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A model is proposed which expresses consumer satisfaction as a function of expectation and expectancy disconfirmation. Satisfaction, in turn, is believed to influence attitude change and purchase intention. Results from a two-stage field study support the scheme for consumers and nonconsumers of a flu inoculation.

A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions

A recent wave of interest in research on consumer satisfaction has stimulated several thoughtful interpretations of the causes and effects of satisfaction cognitions. Reviews of the literature (Day 1977; LaTour and Peat 1979; Ölander 1977; Oliver 1977) suggest that two constructs, performance-specific expectation and expectancy disconfirmation, play a major role in satisfaction decisions. The purpose of this article is to extend this body of literature in a manner which will permit one to integrate the suggested antecedents and some hypothesized cognitive consequences into a coherent framework of satisfaction-related concepts.

Expectation and Disconfirmation Effects

Early propositions linking disconfirmed expectations to subsequent consumer satisfaction were advanced by Engel, Kollat, and Blackwell (1968, p. 512–15) and Howard and Sheth (1969, p. 145–50), although little evidence in the product performance area could be cited to support the seemingly obvious conclusion that satisfaction increases as the performance/expectation ratio increases. This view was based largely on the results of a seminal laboratory study by Cardozo (1965). Since that time, further experiments in the laboratory (Anderson 1973; Cohen and Goldberg 1970; Olshavsky and Miller 1972; Olson and Dover 1976, 1979; Woodside 1972) and longitudinal surveys in the field (Oliver 1977; Swan 1977) have suggested that the satisfaction decision is more complex.

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Though writers do agree that expectations are a factor in postpurchase evaluations, viewpoints differ on the process of expectancy disconfirmation. Some conclude that the latter phenomenon exists implicitly whenever expectations are paired with disparate performance, others view it as a comparative process culminating in an immediate satisfaction decision, and still others view it as a distinct cognitive state resulting from the comparison process and preceding a satisfaction judgment.

Insight on this issue can be gained from prior research in the fields of social and applied psychology. Almost without exception, reviewers and early researchers in the areas of job, life, self, and patient satisfaction agree that satisfaction is a function of an initial standard and some perceived discrepancy from the initial reference point (see, variously, Andrews and Withey 1976; Campbell, Converse, and Rodgers 1976; Ilgen 1971; Locke 1969; Locker and Dunt 1978; Shrauger 1975; Spector 1956; Watts 1968; Weaver and Brickman 1974.) Although many researchers choose to measure discrepancies objectively, reviewers of the early dissonance studies (e.g., Watts 1968; Weaver and Brickman 1974) were among the first to argue that individuals implicitly make summary comparative judgments apart from and as an input to their feelings of satisfaction. This perspective is the one used here.

The research cited strongly suggests that the effects of expectation and discrepancy perceptions may be additive. Specifically, expectations are thought to create a frame of reference about which one makes a comparative judgment. Thus, outcomes poorer than expected (a negative disconfirmation) are rated below this reference point, whereas those better than expect-

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ed (a positive disconfirmation) are evaluated above this base.

Researchers in job satisfaction (e.g., Ilgen 1971; Smith, Kendall, and Hulin 1969) have noted that this additive interpretation is modeled well by Helson's (1948, 1959) adaptation level theory which posits that one perceives stimuli only in relation to an adapted standard. The standard is a function of perceptions of the stimulus itself, the context, and psychological and physiological characteristics of the organism. Once created, the "adaptation level" serves to sustain subsequent evaluations in that positive and negative deviations will remain in the general vicinity of one's original position. Only large impacts on the adaptation level will change the final tone of the subject's evaluation.

As applied to satisfaction decisions, one's level of expectation about product performance, however created, can be seen as an adaptation level. Expectations are influenced by the same factors that Helson (1959) suggested in his discussion of adaptation phenomena, namely (1) the product itself including one's prior experience, brand connotations, and symbolic elements, (2) the context including the content of communications from salespeople and social referents, and (3) individual characteristics including persuasibility and perceptual distortion. Postdecision deviations from the adaptation level are thought to be caused by the degree to which the product exceeds, meets, or falls short of one's expectations, i.e., positive, zero, or negative disconfirmation. Satisfaction, then, can be seen as an additive combination of the expectation level and the resulting disconfirmation.

A growing number of studies suggest that this paradigm may be useful in the study of consumer satisfaction. Data from the laboratory and the field have shown that both expectation and disconfirmation affect postexposure product reactions. Specifically, in investigations where expectations have been manipulated or measured prior to product exposure, significant expectation effects have been observed consistently. Interested readers are referred to Olshavsky and Miller (1972), Anderson (1973), Olson and Dover (1976), Oliver (1977), Swan (1977), and Linda and Oliver (1979).

Investigations demonstrating significant disconfirmation effects include those of Cardozo (1968), Cohen and Goldberg (1970), Woodside (1972), and Olson and Dover (1979). Of note are four two-stage field studies (Oliver 1977; Swan 1977; Gilly 1979; Linda and Oliver 1979) where the disconfirmation effect was measured independently of expectation level through the use of hierarchical ANOVA and partial regression coefficients. The results of each of these studies showed that expectations measured before product exposure were uncorrelated with subsequent expectancy disconfirmation, thus permitting an additive interpretation. Moreover, significant disconfirmation effects, larger in magnitude than that of expectation, were observed in all cases. To date, these studies offer encouraging support for an adaptation level interpretation of satisfaction decisions.

Cognitive Postpurchase Consequences

Much of the literature on postpurchase satisfaction pertains to the behavioral criteria of complaining and repurchase (see Robinson 1979 for review). Development of the cognitive ramifications is largely theoretical at this point in time, but is well grounded in the literature on emotional affect (attitude). Generally, it is agreed that satisfaction interacts with other cognitions of an emotional nature (Homans 1961). Howard and Sheth (1969, p. 147) recognized this notion explicitly. In their notation:

$$A_{t+2} = f(S_{t+1} - A_t) + A_t$$

where:

A_t = prepurchase attitude,
S_{t+1} = immediate postpurchase satisfaction, and
A_{t+2} = revised postpurchase attitude.

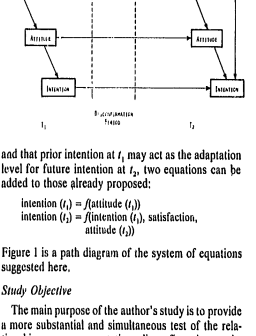
The difference, $(S_{t+1} - A_t)$, is a cognitive comparison between anticipated satisfaction (represented by A_t) and received satisfaction. It is, in effect, a disconfirmation at the more abstract affect level rather than at the more objective attribute level.

The Howard and Sheth (1969) equation can be reinterpreted in light of Fishbein's (1967) work on the components of attitudes and with respect to the research cited previously. If one views expectations as belief probabilities of attribute occurrence, a recommendation originally proposed by Olson and Dover (1976), it is readily apparent that these beliefs perform two functions. First, they serve to provide the foundation for attitude formation and, second, they serve as an adaptation level for subsequent satisfaction decisions. Satisfaction, in turn, can be seen as a function of the expectation (adaptation) level and perceptions of disconfirmation. In a similar manner, the revised postpurchase attitude at t_2 can be viewed as a function of the initial attitude at t_1 and the influence of one's sense of satisfaction/dissatisfaction. Thus:

attitude (t_1) = f(expectations)
satisfaction = f(expectations, disconfirmation)
attitude (t_2) = f(attitude (t_1), satisfaction)

The postpurchase model can be expanded further by including purchase intentions. In fact, a later version of the Howard and Sheth model (Howard 1974) explicitly recognizes that satisfaction experiences influence future purchase intention as well as postpurchase attitude. Most consumer behaviorists would agree that a dissatisfying product purchase should decrease one's inclination to repurchase. If one also recognizes that the most immediate precursor of behavioral intention is attitude (Fishbein and Ajzen 1975),

Figure 1
COGNITIVE MODEL OF THE ANTECEDENTS AND CONSEQUENCES OF SATISFACTION DECISIONS



and that prior intention at t_1 may act as the adaptation level for future intention at t_2, two equations can be added to those already proposed:

$$\text{intention } (t_1) = f(\text{attitude } (t_1))$$
$$\text{intention } (t_2) = f(\text{intention } (t_1), \text{ satisfaction, attitude } (t_2))$$

Figure 1 is a path diagram of the system of equations suggested here.

Study Objective

The main purpose of the author's study is to provide a more substantial and simultaneous test of the relationships among expectation, disconfirmation, satisfaction, and the traditional criteria of attitude and purchase intention than has been performed to date. In the conduct of the study, attempts were also made to improve certain methodological shortcomings peculiar to much of the prior satisfaction research. The refinements include use of an actual "purchase" situation with a lengthy "consumption" period, analysis of nonpurchasers, comparison of consumer and student samples, and development of operationalizations of expectation, disconfirmation, and satisfaction.

METHOD

Procedure and Design

The study is an extension of an earlier field study on a nonrecurring federal flu vaccination program. Details of the first stage, wherein questionnaires measuring attitudes and intentions toward the flu inoculation were mailed to residents of a medium-size SMSA before the vaccine became available, are given by Oliver and Berger (1979). At the officially designated end of the flu season, those subjects responding to the first wave of the study were sent a second questionnaire asking for their feelings toward the federal flu program and flu shots in retrospect. Included in this survey were measures of behavior, disconfirmation, attitude, and future intention in the event of another identical flu campaign. One followup request with a duplicate questionnaire and postage-paid return envelope was made to stimulate compliance.

Subjects

Two thousand residents of a south-central city (a 1% sample) were selected from the telephone directory by systematic random sampling to receive the questionnaire used in the study. In addition, 1,000 students from a major state university in the community were asked on a random basis to participate in the survey. Forty-five percent of the contacted student population and 28% of the residents receiving questionnaires responded to the first wave of the study. Of these respondents, 76% of the students and 79% of the community at large returned the second survey. On the basis of respondent self-reports, 80% of the residents and 66% of the students elected to receive the flu shot. After deletion of a small number of respondents for whom complete data were not available, the samples used in the study consisted of 291 resident and 162 student "vaccinees," and 65 resident and 86 student "nonvaccinees."

Nonresponse bias was examined by comparing the resident demographic profile with the county census figures. The data showed that the sample contained a disproportionate number of males, whites, and residents in high income brackets. The first of these findings was thought to derive from the sample frame because head of household telephone listings are likely to be in the husband's name. The second and third reflect interest in and actual response to the flu campaign under study. Further elaboration is given by Oliver and Berger (1979).

Measures

Preexposure variables. Expectations were measured as the perceived belief probabilities attributed to eight consequences of receiving the flu shot in response to suggestions by Olson and Dover (1976). Because it was believed that one's expectations involve not only the probability of outcome occurrence but also the evaluation of that outcome, the overall expectation measure was viewed as the sum of belief-evaluation products (Fishbein and Ajzen 1975). The probabilistic measure of beliefs about outcomes was obtained by asking the subjects to scale the possibility of occurrence of each consequence of receiving the flu shot on a 5-point scale ranging from "no chance" to "certain." The evaluation component was measured by asking respondents to evaluate each consequence on a 5-point good-bad scale.

A 9-item semantic differential scale was used to obtain a summary measure of one's overall attitude toward getting the inoculation. The coefficient alpha scale reliability over both samples combined was 0.94.

A continuous measure of behavioral intention was obtained by asking respondents to indicate the "chances in 10" that they would get a flu shot on an 11-point scale ranging from "no chance" to "certain."

Postexposure variables. Three approaches have been used to operationalize the disconfirmation concept. In an historical mode, numerous studies have measured the objective discrepancy between expectations and performance outcomes to arrive at a difference score. (See, for example, Foa 1957; Ilgen 1971; Morris, Crull, and Winter 1976; Spector 1956; Weaver and Brickman 1974). More recently, others have used the difference between preexposure and postexposure ratings with equally favorable results (Madden, Little, and Dolich 1979; Oliver 1977; Swan 1977). In all studies cited, the difference score was found to be significantly related to postexposure satisfaction or affect scales.

In other recent work, researchers have attempted to capture the consumer's summary judgment of overall disconfirmation on a "better than expected-worse than expected" scale (Aiello, Czepiel, and Rosenberg 1977; Linda and Oliver 1979; Oliver 1977; Swan and Trawick 1980; Westbrook 1980). These results paralleled and, in some cases, exceeded those using difference scores.

For the purpose of the present study, overall better-worse than expected scales were used for the disconfirmation measures. Individual attribute data were also collected by means of a probabilistic disconfirmation scheme which compared prior probabilities with the occurrence or nonoccurrence of predicted states of nature. Preliminary results showed that the summary measures displayed a more meaningful relationship to satisfaction. Interested readers are referred to Oliver (1980).

For the subset of respondents who indicated that they had been inoculated, a 2-item overall disconfirmation scale based on the perceived benefits of receiving the inoculation and the problems associated with it was constructed. These subjects were first asked to reflect on the problems encountered with the shot and to indicate on a 7-point scale whether these problems were "much more serious than expected" at the one extreme through "pretty much as expected" at the midpoint to "much less serious than expected" at the other extreme. Subjects were then asked to consider the benefits received and, on a similar scale, to check whether they were "much less than expected" at the negative extreme to "much greater than expected" at the positive extreme. Both items were summed to form the inoculation group disconfirmation scale. The unvaccinated group was asked to indicate on a similar 7-point item whether they were "much worse off than expected" at the one extreme, "as well off as expected" at the midpoint, or "much better off than expected" at the other extreme as a result of their decision not to get the flu inoculation.

The satisfaction measure was a 6-item Likert scale constructed for this study. All items were emotional in content (Hunt 1977) and included references to the respondent's outright satisfaction, regret, happiness, and general feelings about the decision to receive or not to receive the shot.[1] The coefficient alpha reliability of this scale over all subjects was 0.82; analysis showed that no item deletions would improve this value. Postexposure attitude and intention toward getting a similar flu shot in the future if it were offered were measured on scales identical to those used in the preexposure questionnaire. Finally, inoculation behavior was obtained in self-report fashion.[2]

Analysis

A just-identified fully recursive path analysis (Duncan 1975; Wright 1934) was applied to the four samples (two respondent groups by two inoculation categories) to test the theoretical scheme suggested here. The complete system of tested equations, with variables arrayed in order of their suggested temporal precedence, is shown in Table 1. If the variables are expressed in standard form (Z_i), the coefficients (p_{ji}) are directly interpretable as standardized regression (path) coefficients where j and i denote the dependent and independent variables, respectively.[3]

A complete recursive system was selected for analysis rather than the abbreviated, overidentified system in Figure 1 for three reasons. First, the path coefficients obtained with a just-identified framework are unique in that only one solution to the estimates is possible. Second, a test of a fully recursive model is considered to be a fairly stringent analysis of a temporally ordered system because "troublesome" paths cannot be eliminated *a priori*. Third, heuristically, some evidence attesting to the nature of the adaptation level may emerge. Because the three

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[1]The six items were:
—I am satisfied with my decision to get or not to get a flu shot.
—If I had it to do all over again, I would feel differently about the flu shot program.
—My choice to get or not to get a flu shot was a wise one.
—I feel bad about my decision concerning the flu shot.
—I think that I did the right thing when I decided to get or not to get the flu shot.
—I am *not* happy that I did what I did about the flu shot.

[2]Actual inoculation behavior was obtained from health department records and was used to classify respondents for a second set of identical analyses. The results were very similar to those reported here. Differences in findings were reflected most typically in higher coefficients of determination with the use of actual behavior as the classification variable. The decision to use self-report data was made on the basis of a high likelihood that many "true" inoculated respondents were omitted because of recording and nonreport errors.

[3]Maximum likelihood estimates of the path coefficients were also calculated using LISREL (Jöreskog and van Thillo 1972) with nearly identical results. The author thanks Richard P. Bagozzi for his advice and assistance.

Table 1
HYPOTHESIZED RELATIONSHIPS BETWEEN THE ANTECEDENTS AND CONSEQUENCES OF SATISFACTION ARRAYED IN ORDER OF TEMPORAL PRECEDENCE

Variable		Structural equations
Z_1:	Expectation	—
Z_2:	Attitude (t_1)	$p_{21}Z_1^a$
Z_3:	Intention (t_1)	$p_{31}Z_1 + p_{32}Z_2^a$
Z_4:	Disconfirmation	$p_{41}Z_1 + p_{42}Z_2 + p_{43}Z_3$
Z_5:	Satisfaction	$p_{51}Z_1 + p_{52}Z_2 + p_{53}Z_3 + p_{54}Z_4^a$
Z_6:	Attitude (t_2)	$p_{61}Z_1 + p_{62}Z_2 + p_{63}Z_3 + p_{64}Z_4 + p_{65}Z_5^a$
Z_7:	Intention (t_2)	$p_{71}Z_1 + p_{72}Z_2 + p_{73}Z_3 + p_{74}Z_4 + p_{75}Z_5 + p_{76}Z_6^a$

[a]A significant coefficient is hypothesized.

preexposure variables remain in subsequent regressions simultaneously, it is possible that one may dominate as an anchor for all postpurchase evaluations. This information would not be available if the preexposure components were selectively matched with their postexposure counterparts.

One major disadvantage of this approach is multicollinearity. Because the preexposure variables are thought to be related, they may be highly correlated. Significant degrees of correlation between variables may render the path coefficients unstable and subject to sampling variations. The extent of this problem is readily observed when results are compared over the four respondent samples used here. Alternatively, similar findings over the sample groups would indicate that the weights are fairly stable despite the inherent multicollinearity among antecedents.

RESULTS

Correlations between variables for the resident and student inoculation and non-inoculation samples show, first, that all preexposure measures are associated with all attitudinal postexposure measures (satisfaction, attitude, and intention) with the exception of intention in the student inoculation sample.[4] Second, no preexposure measure is correlated with disconfirmation in any sample. Third, the sequence of postpurchase events, satisfaction → attitude → intention, appears to be supported in both inoculation samples in that the satisfaction-intention correlation is lower than the satisfaction-attitude and attitude-intention correlations (Blalock 1964). The effect of disconfirmation, however, is not unique to satisfaction but appears to affect all postexposure criteria.

Tables 2 and 3 show the results obtained when the variables are entered into the path analysis in order of suggested temporal precedence. Analysis of the inoculation group postexposure data reveals, first, that disconfirmation is independent of all preexposure

[4]Variable intercorrelation matrices for both inoculation groups over the two samples, not reported here because of space limitations, are available from the author.

Table 2
PATH COEFFICIENTS OBTAINED FROM THE INOCULATION GROUP DATA

Variable		Structural equation[a]	R^2
Z_1:	Expectation	—	
		—	
Z_2:	Attitude (t_1)	$.492Z_1^b$	24^b
		$.482Z_1^b$	23^b
Z_3:	Intention (t_1)	$.06Z_1 + .56Z_2^b$	35^b
		$.06Z_1 + .57Z_2^b$	$.36^b$
Z_4:	Disconfirmation	$.05Z_1 + .05Z_2 - .10Z_3$	01
		$.02Z_1 - .15Z_2 + .10Z_3$	01
Z_5:	Satisfaction	$.07Z_1 + .21Z_2^b + .04Z_3 + .33Z_4^b$	$.19^b$
		$.17Z_1^c + .15Z_2 + .14Z_3 + .47Z_4^b$	$.33^b$
Z_6:	Attitude (t_2)	$.11Z_1 + .26Z_2^b - .05Z_3 + .22Z_4^b + .45Z_5^b$	$.49^b$
		$.20Z_1^c + .06Z_2 - .09Z_3 + .26Z_4^b + .48Z_5^b$	$.49^b$
Z_7:	Intention (t_2)	$-.05Z_1 + .01Z_2 + .10Z_3 + .09Z_4 + .15Z_5^b + .53Z_6^b$	$.48^b$
		$-.04Z_1 - .24Z_2^c + .17Z_3^c - .01Z_4 + .26Z_5^b + .47Z_6^b$	43^b

[a]Parameters for the first equation in each pair were obtained from the resident sample ($n = 291$); those for the second were calculated from the student sample ($n = 162$).
[b]$p < .01$.
[c]$p < .05$.

Table 3

PATH COEFFICIENTS OBTAINED FROM THE NON-INOCULATION GROUP DATA

Variable	Structural equations[a]	R^2
Z_1: Expectation	—	
	—	
Z_2: Attitude (t_1)	$.43Z_1^b$	.19[b]
	$.54Z_1^b$	.30[b]
Z_3: Intention (t_1)	$.16Z_1 + .64Z_2^b$	.52[b]
	$.06Z_1 + .65Z_2^b$	.47[b]
Z_4: Disconfirmation	$.05Z_1 - .17Z_2 + .06Z_3$	.02
	$-.17Z_1 - .03Z_2 + .00Z_3$	.03
Z_5: Satisfaction	$-.16Z_1 - .23Z_2 - .04Z_3 + .34Z_4^b$	.27[b]
	$.11Z_1 - .40Z_2^b - .15Z_3 + .32Z_4^b$	.34[b]
Z_6: Attitude (t_2)	$.07Z_1 + .11Z_2 - .10Z_3 - .14Z_4 - .55Z_5^b$	.43[b]
	$.18Z_1 + .40Z_2^b - .19Z_3 - .10Z_4 - .42Z_5^b$	.53[b]
Z_7: Intention (t_2)	$-.10Z_1 + .02Z_2 + .33Z_3^b - .24Z_4^b - .20Z_5 + .32Z_6^b$	.53[b]
	$-.05Z_1 - .23Z_2 + .33Z_3^b - .12Z_4 - .25Z_5^b + .48Z_6^b$	.53[b]

[a] Parameters for the first equation in each pair were obtained from the resident sample ($n = 65$); those for the second were calculated from the student sample ($n = 86$).

[b] $p < .01$.

[c] $p < .05$.

measures and thus may be considered exogenous to the system. Satisfaction, in turn, is a function of disconfirmation and a linear combination of preexposure variables. Attitude appears to be the primary determinant of adaptation level in the resident sample, whereas the expectation measure receives the highest coefficient in the student sample. The disconfirmation measure, however, appears to produce the greatest impact on satisfaction in both cases.

Analysis of postusage attitude in the inoculation group reveals that satisfaction is the primary determinant, as hypothesized, and that disconfirmation also has significant impacts in both samples. Coefficients obtained with the preexposure expectation and attitude variables are similar to those found in the regressions on satisfaction. Analysis of the intention criterion for this same group suggests that both postexposure attitude and satisfaction affect future purchase probabilities, as hypothesized. Surprisingly, no preexposure variable, including intention, appears to have any impact in the resident group. Among the student sample, however, postusage intention is influenced by prior intention in accord with the theoretical discussion. The same equation also yields a negative preexposure attitude coefficient, best explained by suppressor effects (see Darlington 1968).

The postexposure results on the non-inoculation group closely resemble those obtained with the vaccinated group. Specifically, disconfirmation is unrelated to any of the expectation variables, whereas satisfaction is significantly related to disconfirmation in both samples and to preexposure attitude in the student sample. (The negative coefficient is due to the direction of scaling on the attitude measure.) The attitude coefficient in the resident sample is greater than 0.2 in magnitude but does not attain significance because of the small sample size involved.

As hypothesized, postusage attitude is a function of satisfaction in both non-inoculated samples. In the student group one's prior attitude appears to provide an adaptation level whereas in the resident group no preexposure measure yields a significant coefficient. Analysis of the postexposure intention variable shows that postusage attitude and preexposure intention

Table 4

SUMMARY OF SIGNIFICANT COEFFICIENTS OVER TWO SAMPLES AND USAGE GROUPS

Dependent variable	Users		Non-users	
	Residents	Students	Residents	Students
Attitude (t_1)	Exp	Exp	Exp	Exp
Intention (t_1)	Att_1	Att_1	Att_1	Att_1
Disconfirmation	—	—	—	—
Satisfaction	Att_1, Disc	Exp, Disc	Disc	Att_1, Disc
Attitude (t_2)	Att_1, Disc, Sat	Exp, Disc, Sat	Sat	Att_1, Sat
Intention (t_2)	Sat, Att_2	Int_1, Sat, Att_2 (Att_1 as suppressor)	Int_1, Disc, Att_2	Int_1, Sat, Att_2

emerge as antecedents in both non-inoculation samples. Disconfirmation also produces a significant coefficient in the resident group.

Table 4 summarizes the findings over the two samples and two usage groups. The findings of interest to this study pertain to the four postexposure variables. The first, disconfirmation, is unrelated to any preexposure variable in all cases. Satisfaction is related to disconfirmation in all samples and to either preexposure attitude or the expectation measure in three of four sample groups. Of these, attitude appears to serve the adaptation level function in two of the three.

Postexposure attitude is a function of satisfaction in all sample groups and a function of disconfirmation in the inoculation groups. In accord with the regression results found with the satisfaction criterion, preexposure attitude apparently was used as an adaptation level for postexposure attitude in two of three cases where a preexposure variable yields a significant coefficient. Finally, postexposure intention is related to one's revised attitude in all cases, to satisfaction in three, and to preexposure intention—the apparent adaptation level—in three. On balance, the theoretical scheme in Figure 1 appears to be a fairly accurate representation of the cognitive processes used in the satisfaction decisions investigated here.

DISCUSSION

Despite the fact that this study differs in many respects from prior investigations, the findings support the results of earlier studies on the expectation effect and recent interpretations of the disconfirmation effect (Oliver 1977; Swan 1977; Weaver and Brickman 1974). Specifically, postusage ratings of satisfaction appear to be a function of a linear combination of an adaptation level component (expectations or prior attitude) and disconfirmation.

Two items are worthy of note in relation to the findings. First, the adaptation level effect is remarkably resistant to extinction. In prior studies, expectation creation, product exposure, and postexposure evaluation all occurred in the span of a very short time. When small time frames are used, one could argue that primacy or recall effects are operating. In the present study, however, the seven-month time span between the pretest and posttest makes recall a less likely explanation for the obtained findings. Apparently, the underlying beliefs which give rise to expectation formation are internalized to the extent that the summary expressions of attitude or, perhaps, intention persist over some unspecified period of time.

The second observation one might make about the results in Tables 2 and 3 concerns the large disconfirmation effect evident in all regressions on satisfaction. Though it is conceivable that the significant disconfirmation coefficients are due to method variance in that disconfirmation was measured with the same instrument as satisfaction, one must remember that disconfirmation does not occur until after product exposure and that subsequent cognitive reactions probably follow soon thereafter. Until a three-stage study is conducted whereby satisfaction is measured at a point in time subsequent to and separate from the disconfirmation assessment, one must conclude that the disconfirmation effect is at least as potent as the effect attributed to expectation.

Moreover, the path-analytic results suggest that disconfirmation is well positioned in the proposed theoretical satisfaction framework in that the most immediate impact appears to be on satisfaction, as hypothesized. The effect of disconfirmation on later stages of the model (postexposure attitude and intention), however, does not appear to have the same pervasive influence as the adaptation level variables in a multivariate perspective.

Implications for a model of consumer satisfaction. The data reported here provide support for an integrated model of consumer satisfaction which dovetails well with the more general attitude models such as that suggested by Fishbein (1967). Specifically, satisfaction appears to mediate changes between preexposure and postexposure attitudinal components. The nature of the mediatorial process is predicted by Helson's (1948) adaptation level theory whereby preexposure cognitions serve as the consumer's adaptation level. A cognitive comparison between the adaptation level and actual product experience (disconfirmation) determines the manner in which subsequent evaluations will deviate from the adaptation level. These evaluations then become a revised adaptation level used in future product performance evaluations.

Suggested consequences of satisfaction decisions, namely revised attitude and intention in that respective order, are reflected well by the results shown in Tables 2 and 3. In fact, the satisfaction → postattitude → postintention sequence is well supported in all samples. The data show that the coefficients attributed to satisfaction in the attitude regressions are much greater in magnitude than the other explanatory variables in the model. An analogous pattern of results holds for the regression of intention on attitude and its antecedents. Although more concrete behavioral criteria such as complaining behavior and repeat purchasing were not investigated, the cognitive postexposure response pattern appears to support current theoretical views of satisfaction effects (Andreasen 1977; Day 1977).

Data from the unvaccinated respondents provide encouraging support for the satisfaction model in two ways. First, the two nonuser groups can be viewed as validation samples in that independent assessments of the parameter coefficients are provided. Generally, the results show that the magnitudes and pattern of coefficients are in accord with those obtained on the user groups. Second, results from the non-inoculation

groups suggest that the the proposed framework of cognitive processes operates for satisfaction decisions in a more general mode. Apparently consumers respond to the ramifications of nonpurchasing (e.g., opportunity costs, vicarious relief and regret) in the same manner as they do for the purchase itself.

Methodological issues and limitations. Although the findings reported here are consistent with a number of proposed theoretical frameworks and with the results and conclusions of prior studies, two methodological issues require elaboration. The first and most problematical pertains to the measures used for the expectation and disconfirmation variables. In accord with recommendations made by Olson and Dover (1976), Fishbein scaling (Fishbein and Ajzen 1975) was used in the present study. The results show that belief-evaluation products perform the function of an adaptation level in some cases, but that one's overall attitude seems to act as the cognitive anchor on a more frequent basis. It may be argued that one's attitude somehow captures the totality of the expectation level and that it provides the baseline for other cognitions of an overall nature, particularly satisfaction.

Problems also remain in the operationalization of the disconfirmation construct. Although a 2-item summary concept was used here, disconfirmation ultimately takes place at the individual attribute level, suggesting that an attribute-specific measure may yield greater insight. Ideally, one would wish to obtain postpurchase perceptions of the expected attitude levels to demonstrate that a set of expectations had, in fact, been disconfirmed. Earlier studies used attribute rating change scores to measure attribute disconfirmations. More recent ongoing works by Suprenant (1977) and the author are exploring the use of better-worse than expected attribute-specific scales, and other researchers are currently working on multiple-item overall disconfirmation scales in bipolar adjective format.

The author regrets that the attribute level approach taken in this study (reported by Oliver 1980) did not yield more encouraging results. The overall scales used hopefully served to capture the net cognitive feeling of the disconfirmation experience. Limited prior research has shown that overall measures may be more highly correlated with postpurchase evaluations than are aggregates of individual attribute pre and post comparisons (Oliver 1977), a position analogously taken by Fishbein and Ajzen (1975) in their discussion of attitude development. A better understanding of the disconfirmation construct is expected to emerge as work develops in the satisfaction area.

Finally, the sample frame used here remains a potential source of error. A national sample of respondents was not used; the resident sample was drawn from one community. Moreover, the response rate was not particularly high. An analysis of respondent demographic features indicated that the resulting bias may be toward higher income white respondent categories. It should be noted, however, that parallel analyses of the student sample suggest that the residents may be representative of the population on a correlational basis. For example, no consistent differences were observed between the regression results obtained with the student and community samples. Individual readers must decide, however, whether this fact is sufficient evidence for the representativeness of the resident sample.

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