DISCONFIRMED EXPECTATIONS THEORY OF CONSUMER SATISFACTION: AN EXAMINATION OF REPRESENTATIONAL AND RESPONSE LANGUAGE EFFECTS

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ABSTRACT

This paper reports the results of an experiment in which the strength of the linkages among variables specified in the disconfirmed expectations theory of consumer satisfaction is examined while controlling for measurement context and response language effects. The results extend previous research by examining both predictors and consequences of consumer satisfaction and by providing evidence that expectations produce representational effects rather than merely measurement context and response language effects. In general, the findings provide support for the theory and the strategic implications of the disconfirmed expectations theory.

INTRODUCTION

The disconfirmed expectations theory of consumer satisfaction (hereafter referred to as the disconfirmed expectations theory) is a generally accepted theory utilized by marketing managers to impact consumers' satisfaction and their likelihood to make purchases. Salient to the purpose of this study is that theories including perceptual comparative contrasts, such as the disconfirmed expectations theory, are implicitly assumed to produce representational effects, defined by Lynch, Chakravarti, and Mitra (1991, p. 285) as changes in ". . . the underlying mental representations of judged objects." That is, the actual opinions about the objects (e.g., products and services) are affected by the comparison process. For example, Urbany, Bearden, and Weilbaker (1988) found that when subjects were presented with higher reference prices for a television set, they rated the offered price for the television set as better and indicated a weak desire to purchase it relative to the context of lower reference prices. In another study, Lynch et al. (1991) found a significant correlation between price estimates for cars and rankings of purchase intention for both moderately priced and expensive cars when compared to low-priced cars (this finding was true only for novices, not experts). In both examples, the propensity to buy increased when the perceptions of the product improved through a comparative process. Similarly, the comparative process between consumers' perceived expectations and their ratings of performance, disconfirmation, and satisfaction are assumed to produce parallel changes in their purchase behavior.

However, there is evidence that comparative processes do not necessarily always result in representational effects. Instead, empirical tests of theories can produce response language effects, defined as changes in "...how context-invariant representations are mapped onto response scales provided by researchers..." (Lynch et al. 1991, p. 285), which, in essence, generate false positive results—that is, the changes in ratings due to comparative processes do not carry over to behavior. Moreover, the process of measuring comparative processes can also result in response language effects (Feldman and Lynch 1988). Take the earlier example of television reference prices. With response language effects, a higher reference price, relative to a lower reference price, would still result in a favorable perception of the offered price, but there would be no increase in purchase intention. Upshaw (1978) found that when subjects compared their prior attitudes to Thurstone-type attitude statements, their ratings of those statements were affected. But these effects did not carry over to related judgmental perceptions, nor did they carry over to behavior. In the case of the disconfirmed expectations theory, if response language effects and not representational effects have been driving theory

support, then managerial actions based on the theory may not be valid. Thus, for example, lowering service expectations (e.g., promising that a meal will be served in 15 minutes instead of 10 minutes) may increase consumers' satisfaction ratings but not increase repeat purchases. Given the significance of such a finding to marketing practice, it is essential to subject the disconfirmed expectations theory to a test that can discern whether or not representational or response language effects form the basis for theory support, something which has not specifically been the focus of previous research.

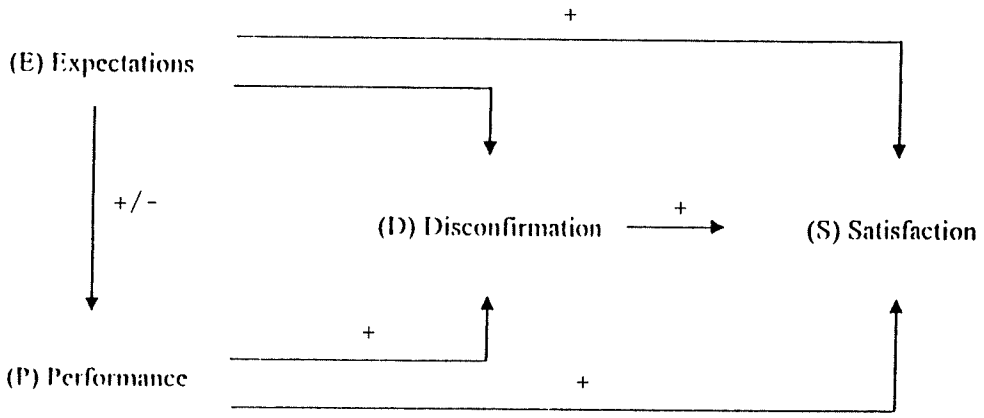
Determining whether or not consumers' ratings based on comparative contrasts of variables in the disconfirmed expectations theory reflect underlying mental representations (representational effects) or effects of an expectations treatment and /or the process of measuring expectations that do not reflect underlying mental representations (response language effects) requires empirical tests that examine the degree to which patterns of concomitant variation among the variables reflects one or the other type of effects (Lynch et al. 1991). In particular, this requires empirical measurement of the behavioral consequences of satisfaction/dissatisfaction experiences. Although several marketing studies have examined the linkage between consumer satisfaction and purchase intentions (Bearden and Teel 1983; Bolton 1998; Bolton and Lemon 1999; LaBarbera and Mazursky 1983; Mittal and Kamakura 2001; Oliver 1980a; Oliver and Linda 1981; Oliver and Swan 1989), there is limited empirical evidence of linkages between transaction-specific satisfaction and future product choice behavior. This is an important limitation of the empirical evidence because, whereas measures of purchase intentions use measurement scales vulnerable to response language effects, measuring product choice involves consumer responses that do not involve measurement scales; consequently, product choice responses may be less vulnerable to response language effects.[1]

Thus, the purpose of this study is to examine the disconfirmed expectations theory, specifically focusing on whether or not the perceptual comparative processes result in representational and (or) response language effects. We address these issues with a controlled experiment focusing on the effects of expectation level and measurement manipulations on (a) the primary variables of the classic disconfirmed expectations theory that are potentially vulnerable to response language effects and (b) a choice variable that is less vulnerable to response language effects than the purchase intention variable used in most previous research. This, along with the experimental manipulations and measures, provides a strong test of the theory—the strength of linkages among variables specified in the disconfirmed expectations theory is examined while controlling for measurement context and response language effects.

REPRESENTATIONAL VS. RESPONSE LANGUAGE INTERPRETATIONS OF EXPECTATIONS EFFECTS IN THE DISCONFIRMED EXPECTATIONS THEORY

A summary model of the disconfirmed expectations theory of consumer satisfaction is presented in Exhibit 1, which also summarizes theoretical and empirical evidence for the model. Importantly, the theoretical logic of the model indicates that expectations represent a comparison standard that provides a point of reference for consumers' judgments and (or) ratings of performance, disconfirmation, and satisfaction. For example, when evaluating the service provider in the context of low performance expectations, such as five-day delivery, a consumer may assign favorable disconfirmation and performance ratings to three-day service delivery. However, in the context of high performance expectations, such as two-day delivery, the consumer may assign unfavorable disconfirmation and performance ratings. Expectations and (or) the process of measuring expectations creates a context in which the delivery service is rated which, in turn, affects ratings of disconfirmation and performance. Thus, the determination of representational or response language effects is heavily dependent on consumers' expectations and how they use their

Exhibit 1
The Expectancy Disconfirmation Model of Consumer Satisfaction



A summary of the empirical support for the six linkages (from Oliver 1997 and Churchill and Surprenant 1982:)

Expectations – Performance Linkage
Boulding, Kalra, Staelin, and Zeithaml (1993)
Oliver, Balakrishnan, and Barry (1994)
Churchill and Surprenant (1982)

Expectations – Disconfirmation Linkage
Churchill and Surprenant (1982)

Performance – Disconfirmation Linkage
Swan and Trawick (1981)
Bolton and Drew (1991)
Churchill and Surprenant (1982)
Anderson and Sullivan (1993)
Olson and Dover (1976)

Disconfirmation – Satisfaction Linkage
Olson and Dover (1976)
Churchill and Surprenant (1982)
Oliver (1977, 1979, 1980b, 1993, 1994)
Oliver, Balakrishnan, and Barry (1994)

Expectations – Satisfaction Linkage
Olshavsky and Miller (1972)
Anderson (1973)
Oliver (1977, 1980a)
Olson and Dover (1979)
Churchill and Surprenant (1982)
Oliver and DeSarbo (1988)
Tse and Wilton (1988)
Bone, Shimp, and Sharma (1990)
Szajna and Scamell (1993)

Performance – Satisfaction Linkage
Swan and Trawick (1981)
Churchill and Surprenant (1982)
Bolton and Drew (1991)
Anderson and Sullivan (1993)
Oliver (1993, 1994)
Simester et al. (2000)

expectations in the comparative process.

In order to illustrate the relationship between expectations and representational/response language effects, consider a chocolate chip cookie containing an intermediate number of chocolate chips. This chocolate chip cookie is judged by one group of respondents under the condition of low chocolate chip expectations (in terms of number of chips) and by another equivalent group of respondents under the condition of high chocolate chip expectations. If statistically significant relationships exist between the expectations level and other constructs in the model (i.e., performance, disconfirmation, and satisfaction),

the question remains concerning whether or not the estimated relationships involve response language or representational effects. Support for a representational effects interpretation is generated if expectations can be shown to be linked, either directly or indirectly, to changes in the magnitude of measures that are less vulnerable to response language effects. The absence of these linkages would be evidence of response language effects.

For purposes of illustration, assume that a group of consumers with low chip expectations is exposed to a situation in which the objective performance (i.e., actual chip content) exceeds expectations; in contrast, another group of consumers with high chip expectations is exposed to a situation in which the actual chip content falls short of expectations. Also assume that performance is held constant at an intermediate level of chocolate chip content.

Response Language Effects

In the response language effects situation, actual perceived chip content is not affected by the expectations treatment and, therefore, the perceived chip content is identical across the two expectations treatment levels. However, the overt cookie ratings (i.e., performance measures) are different because of response language contrast effects. The expectations treatment and (or) the process of measuring expectations cause the cookie performance ratings to shift in the direction of high performance in the low expectations treatment condition and shift in the direction of low performance under high expectations conditions. A potential result is that, although actual and perceived performance is the same in the two scenarios, the respondents' cookie performance ratings, and, perhaps, disconfirmation and satisfaction ratings, are shifted in a manner consistent with the response language contrast effects. The ultimate result is an increase in the concomitant variation across elements of the disconfirmed expectations model which, in turn, generates empirical support for the disconfirmed expectations theory. However, since the actual perceived chip content is unaffected by the high-versus-low expectations treatment, the response language effects may or may not affect subsequent cookie choice probabilities.

It is important to note that manipulation of expectations levels may produce response language effects directly with respect to subsequent ratings of satisfaction and purchase intentions. In contrast, expectations levels may produce response language effects indirectly through expectations measurement, which then can carry over to subsequent satisfaction and purchase intention ratings. This expectations measurement context effect is referred to as self-generated validity, described by Feldman and Lynch (1988, p. 422) as follows:

> "...the act of measurement changes the phenomenon under study, producing the thought processes predicted by the theory being tested and quite possibly influencing behavior."

The result of either direct or indirect response language effects is distortion of the practical and theoretical implications of the disconfirmed expectations model. Thus, a thorough examination of possible response language effects in tests of the disconfirmed expectations theory requires an examination of both of these response language possibilities.

Representational Effects

Under the representational effects scenario, the respondents' actual unmeasured performance perceptions are affected by the chocolate chip expectations treatment. Moreover, in contrast to the response language effects scenario, the unmeasured perceived cookie performance diverges away from the expectations held by the two groups of respondents. Under low expectations, the unmeasured perceived chip content shifts in the direction of high performance while under the high expectations situation the unmeasured perceived chip content shifts in the direction of low performance. These perceptual contrast effects occur because different expectations conditions produce different reference points against which the cookie is

judged. Observing the cookie from a low (high) chocolate chip content expectations reference point results in respondents' perceptions that the cookie contains a higher (lower) level of chip content. Similar to the empirical implications of the response language scenario, the ultimate result of these representational effects is an increase in the concomitant variation across measured variables of the disconfirmed expectations theory which, in turn, generates empirical support for the model. But, in contrast to the response language situation, which may or may not influence cookie choice probabilities, these representational effects can be expected to influence subsequent cookie choice probabilities.

Just like response language effects, representational effects also can be produced by expectation levels and by expectation measurement processes. First, the manipulated expectation level may produce representational effects that ultimately affect consumer behavior—for example, expectations may affect unmeasured perceived performance that is linked to behavior independent of a psychological measurement context. This result would provide empirical support for the theory. Second, the process of measuring expectations can produce representational effects (e.g., changes in unmeasured performance perceptions) that are the result of self-generated validity. That is, the results of empirical studies suggest the process of measurement can affect the estimated structural relationships among variables and can ultimately affect behavior (Fazio et al. 1981; Higgins and Lurie 1983; Sherman et al. 1978). Evidence that representational effects are produced by the measurement of expectations would suggest that the empirical support for the theory is the result of self-generated validity which, in turn, would suggest that the empirical findings are misleading with respect to the theoretical and practical implications of the disconfirmed expectations theory. Thus, in an examination of representational effects in tests of the disconfirmed expectations theory, it is important to examine for the possibility of both types of representational effects.

DETECTING REPRESENTATIONAL AND RESPONSE LANGUAGE EFFECTS

Interpreting significant relationships in the disconfirmed expectations model as being evidence of either representational or response language effects ultimately rests on a combination of observations collected without measurement scales (e.g., a choice task) or with maximally different measurement methods. Three methods of detection are used in this study.

Decompositional Utility Measurement

Lynch et al. (1991, p. 286-7) argue that response language effects can be distinguished from representational effects in studies that require respondents to ". . .make integrated judgments of multidimensional stimuli (rather than of unidimensional stimuli) and in which contextual stimulus sets differ in their ranges on only one dimension." We developed the first method of detection based upon this general proposition.

Consider a respondent judging the desirability or preference for a set of offers comprised of various pairs of product and price combinations. The specific exercise involves a conjoint measurement procedure in which a set of four stimulus offers is created based upon a 2 x 2 factorial design resulting in a set of four product/price offerings (i.e., conjoint stimuli) described on two dimensions (chocolate chip cookie product and price) with each dimension consisting of two levels (high and low). Based upon the results of the conjoint measurement, both the price part-worth range and the cookie part-worth can be calculated for each respondent. When changing the chocolate chip context expectations from low to high (or from high to low) alters the psychological representation of the cookie product, only perceptions of the cookie product should vary, since only the product (and not price) is linked to the chocolate chip expectation manipulation. Thus, under the representational effects situation, the part-worth function associated with the cookie product is expected to change but the price part-worth range is expected to be unaffected.

In contrast, changing expectations may cause no change in respondents' perceptions of the cookie product but may simply change the way subjects anchor their ratings of the stimuli in general. That is, both the cookie part-worth and the price part-worth range will be higher (lower) under the low (high) cookie expectations condition. Indeed, Lynch, et al. (1991, p. 287) argue that under these conditions the raw responses to the set of conjoint stimuli will change. Thus, under response language effects, the product and price part-worths can be expected to change proportionately.

Choice Task

An actual choice task represents another method of measuring the consumer's response to the expectations manipulations. In an actual choice situation where the expectations manipulation affects neither the product perceptions nor choice behavior, there is evidence of response language effects. In contrast, when the expectations manipulation affects product perceptions and choice behavior, then there is evidence of representational effects, particularly if the conjoint measurement price part-worth range has not been affected by the experimental manipulations.

Experimental Measurement Manipulation

A third method for examining response language and representational effects is to experimentally manipulate the expectations measurement process through either the expectations level (e.g., high vs. low) or expectations measurement (e.g., measured vs. not measured). Manipulation of the measurement sequence is a traditional method used in measurement context effects research (for examples, see Simmons, Bickart, and Lynch 1993 and Bickart 1993). Significant measurement treatment main effects on the conjoint and (or) the cookie choice results would be evidence that measurement context effects resulting from the measurement process distort the results of empirical tests of the disconfirmed expectations model. Specifically, a statistically significant expectations measurement treatment effect on the cookie part-worth measure and (or) the cookie choice proportion combined with a statistically insignificant expectations measurement treatment effect on the price part-worth measures would be evidence of representational effects. Conversely, a response language effects interpretation would be indicated if the findings show significant expectations measurement treatment effects on the cookie part-worth measure and (or) the cookie choice proportion and price part-worth estimates. It is important to note that either of these interpretations distort the findings of the empirical test of the model and, therefore, are indicative of self-generated validity.

THE EXPERIMENT

As previously discussed, to fully examine the disconfirmed expectations model for representational and response language effects, it is necessary to examine the effects of (a) expectation level manipulations, (b) expectation measurement processes, and (c) the interaction between expectation level manipulations and measurement processes. Moreover, the effects of these manipulations and measurements need to be examined on both the variables traditionally included in disconfirmed expectations theory research and on other variables that are typically not included. Thus, by using experimental manipulation to separate response language and representational effects linked to expectations level and measurement treatments, it is possible to separate results that provide empirical support for the disconfirmed expectations theory from results that are artifacts of measurement processes.

To this end, we incorporated several elements into the experimental design in order to create a strong test of the disconfirmed expectations theory. First, the experiment manipulated expectations about chocolate chip cookies; respondents were exposed to an ad with either a large number or a low number of chocolate chips but then were presented with a test cookie that would be perceived as either having too few or too many chips, given the ad manipulation exposure.

Exhibit 2
The Design for the Experiment

Cell	Expectations Treatment ET[a]	Taste Test	Expectations Measurement Treatment EM[b]	Disconfirmed Expectations Measurement Treatment DM[c]	Conjoint And Choice Tasks Y
1	ET_0	T	E_0	D_0	Y
2	ET_0	T	E_1	D_0	Y
3	ET_0	T	E_0	D_1	Y
4	ET_0	T	E_1	D_1	Y
5	ET_1	T	E_0	D_0	Y
6	ET_1	T	E_1	D_0	Y
7	ET_1	T	E_0	D_1	Y
8	ET_1	T	E_1	D_1	Y

[a] Expectations Treatments
(ET_0) Low Expectations
(ET_1) High Expectations

[b] Expectations Measurement Treatment
(E_0) Measurement Omitted
(E_1) Measurement Included

[c] Disconfirmed Expectations Measurement Treatments
(D_0) Measurement Omitted
(D_1) Measurement Included

Second, two treatment levels were created with respect to the measurement of expectations and disconfirmed expectations—these variables were either measured or not measured. Third, we included three different variables that would reveal consumer response to the expectations manipulation. These variables included cookie part-worth, cookie choice probability, and price part-worth range. The experimental design is presented in Exhibit 4 and is more fully explained in the following sections.

Subjects, Design, and Procedure

Two hundred seven undergraduate business students participating for course credit were exposed to the cells of a 2 (expectations: high versus low) x 2 (expectations measured vs. not measured) x 2 (disconfirmation measured vs. not measured) between-subjects experimental design. In addition, measurements were also obtained for a set of dependent variable measures—conjoint measures and product choice—that were specified as being predicted by respondent satisfaction.

The experiment was conducted in a single session. The subjects completed a set of tasks in the following sequence—exposure to an ad for a fictitious brand of chocolate chip cookie, a taste test of a chocolate chip cookie, exposure to the expectations measure treatment (i.e., expectations measured or not measured), exposure to the disconfirmed expectations measurement treatment (i.e., disconfirmation measured or not measured), and participation in the conjoint and product choice tasks. Consumer satisfaction and perceived performance were not measured in this data

collection sequence because the measurement of these variables would have resulted in possible additional uncontrolled measurement context effects that would have resulted in ambiguous results with respect to the variables that were the primary focus of this study—expectations and disconfirmed expectations.[2] That is, it is the comparative process between the expectations treatment condition and the actual chip content that is presumed to result in support for the theory; perceived performance and satisfaction, while certainly central to the disconfirmed expectations theory, do not involve comparative processes that are potentially to blame for false theory support.

Ad Stimuli

The stimuli for the expectations treatments were ads for two fictitious brands of chocolate chip cookies. The high expectations ad featured Windsor Chips R' Us brand cookie, a cookie with lots of chocolate chips ("50% of cookie covered with chips, GUARANTEED!" and "big chocolate taste"); a picture of a cookie covered with chocolate chips was also portrayed in this ad. The low expectations ad featured the Windsor Chocolight brand cookie, a cookie light on chocolate ("40% less chocolate than our classic Windsor Chips R' Us Cookie" and "light chocolate taste"), and was accompanied by a picture of a cookie with very few chocolate chips.[3] The two ads were similar in that each contained identical claims for taste ("all-butter cookie for mom's homemade taste") and texture ("extra large cookie for a bigger crunch"). In addition, the ad layout was similar for both ads—the cookies portrayed in both ads were the same size (four inches in diameter) and differed only in the number of chips. Subjects in Cells 1, 2, 3, and 4 were exposed to the low expectations ad, while subjects in Cells 5, 6, 7, and 8 were exposed to the high expectations ad.

Product Performance

Because we wished to hold performance constant, the chocolate chip cookies used in the taste test were uniformly made with respect to size (four inches in diameter), texture (soft), taste (buttery), and number of chocolate chips (seven). In order to determine the appropriate number of chocolate chips, a pretest of chocolate chip cookies was conducted using cookies that varied only in the number of chocolate chips, having 4, 7, or 12 chocolate chips. The cookies were randomly distributed to 52 undergraduate marketing students who rated the cookies with respect to performance, disconfirmation, satisfaction, intentions, and product choice. Based on these results, cookies with seven chocolate chips were used in the experiment.

Measures

Expectations and disconfirmed expectations were measured via summated scales. One seven-point bipolar scale (small number of chocolate chips—large number of chocolate chips) was used in each of the expectations and disconfirmed expectations measures. The remaining scale items used for the measures were not the same across scales to reduce the likelihood of methods variance. Since the expectation manipulation involved one attribute—chocolate chips—using measures that focus repeatedly on that attribute could cause methods variance problems. Consequently, we created additional global and attribute specific measurement items to include with the chocolate chip content measures. We designed items that would be expected to be influenced by chocolate chip perceptions but were not directly measuring chocolate chip quantity.

Expectations. Expectations were measured via three items. One item consisted of a difference score calculated as the absolute value of the difference between the expected chocolate chip content and the ideal chocolate content.[4] Both measures consisted of a 7-point bipolar scale ranging from a "small number of chocolate chips" (coded 1) and a "large number of chocolate chips" (coded 7). The other two items consisted of bipolar 7-point scales anchored with "low (high) level of richness" coded 1 (7) and "poor (good) taste" coded 1 (7). The items were normalized by subtracting the item mean and dividing by the item

standard deviation prior to creating the summated scale. Coefficient alpha for the scale is .81.

Disconfirmation. Disconfirmed expectations were measured via a three-item summated scale. The items were:

1. "The number of chocolate chips in this cookie is..." – "smaller than I anticipated" (coded 0); "exactly what I anticipated" (coded 5); "larger than I anticipated" (coded 10).

2. "The richness of the cookie is..." – "less rich than I anticipated" (coded 0); "exactly what I anticipated" (coded 5); "richer than I anticipated" (coded 10).

3. "The taste of the cookie is..." – "not as good as I anticipated (coded 0); "exactly what I anticipated" (coded 5); "better than I anticipated" (coded 10).

Coefficient alpha for the scale is .74.

Conjoint Measurement. The conjoint measurement exercise was based upon stimuli created by a 3 x 3 full factorial design (see Appendix B for details). Subjects indicated their preferences for nine product-price stimuli created via three different products (12-ounce can of Classic Coke, 2-ounce Snicker candy bar, or two Windsor test cookies) at three different prices (40¢, 50¢, or 60¢).

Product Choice. Product choice was measured by asking subjects to indicate which of two products they wished to receive after the study was completed. Subjects chose between two Windsor test cookies and a 2-ounce Snicker candy bar. One month after the study ended, the subjects were given the product they had chosen.

Tests for Expectations Level Context Effects

In order to determine whether or not the expectations level treatment results in response language or representational effects, it is necessary to examine a series of hypotheses tests. Exhibit 3 depicts two sets of hypotheses tests organized into flow charts; as can be seen, the path taken by any one combination of hypotheses tests will produce different outcomes with respect to response language or representational effects. Indeed, only one path in each flowchart will result in response language or representational effects—all other paths will produce either unexpected or null effects.

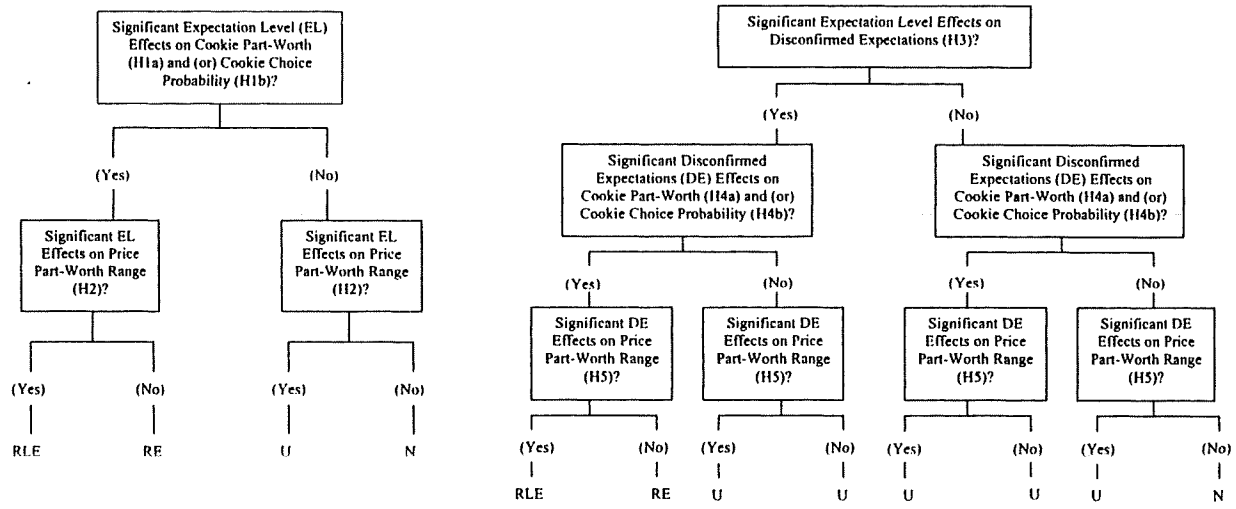
Starting with the left-hand side of the exhibit, which examines the direct effects of expectations level on the dependent variables, if the expectations level treatment is significantly related to the cookie part-worth and (or) cookie choice probability, and significantly related to the price part-worth range, a response language effects interpretation is warranted because the expectations level manipulation affected the respondents' reaction to both the cookie stimuli and the price stimuli in the conjoint exercise, generating misleading empirical support for the disconfirmed expectations theory. If, on the other hand, the expectations level treatment is significantly related to the cookie part-worth and (or) cookie choice probability and insignificantly related to the price part-worth range, then a representational effects interpretation is suggested because the expectations level treatment affected the cookie part-worth and (or) choice probability without affecting the price part-worth range variable. This finding would indicate support for the disconfirmed expectations theory. This set of findings is based on the following hypotheses:

H1: The expectations level treatment is negatively related to:
   a. the cookie part-worth estimate.
   b. the respondent's propensity to choose the test cookie from a product choice set.

H2: The expectations level treatment is negatively related to the price part-worth range.

Other findings may also emerge when examining the combination of H1a, H1b, and H2 tests. If the expectations level treatment is insignificantly related to the cookie part-worth and

Exhibit 3
Tests for Expectations Level Context Effects--Response Language vs. Representational Effects



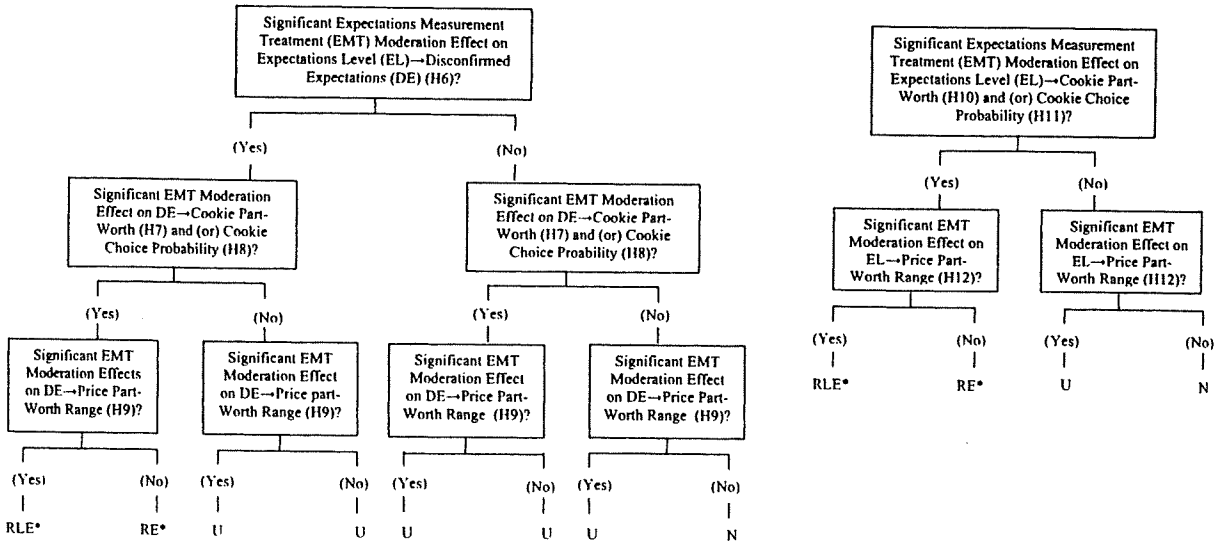
RLE: Response Language Effects
RE: Representational Effects
U: Unexpected Results
N: Null Effects

(or) cookie choice probability, yet significantly related to the price part-worth range, then the theory would be unsupported—these findings would be unexpected because it would be unusual to have expectations level treatment effects on the price part-worth range while not having effects on the cookie part-worth or cookie choice probability, the variables to which expectations level is more closely linked. In addition, if the expectations level treatment is insignificantly related to both the cookie part-worth and (or) cookie choice probability and the price part-worth range, then there would be a finding of total insignificance, or null effects, which would suggest no response language effects and no support for the theoretical model.

The right-hand side of Exhibit 3 examines the indirect effect of expectations level on the dependent variables through the mediation variable, disconfirmed expectations. A response language effects interpretation would be suggested in the situation where there is a significant expectations level treatment effect on disconfirmed expectations, significant disconfirmed expectations effects on the cookie part-worth and (or) cookie choice probability, and on the price part-worth range. However, when the expectations level treatment effect on disconfirmed expectations is significant, and disconfirmed expectations has a significant effect on the cookie part-worth and (or) cookie choice probability, but not on the price part-worth range, a representational effects interpretation is suggested, and the disconfirmed expectations theory is supported. In all other combinations of test results, the theory is not supported because of either unexpected findings or null effects. The combination of tests depicted in this flowchart are represented by the following hypotheses:

H3: The expectations level treatment is negatively related to the disconfirmed

Exhibit 4
Tests for Expectations Measurement Context Effects--Response Language vs. Representational Effects



RLE: Response Language Effects
RE: Representational Effects
N: Null Effects
U: Unexpected Results

* Results attributable to self-generated validity.

expectations measure.

H4: The disconfirmed expectations measure is positively related to:

a. the cookie part-worth estimate.
b. the respondent's propensity to choose the test cookie from a product choice set.

H5: The disconfirmed expectations measure is positively related to the price part-worth range.

Tests for Expectations Measurement Context Effects

Exhibit 4 depicts two series of tests that address the possibility that the expectations measurement treatment can moderate the theoretical linkages of the disconfirmed expectations model; significant moderator variable effects would indicate measurement context effects. The flowchart on the left-hand side of the exhibit considers moderation effects of the expectations measurement treatment (EMT) on the linkages between the expectations level treatment and disconfirmed expectations and between disconfirmed expectations and the cookie part-worth variable and (or) cookie choice variable. A significant EMT moderation effect on the linkages between the expectations level manipulation and disconfirmed expectations and between disconfirmed expectations and the cookie part-worth and (or) cookie choice probability, plus a significant EMT moderation effect on the linkage between disconfirmed expectations and the price part-worth range results in a finding of response language effects. On the other hand, if the EMT moderation effect on the linkage between disconfirmed expectations and the price part-worth range is not significant, then a finding of

representational effects is warranted. However, because both the response language and representational effects are produced by measurement context effects, reflecting self-generated validity, they provide misleading support for the disconfirmed expectations theory. All other test combinations in this flowchart also do not support the theory, either being unexpected results or null effects. The hypotheses related to this combination of tests are:

H6: The negative linkage between the expectations level treatment variable and disconfirmed expectations is negatively moderated (i.e., enhanced) by the expectations measurement treatment.

H7: The positive linkage between disconfirmed expectations and the cookie part-worth measure is positively moderated (i.e., enhanced) by the expectations measurement treatment.

H8: The positive linkage between disconfirmed expectations and the cookie choice probability is positively moderated (i.e., enhanced) by the expectations measurement treatment.

H9: The positive linkage between disconfirmed expectations and the price part-worth range is positively moderated (i.e., enhanced) by the expectations measurement treatment.

Measurement context effects could also involve a situation in which the measurement process enhances the effect of the expectations level treatment on the ultimate dependent variables of the model. These effects would manifest themselves as moderator variable effects. The flowchart on the right-hand side of Exhibit 4 traces the combination of tests that examine the moderation effect of the expectations measurement treatment on the linkage between the expectations level treatment and the cookie part-worth and (or) cookie choice probability. Further, in order to distinguish response language vs. representational effects, the effect of the expectations measurement treatment on the linkage between the expectations level treatment and the price part-worth range is also examined. The corresponding hypotheses are:

H10: Measuring expectations prior to the conjoint rating task negatively moderates the relationship between the expectations level treatment and the cookie part-worth estimate.

H11: Measuring expectations prior to the product choice task negatively moderates the relationship between the expectations level treatment and cookie choice probability.

H12: Measuring expectations prior to the conjoint rating task negatively moderates the relationship between the expectations level treatment and the price part-worth range.

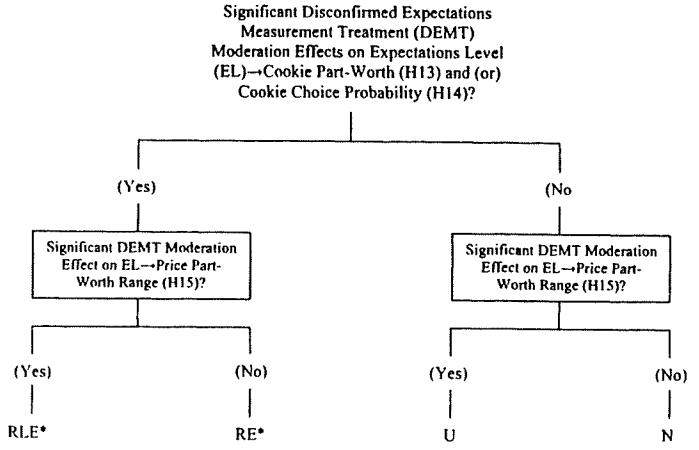
Although response language and representational effects may be indicated by the right combination of hypotheses tests, as shown in Exhibit 4, because the findings are induced by the process of measuring expectations, i.e., self-generated validity, misleading support for the disconfirmed expectations theory is produced.

Tests for Disconfirmed Expectations Measurement Context Effects

A thorough examination of expectations effects in the disconfirmed expectations model includes an investigation of the impact of the measurement of disconfirmed expectations. That is, the process of measuring disconfirmed expectations may also result in measurement context effects that provide misleading support for the theory. The combination of hypotheses tests, as shown in Exhibit 5, necessary to examine for disconfirmed expectations measurement context effects are:

H13: Measuring disconfirmed expectations prior to the conjoint rating task negatively moderates the relationship between the expectations level treatment and the cookie

Exhibit 5
Tests for Disconfirmed Expectations Measurement Context Effects--Response Language vs. Representational Effects



RLE: Response Language Effects
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N: Null Effects
U: Unexpected Results

* Results attributable to self-generated validity.

part-worth estimate.

H14: Measuring disconfirmed expectations prior to the product choice task negatively moderates the relationship between the expectations level treatment and the cookie choice probability.

H15: Measuring disconfirmed expectations prior to the conjoint rating task negatively moderates the relationship between the expectations level treatment and the price part-worth range.

As posited in H10 and H11, the relationship between the expectations level treatment and the dependent variables is predicted to be negative. Consequently, a significant disconfirmed expectations measurement treatment (DEMT) moderation effect on the relationship between the expectations level treatment and the dependent variables is hypothesized to enhance the negative relationship. This, in combination with a significant DEMT moderation effect between the expectations level treatment and the price part-worth range would be indicative of response language effects; a representational effect would be indicated if there is no significant DEMT moderation effect on the relationship between the expectations level treatment and the price part-worth range. However, both of these findings would again be the result of self-generated validity. Thus, support for the disconfirmed expectations model would be misleading.

FINDINGS

A series of hierarchical regression estimates were conducted to test the hypotheses; estimation equations for all the tests are in Appendix A.

Because the logical reporting of the regression results does not directly relate to the order in which hypotheses were presented, a summary of the hypotheses test findings is reported in Table 1. In addition, Table 1 directs the reader to the appropriate table(s) to see specific results of all the regression tests, in Tables 2 through 8.

Expectations Level Tests

Two combinations of hypotheses tests examine whether or not the expectations level treatment resulted in response language or representational effects, as shown in Exhibit 3. Hypotheses H1-H3 examine the direct effect of the expectations level treatment on the cookie part-worth, cookie choice probability, and the price part-worth range. H1a and H1b were both supported, however, the estimate of the price part-worth range variable (H2) was statistically insignificant. Consequently, the combination of these results indicates the presence of representational effects and support for the disconfirmed expectations theory; there is no evidence of response language effects.

Also shown in Exhibit 3 are combinations of H3-H5, which examine the indirect effect of the expectations level treatment, through disconfirmed expectations, on the dependent variables. A significant expectation level treatment effect on disconfirmed expectations is found in support of H3. Similarly, significant relationships between disconfirmed expectations and the cookie part-worth (H4a) and the cookie choice probability (H4b) are found. But the relationship between disconfirmed expectations and the price part-worth range variable is statistically insignificant, thus, H5 is not supported. Once again, this combination of results indicates a finding of representational effects and support for the disconfirmed expectations theory.

Expectations Measurement Context Effects Tests

Exhibit 4 maps out two flowcharts of hypotheses tests that examine the effects of expectations measurement with respect to support for the disconfirmed expectations theory. None of the relationships posited in the hypotheses tests in this exhibit were statistically significant. That is, the combination of results for H6, H7, H8, and H9 produced a null effect, as did the combination of results for H10, H11, and H12. This pattern of results suggests an absence of response language effects, and thus, support for the disconfirmed expectations theory.

Disconfirmed Expectations Measurement Context Effects Tests

Hypotheses H13, H14, and H15, as shown in Exhibit 5, examine whether or not the process of measuring disconfirmed expectations provides misleading support for the disconfirmed expectations theory. All three of these hypotheses were unsupported, which together produced a null effect. This indicates the absence of response language effects and support for the disconfirmed expectations theory.

DISCUSSION AND CONCLUSIONS

The purpose of this study was to re-examine the disconfirmed expectations theory using experimental conditions that focus on the question of whether or not the perceptual comparative processes involved in disconfirmation produce representational and (or) response language effects. In order to do this, a controlled experiment was designed to create a strong test of the theory, which had never been undertaken before. Thus, the strength of the linkages between the expectations level treatment and a cookie part-worth variable, a cookie choice variable, and a price part-worth range variable were examined while controlling for measurement context effects. It is important to note that the primary focus of this study was on the comparative process between expectations and disconfirmed expectations. Consequently, to control for measurement context effects that might have possibly occurred from the process of measuring perceived performance and satisfaction (and thus would have created ambiguity in interpreting the results with respect to the focal variables), these

Table 1
Summary of Hypotheses Tests

Hypothesis Test	Result	Corresponding Table*
H1a	Supported	Tables 3, 6
H1b	Supported	Tables 4, 7
H2	Not supported	Tables 5, 8
H3	Supported	Table 2
H4a	Supported	Table 3
H4b	Supported	Table 4
H5	Not supported	Table 5
H6	Not supported	Table 2
H7	Not supported	Table 3
H8	Not supported	Table 4
H9	Not supported	Table 5
H10	Not supported	Tables 3, 6
H11	Not supported	Tables 4, 7
H12	Not supported	Tables 5, 8
H13	Not supported	Table 6
H14	Not supported	Table 7
H15	Not supported	Table 8

* For specific hypothesis test results, see listed table(s).

Table 2
Regression Estimates Predicting Disconfirmed Expectations
(n = 107)*

Variable	Relevant Hypothesis	Unstandardized β	Standardized β	t
Expectations level (EL)	H3	-2.04	-.69	-9.64[a]
Expectations measurement treatment (EMT)		-.16	-.05	-.73
EL*EMT	H6	-.13	-.04	-.60
Constant		7.018[c]		33.11
R^2 = .48				

*Only data from those cells where subjects were exposed to the disconfirmed expectations scale items (Cells 3, 4, 7, and 8) were used in this test.
[a] $p < .01$ for a one-tailed t-test.
[b] $p < .05$ for a one-tailed t-test.
[c] $p < .01$ for a two-tailed t-test.
[d] $p < .05$ for a two-tailed t-test.
[e] $p < .01$.
[f] $p < .05$.

Table 3
Regression Estimates Predicting Cookie Part-Worth (n = 107)

Hierarchical Regression Results

Explanatory Variable Set	Relevant Hypothesis	R^2 Change	F	Degrees of Freedom	Significance of F
Set 1: Expectations level (EL),	H1a				
Disconfirmed expectations (DE)	H4a	.177	11.15	2/104	.00
Set 2: Expectations measurement treatment (EMT),					
EMT*EL,	H10				
EMT*DE	H7	.003	.13	3/101	.94

Estimate of Equation Using the Significant Variable Sets

Explanatory Variable	Relevant Hypothesis	Unstandardized β	Standardized β	t
DE	H4a	.59	.55	4.49[a]
EL	H1a	.79	.25	2.02[b]
Constant		-6.01		-6.19[c]
R^2 = .177				

*Only data from those cells where subjects were exposed to the disconfirmed expectations scale items (Cells 3, 4, 7, and 8) were used in this test.

[a] $p < .01$ for a one-tailed t-test.
[b] $p < .05$ for a one-tailed t-test.
[c] $p < .01$ for a two-tailed t-test.
[d] $p < .05$ for a two-tailed t-test.
[e] $p < .01$.
[f] $p < .05$.

Table 4
LOGIT Estimates Predicting Cookie Choice Probability (n = 110)*

Hierarchical LOGIT Results

Predictor Variables Added	Relevant Hypothesis	-2 Log Likelihood	Improvement χ^2	Degrees of Freedom	Significance Level
Set 1: Expectations level (EL),	H1b				
Disconfirmed expectations (DE)	H4b	131.57	16.75	2	.00
Set 2: Expectations measurement treatment (EMT),					
EMT*EL,	H11				
EMT*DE	H8	126.42	5.15	3	.16

Estimate of Equation Using the Significant Variable Sets

Variable	Relevant Hypothesis	β	Wald	Degrees of Freedom	Significance Level
EL	H1b	.77	6.31	1	.01
DE	H4b	.41	13.82	1	.00
Constant		-2.82	12.73	1	.00

Percent correct classification = 67.3%

*Only data from those cells where subjects were exposed to the disconfirmed expectations scale items (Cells 3, 4, 7, and 8) were used in this test.

Table 5
Regression Estimate Predicting Price Part-Worth Range (n = 110)*

Hierarchical Regression Results

	Explanatory Variable Set	Relevant Hypothesis	R^2 Change	F	Degrees of Freedom	Significance of F
Set 1:	Expectations level (EL),	H2				
	Disconfirmed expectations (DE)	H5	.016	.82	2/104	.44
Set 2:	Expectations measurement treatment (EMT),					
	EMT*EL,	H12				
	EMT*DE	H9	.016	.21	3/101	.89

*Only data from those cells where subjects were exposed to the disconfirmed expectations scale items (Cells 3, 4, 7, and 8) were used in this test.

Table 6
Regression Estimate Predicting Cookie Part-Worth With Disconfirmed Expectations Measurement Treatment (n = 206)

Hierarchical Regression Results

	Explanatory Variable Set[a]	Relevant Hypothesis	R^2 Change	F	Degrees of Freedom	Significance of F
Set 1:	Expectations level (EL)	H1a	.013	2.71	1/204	.09
Set 2:	Expectations measurement treatment (EMT),	H10				
	Disconfirmed expectations measurement treatment (DEMT)		.028	3.37	2/202	.04
Set 3:	EMT*EL,					
	DEMT*EL,	H13				
	EMT*DEMT*EL		.002	.28	3/199	.84

Estimate of Equation Using the Significant Variable Sets

Explanatory Variable	Relevant Hypothesis	Unstandardized β	Standardized β	t
EL	H1a	-.41	-.13	-1.83[c]
EMT		-.06	-.02	-.28
DEMT		-.58	-.18	-2.57[c]
Constant				-5.58[d]
R^2 = .05[a]				

[a] Variable sets 1 and 3 correspond to *a priori* hypotheses. Variable set 2 is included in the analysis so that the main effects are controlled when estimating the set 3 interaction effects.
[b] $p < .01$ for a one-tailed t-test.
[c] $p < .05$ for a one-tailed t-test.
[d] $p < .01$ for a two-tailed t-test.
[e] $p < .05$ for a two-tailed t-test.
[f] $p < .01$.
[g] $p < .05$.

variables were not measured until after all other variables had been measured. Furthermore, since perceived performance and satisfaction are not of central interest in this study, the results of those tests are not reported.

As the pattern of hypotheses tests reveals, the results of this study indicate a representational effects interpretation of the expectations level manipulation, and thus support for the disconfirmed expectations theory. That is, the

Table 7
LOGIT Estimates Predicting Cookie Choice Probability With Disconfirmed Expectations Measurement Treatment (n = 217)

Hierarchical LOGIT Results

	Predictor Variables Added	Relevant Hypothesis	-2 Log Likelihood	Improvement χ^2	Degrees of Freedom	Significance Level
Set 1:	Expectations level (EL)	H1b	277.10	5.71	1	.02
Set 2:	Expectations measurement treatment (EMT), Disconfirmed expectations measurement treatment (DEMT)		276.62	.477	2	.79
Set 3:	EMT*EL, DEMT*EL, EMT*DEMT*EL	H11 H14	274.36	.580	3	.90

Estimate of Equation Using the Significant Variable Sets

Variable	Relevant Hypothesis	β	Wald	Degrees of Freedom	Significance Level
EL	H1b	-.34	5.63	1	.02
Constant		.02	.01	1	.91
Percent correct classification = 58.3%					

Table 8
Regression Estimate Predicting Price Part-Worth Range With Disconfirmed Expectations Measurement Treatment (n = 206)

Hierarchical Regression Results

	Explanatory Variable Set[a]	Relevant Hypothesis	R^2 Change	F	Degrees of Freedom	Significance of F
Set 1:	Expectations level (EL)	H2	.003	.60	1/204	.42
Set 2:	Expectations measurement treatment (EMT), Disconfirmed expectations measurement treatment (DEMT)		.009	.89	2/202	.41
Set 3:	EMT*EL, DEMT*EL, EMT*DEMT*EL	H12 H15	.006	.43	3/199	.73

[a] Variables in sets 1 and 3 correspond to *a priori* hypotheses. Variables in set 2 are included in the analysis so that the main effects are controlled when estimating the set 3 interaction effects.

expectations level treatment variable consistently was a significant predictor of disconfirmed expectations, cookie part-worth, cookie choice probability, and price part-worth range, whereas the measurement manipulations related to expectations and disconfirmed expectations consistently produced insignificant findings. Thus, the large number of non-supported hypotheses tests, which might be disappointing in some studies, is a positive result in this study. Why? Because strong support of the disconfirmed expectations theory, such as we find, also supports the strategic implications of the disconfirmed theory. Specifically, the findings suggest that marketing strategies focused on influencing consumer expectations and disconfirmation can be expected to produce effects that go beyond the core variables of the consumer satisfaction model. Consequently, marketing managers who use strategies that affect consumers' expectations can expect that such strategies will impact choice behavior through a complex process--expectations

may produce a positive effect on choice behavior via an indirect linkage with satisfaction that is mediated by disconfirmed expectations. A particularly important finding of this study is that consumer expectations play a role in determining choice behavior. Further, we found strong support that disconfirmation mediates the linkage between consumer expectations and choice behavior. These findings confirm that there is an intricate web of relationships that determine consumers' choice behavior. Had our results shown a pattern of response language effects, the managerial implications of the disconfirmed expectations theory would have been called into doubt. Because previous research has not addressed the possibility of response language effects, this was a critical issue to study.

Another key contribution of this research is that it provides a much needed empirical test of the linkages between variables of the disconfirmed expectations theory and choice behavior. While previous studies have assumed that consumer satisfaction is an important determinant of choice behavior, and, in fact, have measured purchase intentions (Bearden and Teel 1983; LaBarbera and Mazursky 1983; Oliver 1980a; Oliver and Linda 1981; Oliver and Swan 1989), there is a lack of studies that have included choice variables in tests of the disconfirmed expectations theory of consumer satisfaction. As marketers are well aware, however, the intention-behavior linkage is fragile (Ajzen 1985; Fishbein and Ajzen 1975; Sheppard, Hartwick, and Warshaw 1988). The inclusion of a product choice variable in this study addresses Tse, Nicosia, and Wilton's (1990) concern that to fully understand the expectancy-disconfirmation paradigm, attention needs to be given to the transactional circumstances associated with the satisfaction formation process.

Importantly, this extension of the disconfirmed expectations theory also allows us to examine whether consumers' mental representations change when comparing performance to expectations or whether contextual comparative factors are responsible for changing how consumers map their mental representations onto rating scales. It is critically important to demonstrate that statistically significant linkages among the disconfirmed expectations theory variables are the result of representational effects if the theory is to have practical value. If the empirical support for the theory were merely the result of measurement context or response language effects the support would be misleading. The use of conjoint measurement procedures and a product choice exercise in this study enabled a detailed examination of this response language and measurement context versus representational effects issue.

As with any research, there were some limitations associated with this study. Use of a student sample limits the ability to generalize the results of this study. However, because the study focuses on theory application, the use of a sample of homogeneous respondents, such as students, is ideal for theory falsification procedures (Calder, Phillips, and Tybout 1981). An additional limitation with respect to generalization of results is the employment of a nondurable consumer product (cookie) as the product stimulus. Churchill and Surprenant (1982) report results that suggest the relationships among the variables specified in the disconfirmed expectations theory when durable products are involved are different than when nondurable products are involved. Consequently, further research should examine the relationships examined in this study under conditions in which durable products are the focal stimuli.

Future research might consider using other methods of detecting measurement effects on the disconfirmed expectations theory. For example, it might be possible to rule out response language effects by examining the impact of perceived performance and satisfaction scores on immediate and delayed purchase likelihood measures. Another option might be to systematically vary choice sets and examine differences in part-worths. Still another avenue for future research to consider is the effect of respondent involvement on detecting response language or representational effects. If respondents have low involvement, they may be less likely to engage in cognitive effort, and therefore may be more susceptible to measurement context effects, which should disappear over time. But, under a condition of

high involvement, respondents would engage in more cognitive effort, would be less susceptible to measurement context effects, and should have long-term perceptual changes. A delayed choice measure might be able to detect these effects.

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Appendix A
Estimation Equations Predicting Cookie Part-Worth

The expression predicting the cookie part-worth:

(1) $CPW = \beta_0 + \beta_3 EMT + (\beta_1 + \beta_5 EMT)DE + (\beta_2 + \beta_4 EMT)EL$

where: CPW = cookie part-worth

DE = disconfirmed expectations measure
EMT = expectations measurement treatment where:
EMT = 1 when expectations are measured before the conjoint and product choice measures.
EMT = -1 when expectations are not measured.
EL = expectations level treatment where:
EL = 1 for the high chocolate chip expectations level treatment condition.
EL = -1 for the low chocolate chip expectation level treatment condition.

Equation (1) can be rearranged as follows for estimation:

(2) $CPW = \beta_0 + \beta_1 DE + \beta_2 EL + \beta_3 EMT + \beta_4 EMT*EL + \beta_5 EMT*DE$

where EMT*EL is the EMT-by-EL cross-product, EMT*DE is the EMT-by-DE cross-product, and the other terms are defined in (1).

Hypothesis H1.a suggests $\hat{a}_2$ will be negative. Hypothesis H4a. suggests $\hat{a}_1$ will be positive. Hypothesis H7 suggests $\hat{a}_5$ is positive. Hypothesis H10 suggests $\hat{a}_4$ will be negative. The model does not suggest a significant direct linkage between CPW and EMT, consequently, the estimate of $\hat{a}_3$ is expected to be insignificant.

Estimation Equation Predicting Cookie Choice

The expression predicting the cookie choice probability is the following LOGIT expression:

(3) $$C = \frac{1}{1 + \exp.[\hat{a}_0 + \hat{a}_3 EMT + (\hat{a}_1 + \hat{a}_5 EMT)DE + (\hat{a}_2 + \hat{a}_4 EMT)EL]}$$

where C = the cookie choice probability and where the remaining terms are defined in (1). The terms of the exponent expression in equation (3) can be rearranged as in expression (2) for estimation.

Hypotheses H1.b, H4.b, H8, and H11 predict $\hat{a}_2$, $\hat{a}_1$, $\hat{a}_5$, and $\hat{a}_4$ will be negative, positive, positive, and negative, respectively. The estimate of $\hat{a}_3$ is expected to be insignificant.

Estimation Equation Predicting Price Part-Worth Range

The expression predicting the price part-worth range is:

(4) $PPWR = \beta_0 + \beta_3 EMT + (\beta_1 + \beta_5 EMT)DE + (\beta_2 + \beta_4 EMT)EL$

where PPWR = price part-worth range and where the other terms are defined in (1). The terms of equation (4) can be rearranged as in expression (2) for estimation.

Hypotheses H2, H5, H9, and H12 predict $\hat{a}_2$, $\hat{a}_1$, $\hat{a}_5$, and $\hat{a}_4$ will be negative, positive, positive, and negative, respectively, and the estimate of $\hat{a}_3$ is expected to be insignificant.

Estimation Equations Predicting Disconfirmed Expectations

The equation for disconfirmed expectations is:

(5) $DE = \beta_0 + \beta_2 EMT + (\beta_1 + \beta_3 EMT)EL$

where DE = disconfirmed expectations and where the other terms are defined in (1). Equation (5) can be rearranged for estimation as follows:

(6) $DE = \beta_0 + \beta_1 EL + \beta_2 EMT + \beta_3 ET*EL$

where EMT*EL is the EMT-by-EL cross-product and where the remaining terms are defined in (1). Hypotheses H3 and H6 predict $\hat{a}_1$ and $\hat{a}_3$ will be negative. The model does not predict a direct link between DE and EMT; consequently, the estimate of $\hat{a}_3$ is expected to be insignificant.

Estimation Equations Predicting Cookie Part-Worth When Disconfirmed Expectations Measurement Treatment Is Present

The following regression equation predicts the cookie conjoint part-worth measure (CPW) when there is also a disconfirmed expectations measurement manipulation:

(7) $CPW = \beta_0 + \beta_2 EMT + \beta_3 DEMT + (\beta_1 + \beta_4 EMT + \beta_5 DEMT + \beta_6 EMT*DEMT)EL$

where: CPW = cookie part-worth.
EMT = expectation measurement manipulation where:
EMT = 1 when expectations are measured before the conjoint measurement.
EMT = -1 when expectations are not measured.
DEMT = disconfirmation measurement manipulation where:
DM = 1 when disconfirmation is measured before the conjoint measurement.
DM = -1 when disconfirmation is not measured.
EL = expectations level manipulation where:
ET = 1 for the high chocolate chip context treatment.
ET = -1 for the low chocolate chip context treatment.
β's = partial regression coefficients.

Rearranging the terms in equation (6) yields the following equation:

(8) $CPW = \beta_0 + \beta_1 EL + \beta_2 EMT + \beta_3 DEMT + \beta_4 EMT*EL + \beta_5 DEMT*EL + \beta_6 EMT*DEMT*EL$

where DEMT*EL = the DEMT-by-EL cross-product, EMT*DEMT*EL= the EMT-by-DEMT-by-EL cross-product, and where the remaining terms are defined in (7). Hypotheses H1.a, H10, and H13 predict $\hat{a}_1$, $\hat{a}_4$, and $\hat{a}_5$ will be negative. The model suggests $\hat{a}_2$, $\hat{a}_3$, and $\hat{a}_6$ will be insignificant.

Estimation Equation Predicting Cookie Choice When Disconfirmed Expectations Measurement Treatment Is Present

The equation predicting cookie choice probability is the following LOGIT expression:

(9) $$C = \frac{1}{1+\exp.[\beta_0 + \beta_2 EMT + \beta_3 DEMT + (\beta_1 + \beta_4 EMT + \beta_5 DEMT + \beta_6 EMT * DEMT)EL]}$$

where C = the cookie choice probability and where the remaining terms are defined in (7).

The terms of the exponent expression in expression (9) can be rearranged as in expression (8) for estimation. Hypotheses H1.b, H11, and H14 predict $\hat{a}_1$, $\hat{a}_4$, and $\hat{a}_5$ will be negative. The model suggests $\hat{a}_2$, $\hat{a}_3$, and $\hat{a}_6$ will be insignificant.

Estimation Equation Predicting Price Part-Worth Range When Disconfirmed Expectations Measurement Treatment Is Present

Based upon the logic underlying the specification of hypothesis (H2), the test that focuses on the question of response language vs. representational effects involves the estimate of the following equation predicting the price part-worth range variable:

(10) $PPWR = \beta_0 + \beta_2 EMT + \beta_3 DEMT + (\beta_1 + \beta_4 EMT + \beta_5 DEMT + \beta_6 EMT*DEMT)EL$

where: PPWR = the price part-worth range measure and the remaining variables are defined in (7).

The terms of equation (10) can be rearranged as in equation (8) for estimation. Hypotheses H2, H12, and H15 predict $\hat{a}_1$, $\hat{a}_4$, and $\hat{a}_5$ will be negative. The model suggests $\hat{a}_2$, $\hat{a}_3$, and $\hat{a}_6$ will be insignificant.

Appendix B

Directions. The following are nine product choice options. Each consists of a product and a price to be paid for the product. Please scan all of the options so that you are familiar with the entire set of nine product/price options. After briefly scanning the set, use the scale at the bottom of each box containing each option to indicate your preference for each option. Use larger numbers for stronger preferences and smaller numbers for smaller preferences.

One 12-ounce can of Classic Coke Price = $.60 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Two Windsor Test Cookies Price = $.40 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
One 2-ounce Snicker Price = $.60 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
One 12-ounce can of Classic Coke Price = $.40 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Two Windsor Test Cookies Price = $.50 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
One 2-ounce Snicker Price = $.40 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
One 12-ounce can of Classic Coke Price = $.50 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Two Windsor Test Cookies Price = $.60 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
One 2-ounce Snicker Price = $.50 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

ENDNOTES

1. It is important to note that there is often a low correlation between attitude measures and actual behavior (Eagly and Chaiken, 1993). Using choice as one of the criterion variables, therefore, results in a "risky" prediction for the disconfirmed expectations satisfaction model which, in turn, produces a strong test of the theory. As noted by Wacker (1998, p. 366):

> "The criterion of empirical riskiness has been the focus of most of critical evaluators of 'good' theory. Most academics believe that empirical tests of theory should be risky so that there is a good chance of the theory being refuted....Put another way, every legitimate empirical test is designed to disprove the theory and should be risky (Popper, 1957)."

2. Measures of additional consumer satisfaction model variables were obtained, including performance and satisfaction. However, these measures are not reported in this paper because they are not immediately relevant to the research questions. Moreover, because these measures were obtained after all other variables reported in Exhibit 4 were measured, their measurement could not have contributed to any context effects reported in

this paper.

3. A reviewer points out that there is a possible confound in the expectations manipulation. That is, in the low chips ad, a comparison standard was provided ("40% less chocolate than our classic Windsor Chips R Us Cookie") that the high chips ad did not contain ("50% of cookie covered with chips GUARANTEED!"). However, each ad also contained a large visual of a cookie (4 inches in diameter), dominating the ad copy. In the low chips ad, the cookie has six chips; the high chips ad cookie has 17 chips. In fact, the picture in each ad is so large to suggest that most respondents would have focused primarily on the picture, not the ad copy, and would have made inferences about the cookie based on the picture, not the ad copy. To explore this possibility, a sample of undergraduate business students (n=36), similar to those used in the experiment, were asked to look at the ad "as they would look at any ad" and then to record what one thing they had most focused on. Half of the sample looked at the low chocolate cookie ad, and half looked at the high chocolate cookie ad. For both ads, 72% of the respondents reported focusing most on the picture of the cookie, suggesting that any confound in the ad copy was not a significant concern. Moreover, our major concern was that the ads created either high or low expectations with respect to chocolate chip content--100% of those students who looked at the light chocolate cookie ad and 94% of those who viewed the high chocolate ad correctly identified the ad cookie (post-viewing) as being either high or low in chocolate content, which again suggests that there was no significant confound effect.

4. Our use of the ideal measure was based upon the Teas (1993) concept of evaluative performance, which he argues can be used to conceptualize perceived quality. Teas (1993) argues that perceived quality can be used to represent perceived performance in the disconfirmed expectations mode. We incorporate the ideal comparison standard in our measures to deal with the possibility that some students may not desire a maximum amount of chocolate chips. Indeed, a small number of students selected an ideal point that was less than the maximum amount on the scale.