	.263*	.389*
Eggs	.464*	.633*
Oranges	.566*	.485*
Chips	.282*	.438*
Beer	.642*	.339*

NOTE: * = $p \leq 0.05$.

RESULTS AND DISCUSSION

The first step in the analysis was to determine the ability of a conventional behavior-intention model to predict consumption.[4] The results show that a conventional behavior-intention model predicted a substantial amount of food consumption (Table 3). It

[3]The attitude measure is something of a problem. The measure used probably reflects both family consensus as well as the attitudes of individual family members. However, this doesn't have an impact on the interpretation of the results, since these attitude measures produced very little variance. Most respondents indicated a very positive attitude toward the products. As a result, the attitude variable did not enter any of the prediction equations.

[4]A conventional model includes behavior intentions, past behavior, and attitudes as direct predictors of behavior. The relationship between past behavior and attitudes, social norms, past behavior, and expected situations was not examined in this analysis.

TABLE 3

EXPLANATORY POWER OF BEHAVIOR INTENTION MODELS (ADJ R^2)

Product	Conventional model[a]	Conventional model including situations[b]	Improved explanatory power of situations[c]	Percentage of inconsistency explained by situations[d]
Beer	.604	.684	.080[g]	20.2
Juice	.637	.637	.000	0.0
Cereal	.501	.567	.066[f]	13.2
Meat	.458	.524	.066[f]	12.2
Bacon	.432	.521	.089[g]	15.7
Vegetables	.372	.498	.126[g]	20.1
Eggs	.383	.498	.115[g]	18.6
Hamburger	.280	.472	.192[g]	26.7
Frozen dinners	.418	.461	.043[f]	7.4
Soup	.408	.446	.038[e]	6.4
Cheese	.440	.440	.000	0.0
Crackers	.317	.423	.106[g]	15.5
Potato chips	.254	.402	.148[g]	19.8
Oranges	.332	.379	.047[f]	7.0
Chicken	.092	.290	.198[g]	21.8

[a] adj R^2 of $B = f(BI\ PB\ ATT)$.
[b] adj R^2 of $B = f(BI\ PB\ ATT\ SIT)$.
[c] (adj R^2 with situations − adj R^2 without situations).
[d] (adj R^2 with situations − adj R^2 without situations)/(1 − adj R^2 without situations).
[e] $p \leq 0.10$.
[f] $p \leq 0.05$.
[g] $p \leq 0.01$.
NOTE: B = behavior PB = past behavior
BI = intentions ATT = attitudes

also explained between 9.2 percent and 60.4 percent of behavior, or 39.5 percent on average.

As hypothesized, accounting for unexpected situations significantly improved predictive accuracy (see Table 3). The conventional model that included unexpected situations explained between 29.0 percent and 68.4 percent of behavior. Unexpected situations explained a significant ($p \leq 0.10$) amount of behavior for 13 of the 15 products. The situational variables explained as much as 19.8 percent of the variance in behavior, or 8.8 percent on average.

The primary concern of the analysis was the amount of inconsistency in behavior that can be explained by unexpected situations. Inconsistency is defined as the amount of behavior unexplained by intentions, past behavior, and attitudes. The results indicate that the unexpected situations explained up to 26.7 percent of the inconsistency in behavior (see Table 3), or 13.6 percent on average. Although the results are similar to past studies of situational effects, they should be interpreted with caution. Since there are only 57 subjects and 14 situational variables, chance findings may occur, and estimates of the percent of variance explained by unexpected situations may be unstable. But while these results may be due to chance, this seems unlikely. Not only were the results consistent with past studies, they were also consistent across the 15 products. This consistency would not have been observed if the results were due to chance. In addition, the situations that affected behavior were all appropriate. For certain products, a given situation—such as seasonality for meat—may have been inappropriate. None of these "inappropriate" situations had statistically significant effects on behavior. Table 4 presents the situations that affected behavior. The situational effects are easy to interpret.

The study's results show that unexpected situations account for a portion of behavior inconsistency. Although the results are consistent with past research, they also indicate that comparing expected occurrences of situations to actual occurrences may improve our ability to predict behavior inconsistency. Greer (1977) has found that the expectation of unexpected situations occurring explained 4.9 percent of behavior and 7.0 percent of inconsistency. Wicker (1971) has found that expectations of unexpected situations alone explained about 13.0 percent of behavior. However, when the situational variables were added to a model that included attitudes, perceived consequences of behavior, and an evaluation of behavior, they only improved predictions of behavior by 0.5 percent to 10.5 percent and only explained 0.5 percent to 12.7 percent of inconsistency. By examining the occurrence of unexpected situations, actual situations, and actual behavior, this study was able to explain more of the inconsistency in behavior.

Belk (1974b) has shown that situational effects may vary across products. In this study, situational effects

TABLE 4

UNEXPECTED SITUATIONS AFFECTING BEHAVIOR

Product	Situations[a]
Meat	Shopping with others,[b] other situations
Cheese	
Vegetables	Holidays, weather, healthfulness
Juice	
Cereal	Shopping with others, weather,[b] special recipe
Crackers	Busy, special recipe
Soup	Weather[b]
Frozen dinners	Other situations
Ground beef	Special recipe, quality, special request
Chicken	Shopping with others, special recipe
Bacon	Price change, special recipe
Eggs	Special recipe,[b] busy,[b] holiday (Easter)
Oranges	Illness
Potato chips	Price change
Beer	Guest or party, holidays, other situations

[a] All situations listed had regression coefficients significant at $\alpha = 0.05$ unless otherwise indicated.

[b] Regression coefficient significant at $\alpha = 0.10$.

ranged from 0.0 percent to 26.7 percent. This was true irrespective of the ability of past behavior, intentions, and attitudes to predict behavior. For example, the conventional model explained approximately 43.0 percent of the variance for meat, bacon, frozen dinners, soup, and cheese. Yet the amount of inconsistency explained by unexpected situations ranged from 0.0 percent to 15.7 percent.

CONCLUSION

This study has examined the effect of unexpected situations on the inconsistency between intentions and behavior. It improves upon past research by using actual differences between expectations and occurrences of situations—rather than the expected effect of unexpected situations—and by examining actual situations and behavior. Both self-reported and unobtrusive measures of behavior were employed. The results show that unexpected situations explain an average of 13.6 percent of behavior inconsistency. However, it is not the absolute magnitude of the effect that is notable here, but rather that adding unexpected situations to a conventional behavior-intention model increased its explanatory power. It appears that using the difference between occurrence and expectation of occurrence—rather than the expectations of unexpected situations—improves our ability to predict behavior. However, a conclusive statement cannot be made because situational effects vary across products; this suggests that consumption of some products is more sensitive to situational effects than others.

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