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**THE IMPACT OF PRODUCT SAFETY HAZARD COMMUNICATION ON
CONSUMER BEHAVIOR**

City University of New York

PH.D. 1982

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THE IMPACT OF PRODUCT SAFETY HAZARD
COMMUNICATION ON CONSUMER BEHAVIOR

by

AVICHAH SHUV-AMI

A dissertation submitted to the
Graduate Faculty in Business in
partial fulfillment of the
requirements for the degree of
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The City University of New York

1982

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AVICHAI SHUV-AMI

1982

This manuscript has been read and accepted for the Graduate Faculty in Business in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Sept. 7, 1982
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Abstract

THE IMPACT OF PRODUCT SAFETY HAZARD
COMMUNICATION ON CONSUMER BEHAVIOR

by

Avichai Shuv-Ami

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In recent years there have been growing numbers of reports by regulatory agencies warning consumers of product safety hazards. However, consumers seem to differ in their responses to such safety hazard information. The objectives of this dissertation are to model consumers' responses to a disconfirmed expectancy when such responses are due to safety hazard information, and to test the model empirically, using product health hazard in a simulated newspaper article. Disconfirmation refers to the disparity between a consumer's prior expectation of a product and the actual performance of the product.

The study's theoretical model is based on consistency theories, empirical findings from fear appeal literature, disconfirmation research, and other related concepts of the behavioral sciences. The findings from a before and after with control experiment indicated the usefulness of this model in studying consumers' response to safety hazard information.

The actual danger performance, i.e., the message's warning level, was under-estimated because of post-perception of risk, when the number of alternative choice of behavior was limited. Combined with expectation, perception of danger performance can have a positive effect on consumer's perceptions of safety disconfirmation. However, these positive relationships were moderated by several variables. Nevertheless, only perceived vulnerability risk, ego-involvement, self-esteem, and source credibility were found to have an intervening effect on perceived disconfirmation. The decision-making sequence that was found was perceived disconfirmation, attitude, and purchase intention; and this is consistent with previous research. In addition, purchase intentions were also affected by the number of purchase alternatives available, so that as the number of alternatives decreased, the level of purchase intention decreased.

Although further research is needed, theoretical and strategical marketing implications all suggested that these research findings may provide a theoretical framework for companies to evaluate consumers' behavior after exposure to safety hazard communication. This evaluation may provide sufficient warning indicators and may reduce the possibility of product failure. Similarly, such an evaluation may give government agencies a theoretical framework for anticipating the efficiency of different types of safety hazard communications in changing consumer behavior before a campaign is

initiated. In addition, the present investigation may contribute some theoretical insight into consumers' responses to fear-appeal communication and their reactions to disconfirmed expectations.

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TO MY FAMILY

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CHAPTER I
INTRODUCTION

In recent years there have been a growing number of publications by regulatory agencies (such as the Federal Trade Commission) warning consumers of product safety hazards. For example, a recent warning from the Food and Drug Administration (FDA), published in The New York Times (Reinhold, 1980, p. C1), indicated that caffeine is a hazard to public health and "...may cause cleft palates and other birth defects when used by pregnant women." How does this type of communication affect consumers' behavior?

Consumers seem to differ in their reactions to product safety hazard information. Some consumers may stop using the unsafe product, whereas others may use it despite the safety hazard communications provided by government agencies. Therefore, the purpose of the present study is to investigate the underlying variables that may influence consumers' choices after exposure to product hazard information. A theoretical model is suggested based on consistency theories, empirical findings from fear-appeal literature, disconfirmation research, and other related concepts of the behavioral sciences. The present study hypothesizes that product safety hazard communication may

exert a differential influence on consumer behavior, depending on prior expectations of product safety, the information characteristics, the consumer personality, and some situational variables.

The marketing implications of this study follow two directions. First, the study may provide a theoretical framework for a firm to evaluate consumer behavior after exposure to safety hazard communication. This evaluation may reduce the possibility of product failure by providing sufficient warning to allow a firm's marketing management to respond to such threat. Second, the study may give government agencies a theoretical framework to evaluate the efficiency of different types of safety hazard communications in changing consumer behavior before a campaign is initiated. In addition, the present investigation may contribute some degree of insight into consumers' responses to fear-appeal communication, and for the study of consumers' reactions to disconfirmed expectations.

Purpose of the Study

The present study attempts to investigate the impact of regulatory agency communications about product safety hazards on consumers' attitude and intention toward an unsafe product and its alternatives. Moreover, there is an attempt to provide a general theoretical framework to understand, explain, predict, and perhaps control responses to safety hazard communication about the product performance.

The study's theoretical framework is a consistency model that is based on the principle that human nature abhors cognitive inconsistency. It is assumed that exposure to information about product safety hazard may arouse a cognitive imbalanced state and that may be resolved by a change of attitude toward the product. The extent of and the direction in which product hazard information may influence consumer attitudes toward the unsafe product depends on two factors: (a) the discrepancy between consumers' prior expectations of the possible danger of using the product, and the actual product performance (represented by the communication), and (b) consumers' personal characteristics and situational variables.

The direction of the expectations-performance discrepancy is determined by the type of disconfirmation the consumer may face, i.e., expectations are negatively disconfirmed whenever performance is poorer than expected, and positively disconfirmed whenever performance exceeds expectations. Because this study only examines first-time exposure to safety hazard communication, prior expectations of safety hazards are minimal. Therefore, the expectation performance discrepancy represents negative disconfirmation, which can only lead to different degrees of negative attitude change toward the unsafe product.

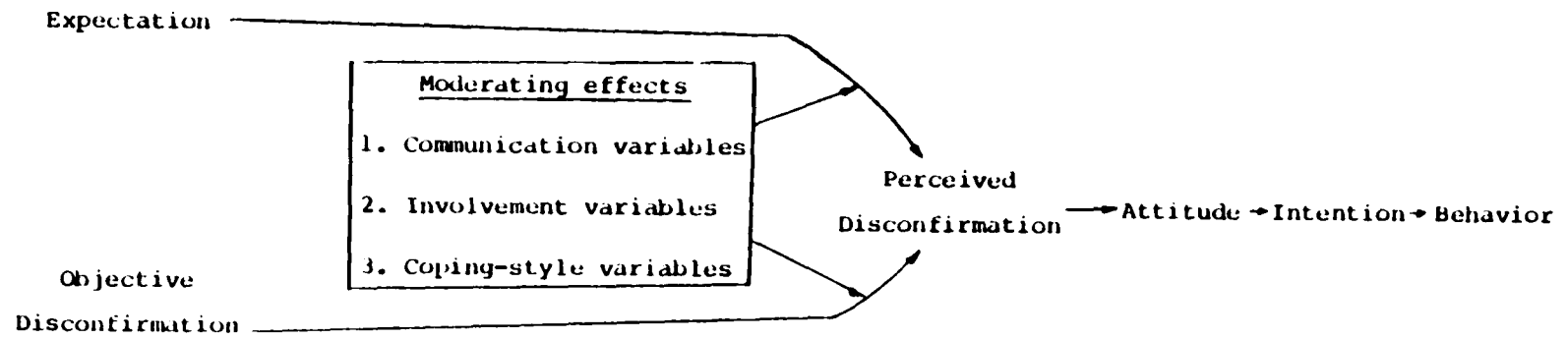
Two measures of disconfirmation are used in the present study: Perceived Disconfirmation (PD) and Objective

Disconfirmation (OD). PD is measured after consumers are exposed to the safety hazard information. PD measures consumers' perception of the discrepancy between prior expectations about the product's safety and the actual safety performance. OD, however, is a pre-exposure measure of the discrepancy between prior safety expectations and the objective measure of the product's safety performance. The product's actual safety performance is measured by the evaluation of the communication hazard warning level of an unbiased group of judges, and expectations are measured prior to the information exposure.

As Figure 1 shows, the present study suggests a causal model to predict the response sequence to safety hazard information. With regard to attitude change, the research hypothesizes that the PD is directly related to the change of attitude toward the unsafe product. However, the effect of OD on attitude change is indirect and is through PD. PD is hypothesized to be a function of consumers' prior expectations and OD. The relationships between PD and OD, and between PD and expectations, are expected to be moderated by the communication characteristics (message factuality and source credibility), involvement variables (relevance, commitment, product importance, and perceived risk), and coping-style variables (self-esteem and brand loyalty). However, direct relationships are expected between attitude and intention, and between intention and behavior.

Figure 1

THE HYPOTHESIS MODEL



Specifically this study hypothesizes that the greater the discrepancy perceived between prior expectations of product safety and the communications hazard warning, the greater the likelihood of inducing negative change in the consumer's attitude toward the unsafe product. Although PD is hypothesized to be positively related to OD and expectations, the magnitude of these relationships may increase as a result of high perception of source credibility, low level of product importance and ego involvement, high level of post-perceived risk, low level of vulnerability/risk, low level of brand loyalty, and high self-esteem. Consequently, assuming a causal relationship between attitude and intention, a consumer's intention to buy an unsafe product is positively related to his or her attitude and the number of alternatives available, and is negatively related to the price of these alternatives.

Theoretical Background

A Conceptual Definition

Product safety hazard can be viewed as (1) negative information, (2) about a product's performance, (3) acquired through experience, and (4) that which may pose danger to the health or to life of users. These characteristics of product safety hazard integrate several concepts that are presented in the following discussion.

A review of the social psychology literature (Abelson and Kanouse, 1966; Anderson, 1965; Birnbaum, 1972;

Feldman, 1966; Parducci, 1968; and Rokeach, 1968), reveals that individuals tend to attribute importance to or to weigh negative information more heavily than positive information when evaluating an object. These findings are based on attribution theory, which suggests that people tend to form causal interpretations of events and objects by attributing characteristics, intentions, feelings and traits in order to make sense of the world around them (Kanouse and Hanson, 1972). Furthermore, these findings of the relative importance of negative cues of information are consistent in two competing models: the "adding" model (the overall evaluation is equal to the sum of the separate traits), and the "averaging" model (the average of the separate trait values makes the overall evaluation). However, the social psychology studies deal mainly with the negative and positive attributes of personality-trait adjectives (good-bad, honest-dishonest, and so forth) but not with product attributes.

Recent marketplace events of product recalls and safety hazard communications have stimulated marketing researchers to deal with the negative information concept. Consistent with the social psychological findings, Weinberger and Dillon (1979) found that unfavorable product ratings tended to have a greater impact on purchase intention than did favorable ratings. A subsequent study by Scott and Tybout (1980) investigating consumers' responses to negative information regarding a soft drink product's

performance, generally supported these findings. Nevertheless, they argue that the consumers' evaluations may differ depending on the source of the negative information. Similarly, Wright (1974), studying a high involvement product (cars), found that subjects tend to rely heavily on negative rather than positive evidence when they are under time pressure, or when they are distracted. Although negative information seems to be an important factor in consumer's evaluations of product performance, studies investigating the impact of consumers' disconfirmations on the perceptions of product performance have been reluctant to deal with this concept. Like negative information, however, different degree of positive information about product preference (lower than expected) can produce negative disconfirmation. Thus, with some modifications, the disconfirmation research can be extended and can be useful in studying the impact of safety hazard communication on consumer behavior.

Negative information about product performance is acquired through experience: either direct experience through usage, or indirect experience by observing the behavior of others or receiving information about product performance through word-of-mouth communication, government reports, mass media communications, and so forth. Several studies in the area of diffusion of innovation (e.g., Arndt, 1967a, 1967b; Midgley, 1977; Midgley and Dowling, 1978; and Robertson, 1971) suggest that negative word-of-mouth communication may hinder the diffusion of a new product. Moreover, Arndt (1967a) found

that unfavorable word-of-mouth communication was more effective than favorable word-of-mouth communication in influencing intention to buy the new product. These findings seem to support the notion that negative information is an extremely important factor to consumers in forming judgments about product performance.

Finally, product safety hazard performance poses danger to the health or life of users, and this inherently arouses some level of emotional anxiety and factual fear of danger. With a somewhat different approach than the present study, the fear appeal studies investigated the impact of safety hazards communication as fear arousal information (Sternthal and Craig, 1974) on an individual's behavior. Although this area of investigation attracted great attention in the discipline of social psychology, it remains an unresolved area. As Engel et al. (1968, p. 203) noted, "Further research is needed" in the fear appeal area; so, too, Schiffman and Kanuk (1978, p. 195) a decade later, claimed that "It seems apparent that more empirical attention is needed before any firm principle can be formulated" to understand the impact of fear arousing information on consumer behavior. Nevertheless, the present study uses some of the moderating variables that were found to share fair amounts of consistency among the fear appeal studies, in order to predict the impact of product safety hazard communications on consumer behavior.

Attitude-Behavior Relationship

In order to complete the theoretical base of the study, a discussion regarding the relationships between belief and attitude, attitude and intention, and intention and behavior is needed. A widely accepted definition of attitude was proposed by Allport (1935): an attitude is a mental and neural state of readiness to respond, organized through experience, exerting a directive and/or dynamic influence on behavior. By including "readiness to respond," this definition implies that intentions are an integral part of attitude structure. Consequently, a tri-component model of attitude structure was suggested (e.g., Day, 1973; McGuire, 1969; and Ray, 1976) consisting of a cognitive or perceptual component, an affective or feeling component, and a conative or intentions component.

Nevertheless, the present study follows the interpretation of attitude as composed of cognitive-affective components (e.g., Cohen, Fishbein and Ahtola, 1972; Fishbein, 1967; and Rosenberg, 1958). The rationale for viewing intention separately from attitude is based on the assumption that, in the case of safety hazard information, situational conditions (price and alternatives available) may critically affect the consistency between the cognitive-affective component and the conative or intention component of attitude. Thus, excluding intention from attitude structure may provide more sensitive analysis of the study subject matter.

Consistent with Fishbein and Ajzen (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980), the present study assumes a causal relationship between beliefs and attitudes. The direction of attitude change, resulting in awareness to safety hazard communication, is predicted by the study's model based on the consistency theory principle maintaining that the human nature abhors inconsistencies. Thus, it is expected that perceived discrepancies between expectations and actual product performance cause attitude change, whereas perception of no such discrepancy leads to maintenance of the prior attitude.

Because beliefs and perceptions are part of attitude structure (Day, 1973), inconsistency between beliefs and outcome will motivate individuals to reduce this unfavorable state by changing attitude structure components to be more consistent with each other. If one views expectations as belief probabilities of attribute occurrence (Olson and Dover, 1976), then inconsistency between communications about actual product performance (outcome) and prior expectations or beliefs may cause change of attitude structure. Because disconfirmation was defined as the discrepancy between expectation and actual or objective product performance, this discrepancy reflects an inconsistency state, which may be reconciled by adjusting perceptions of product performance to be in line with expectations, or by changing expectations as a result of product performance evaluation. Such changes may form

different attitude structures which, subsequently, may cause attitude change. Hence, post-exposure attitude can be partially (due to moderating personal effects) considered as a function of expectations and disconfirmation, which in turn may form the intention of using the product (Oliver, 1979, 1980b).

Intentions, according to Ajzen and Fishbein (1980), are functions of attitudes toward the behavior and the person's subjective norms. Based on the negative information studies, the present study assumed that awareness to danger posed by product performance may eliminate the importance of the consumer's subjective norms toward the unsafe product. That is, consumers will tend to emphasize the threat of danger so heavily that the effect of subjective norms will be minor in the formation of intentions toward the product concerned. However, as Ajzen and Fishbein (1980) suggested, external situational conditions may affect the formulation of a consumer's intention to buy or not to buy the unsafe product. As it is hypothesized here, whenever there is a strong need or want to purchase the product, and there are no (or few) alternatives, consumers may purchase the product despite the safety hazard information they are aware of. Moreover, this purchase behavior may also occur whenever the price of the alternative is perceived as being too high.

Finally, the present study assumes causal relationship between intention and subsequent behavior. Although it

is not assumed that there will always be perfect correspondence between intention and behavior, "barring unforeseen events, a person will, usually, act in accordance with his or her intention" (Ajzen and Fishbein, 1980, p. 5).

Statement of the Problem

The purpose of the study is to investigate the impact of product safety hazard communications from regulatory agencies on consumer attitudes and intentions toward the unsafe product and its alternatives. The change in attitudes and intentions toward an unsafe product may indicate possible product failure for the firm. Product failure can be defined as the extent by which a product fails to meet management expectations, such as sales, percentage profit margins, cost of investment, and so forth (Cooper, 1975; Crawford, 1977).

In recent years, the government has increasingly released evidence indicating possible safety hazards of various products. Warnings of product defects were published through the mass media, such as the warning about the health hazard of the cyclamate in saccharin, volatility of the Ford Pinto gas tank, the defective performance of the Firestone 500, and the recent safety problem with the engine wing of the DC-10. Another example appeared on the ABC World News Tonight television show (August 20, 1980), indicating that Ford cars may have a severe problem with

their automatic transmission and a recall of more than six million cars might be necessary to prevent considerable personal injury and property damage. Furthermore, it was announced that several liability suits of loss of lives were already filed against Ford. How are potential buyers and owners of Ford cars likely to react to this kind of message? By understanding the impact of product safety hazard communication on consumer attitude and intention to use the product, the firm can develop strategy to prevent the potential failure of "unsafe" products.

As Table 1 indicates, there have been many reasons explaining the existence of new product failures. However, there have been no studies explicitly dealing with safety hazard information about an existing product, as well as a new product, as a cause of possible product failure. This evidence stands out even more clearly when examining Cooper's (1979, pp. 97-98) list of 84 specific success/failure variables, which excluded the variable of product performance safety.

Although product defects are considered one of the major technical factors causing product failure, this is only discussed in terms of product performance and quality. However, product deficiencies were not considered in the product failure literature as posing safety hazards to the consumers. The consumer's awareness of product safety hazards may affect the firm's entire product line,

TABLE 1

SOURCES AND REASONS OF NEW PRODUCT FAILURE

Source	Reason	Reference
<u>Organizational</u>	<p>Companies do not assess their own resources, strengths, and weaknesses and then relate these to market opportunities</p> <p>Activities are inadequately planned</p> <p>There is no integration of any communication among departments, marketing and R&D</p> <p>Wrong market for company, i.e., lack of experience, product fails to fit into existing product line</p> <p>No adequate information details provided to advertising agency</p> <p>Too much or too little innovation</p> <p>Inadequate marketing research</p> <p>Entering into inadequate markets</p> <p>Lack of resources</p> <p>Inadequate raw material supply</p> <p>Poor product performance ignored or not assessed</p>	<p>Cochran & Thompson, 1964; Dore, 1972</p> <p>Barnes & Ayars, 1977; Cooper, 1975; Davidson, 1976; Dore, 1972</p> <p>Cochran & Thompson, 1964; Crawford, 1977; Dore, 1972; Paschkis, 1976</p> <p>Angelus, 1969; Crawford, 1977; Hopkins & Bailey, 1971; Paschkis, 1976</p> <p>Dore, 1972; Paschkis, 1976</p> <p>Cooper, 1975; Davidson, 1976</p> <p>Angelus, 1969; Crawford, 1977; Paschkis, 1976</p> <p>Barnes & Ayars, 1977</p> <p>Barnes & Ayars, 1977; Cooper, 1975; Dore, 1972</p> <p>Paschkis, 1976</p> <p>Angelus, 1969; Crawford, 1977; Davidson, 1976; Paschkis, 1976</p>
<u>Marketing</u>	<p>Inadequate market analysis</p> <p>Poor timing</p>	<p>Cochran & Thompson, 1964; Crawford, 1977; Dore, 1972; Hopkins & Bailey, 1971; Paschkis, 1976</p> <p>Angelus, 1969; Cochran & Thompson, 1964; Dore, 1972; Hopkins & Bailey, 1971; Paschkis, 1976</p>

TABLE 1 (continued)

Source	Reason	Reference
<u>Marketing</u>	Competition	Cochran & Thompson, 1964; Dore, 1972; Hopkins & Bailey, 1971
	Insufficient marketing effort	Angelus, 1969; Barnes & Ayars, 1977; Cochran & Thompson, 1964; Davidson, 1976; Hopkins & Bailey, 1971; Paschkis, 1976
	Inadequate sales force	Cochran & Thompson, 1964
	Weakness in distribution	Cochran & Thompson, 1964; Dore, 1972; Paschkis, 1976
	Insufficient price or performance advantage	Davidson, 1976
	Insufficient difference from existing brand	Davidson, 1976; Dore, 1972
	A package that is hard to handle	Paschkis, 1976
	Poor positioning, inadequate or the wrong kind of promotion	Angelus, 1969; Dore, 1972; Paschkis, 1976
	Failure to consider shorter product life cycles, changes in the market, social and economic environments	Crawford, 1977; Dore, 1972
	Failure to meet customer needs	Barnes & Ayars, 1977; Dore, 1972; Moran, 1973; Sommers & Kerman, 1967; Tauber, 1973
<u>Technical</u>	Product defects	Cochran & Thompson, 1964; Dore, 1972; Hopkins & Bailey, 1971
	Higher cost than anticipated	Cochran & Thompson, 1964; Hopkins & Bailey, 1971
	Failure to consider new technologies	Dore, 1972

in the same manner as abandoning an unsuccessful product may cause an overall reduction in profitability in a particular line (Berenson, 1964).

As a few empirical studies (Morwen, 1979; Morwen, Jolly and Nickell, 1980) have already indicated, product recall awareness and perceived danger of product safety hazards were major factors that negatively affected consumer perception of the entire company image. This effect, combined with the estimation that more than 25 million product units will be recalled every year (McGuire, 1975), and with the likelihood that recalls will increase in the future (Morwen et al., 1980), highlights the necessity for the firm to have a better understanding of the consequences of product hazard information on consumer behavior. In order to reduce the negative impact of product safety hazard communications, the firm should have an effective marketing information system to deduce consumer preference for change (Berenson, 1969), and an adequate theoretical framework to evaluate the consequences of the safety hazard communication.

Implication of the Study

The main purpose of the study is to provide a theoretical framework for a firm's marketing information system to evaluate the effect of product safety hazard communication on consumers. It may also provide government agencies, which publish the safety hazard information,

with an indication of the efficiency of their messages in changing consumer attitude and intention toward the unsafe product. Although the study deals only with product hazard communication of regulatory agencies, the findings may be applicable in studying the impact of other external sources of information, i.e., consumer rating organizations, advertising, word-of-mouth, and so forth. Furthermore, because safety hazard communication is fear arousing information, the study's findings and theoretical framework might be useful in examining fear appeal in the context of marketing. The fear appeal literature produces contradictory findings and is principally concerned with the acceptance of a message's specific recommendation (e.g., to take x-rays, to use seat belts in the car, to take a certain drug, and so on). In contrast, the present study is concerned with evaluation of product attributes and the intention to purchase the product.

Finally, the present study may also contribute to the research of consumers' disconfirmation and satisfaction for two reasons: first, the effects of disconfirmation, caused by different levels (strong and weak warning) and types (factual vs. evaluative) of negative information on consumers' behavior were not studied; and second, because present study views information from the government as representing an approximation of actual product performance, negative information represents negative product performance.

Thus, studying safety hazard information as representing negative product performance may add a new dimension to this area of research.

Organization of the Study

Because the purpose of the study is to understand consumer reaction to safety hazard information, the preceding discussion concentrated on the theoretical rationale for this relationship. Consequently, the present study views product safety hazards as a subset of negative information concepts, which represent the health or life dangers due to actual product performance. Three concepts in marketing are related to this view: negative information, product performance and expectations, and fear appeal. However, only product performance and expectation disconfirmation studies and the fear appeal research examine underlying variables relating to the study subject matter. Thus, Chapter II reviews the literature relating to consumer disconfirmation. Chapter III presents a review of fear arousing appeal research.

The theoretical model is presented in Chapter IV, and represents an integration of the preceding theoretical conceptualization and findings. Chapter V discusses the specific hypotheses, and Chapter VI is concerned with the research methodology, including the operational definition of the variables, specification of the research design, and the pretesting results.

Chapter VII enumerates the data analysis performed and the resulting research findings. Test for the research model is presented with and without the effect of moderating variables, and few alternative models are discussed. The final chapter provides a summary of the findings, conclusions, marketing implication, and suggestions for future research.

CHAPTER II

CONSUMER DISCONFIRMATION

There are only a few empirical studies in the consumer behavior literature dealing explicitly with the relationship between consumer expectations and product performance. Although these empirical studies investigate only the disconfirmation of consumer expectations through actual product trial experience, some generalizations have been made. As Olson and Dover (1979) conclude:

....Although this study focused on consumer's product expectations, it should be emphasized that the disconfirmation of expectations is a generic phenomenon, not limited to consumer reaction to physical products. One could, for example, conceptualize the typical attitude-change study as involving a disconfirmation of expectations in which a persuasive communication disconfirms pre-exposure beliefs (p. 188).

Hence, this generalization seems to be broad enough to include the study's subject matter of the impact of government communications about product safety hazards on consumer behavior.

According to Olshavsky and Miller (1972), disconfirmation of expectations might be either negative (performance poorer than anticipated), or positive (performance exceeded expectations). As a consequence of product safety hazard communications, some consumers may experience negative disconfirmation, because they anticipated a safe

product and actually used an unsafe one. Others may be disappointed when positive disconfirmation occurs (Engel, Kollat and Blackwell, 1968, p. 513) because they expected a hazardous product performance and received a better product, although a low performing one. However, the direction of subsequent consumer behavior in these two cases may not be the same, and it is difficult to predict these responses in view of the inconsistent findings of the disconfirmation studies.

Theories of Disconfirmation

With competing theoretical frameworks (see Table 2) these few empirical studies suggest seemingly contradictory findings concerning the effect of disconfirmation on consumers' cognitive structures and subsequent behaviors. The inconsistency between expectations and outcome should motivate the consumer to find a way to reduce the perceived disparity. Two methods to reconcile the inconsistency exist in the literature. One method is to adjust the evaluation of the product received toward the prior level of expectation. Another method is to change expectations responding to the actual performance received.

Cognitive dissonance theory (Festinger, 1957), assumes that human nature abhors inconsistency. The relationship between the cognitive elements may be perceived by the individual as "fitting"--a consonant relationship, or

TABLE 2

THE PREDICTION OF THE DISCONFIRMATION THEORIES

THE THEORY	THE PREDICTION (Direction and Magnitude)*
Cognitive dissonance theory	Adjusting the perception of actual product performance to be <u>consistent</u> with prior expectation.
Assimilation theory	Adjusting the perception of actual product performance to be <u>in line</u> with prior expectation
Learning theory	Change of prior expectation through a <u>reevaluation</u> process toward the actual product performance
Contrast theory	<u>Magnifying</u> any disparity between expectation and performance
Generalized negativity theory	Product performance is always perceived as <u>less</u> favorable than it was expected
Assimilation-contrast theory	A large disparity between expectation and product performance will be <u>magnified</u> , whereas small disparities will be assimilated <u>in line</u> with prior expectations

* The magnitude of the cognitive change is underlined.

as "nonfitting"--a dissonant relationship. A dissonant relationship is supposed to create a noxious state of psychological tension that the individual is motivated to reduce. According to dissonance theory, unconfirmed expectation creates psychological discomfort. As applied to marketing, a discrepancy between expectation and objective product performance can be minimized by adjusting perception of product performance to be consistent with expectations.

However, generalized negativity theory prediction is in complete opposition to dissonance theory. The theory is based on Carlsmith and Aronson's (1963) study of reactions to better and sweeter-tasting liquids. The theory suggests that either positive or negative disconfirmation results in a generalized negative hedonic state, which leads to less favorable perceived product performance than was expected.

Stimulus-response learning theory was suggested by Cohen and Goldberg (1970) as a theory that may explain the impact of disconfirmation on consumer behavior. Learning theory suggests that consumers tend to reevaluate expectations when exposed to product performance information. Consumers positively reevaluate the product when presented with positive disconfirmation, and they negatively reevaluate the product when presented with negative disconfirmation. Thus, the consumer is responding in a rational way to information about the actual product performance.

Finally, assimilation-contrast theory (Hovland, Harvey and Sherif, 1957; Sherif and Hovland, 1961) represents the integration of contrast theory and assimilation theory. This theory maintains that there are zones or latitudes of acceptance and rejection for the two opposing cognitive responses, namely, assimilation and contrast. According to Anderson's (1973) interpretation of this theory, if the discrepancy between expectation and actual product performance is sufficiently small to fall into the consumer's zone of acceptance, then the consumer's reaction will be to assimilate the difference by adjusting the perception of product performance to the line of his or her expectations. However, if disparity between expectation and performance is large, then it will fall into the rejection zone, and the consumer will magnify the difference between prior expectation and actual product performance.

The Evidence

The few empirical studies in the area of disconfirmation generally do not support each other's findings.

Cardozo (1965) and Woodside (1972) assumed that perceived product performance is a function of shopping effort. Both found that the more effort the consumer puts into a purchase, the more the consumer psychologically evaluated the product as performing well, regardless of its actual performance. Cardozo found that negative disconfirmation of

expectation causes unfavorable rating of both product performance and shopping experience. Woodside found the same pattern of change in positive disconfirmation, i.e., favorable rating for both product performance and shopping experience. The direction of change found by Cardozo and Woodside is explained by learning theory and by the contrast effect of contrast-assimilation theory, i.e., a state of disconfirmation will produce a reevaluation process which causes the judgments of product performance to move away from the prior expectations.

Based on learning theory, Cohen and Goldberg (1970) found that consumers "reevaluate positively the product performance when their choice was confirmed by evidence, and negatively when their choice was disconfirmed, a result suggested by learning theory" (p. 320). Nevertheless, they concluded that, in the case of "products believed to be highly ego-involving" (p. 321), consumers might not learn from their experience or "mistakes," and will adjust perception of product performance in line with their prior expectations, as suggested by the assimilation effect and cognitive dissonance theory.

Unlike the results of the prior studies, Olshavsky and Miller (1972) find that, under low performance conditions, subjects with high expectations rate the product quality higher than those with low expectations. Under high product

performance conditions, subjects with low expectations rate product lower than those with high expectations. These findings are consistent with the prediction of cognitive dissonance theory, and as Olshavsky and Miller conclude "Subject's evaluations of performance tended to be assimilated toward manipulated expectations, whether positively or negatively disconfirmed" (p. 21).

Olson and Dover (1976, 1979) support this notion. They manipulate consumers' expectations of a new brand of coffee by ad like messages and measure disconfirmation through actual product trial. They find a shift toward the prior expectation level, and argue that assimilation effect, or cognitive dissonance theory, is the most likely explanation of the change in consumer cognitive structure.

A follow-up study by Oliver (1977) partially supports this argument. By manipulating both expectations and product performance, Oliver finds a positive relationship between product rating and expectations when holding performance constant. When expectations are constant, the ratings are inversely related to negative disconfirmation and positively related to positive disconfirmation. Hence, when expectations are manipulated, cognitive dissonance theory and assimilation theory are applicable. However, holding expectation as constant in the negative disconfirmation condition, contrast theory and learning theory both predict the same pattern of results,

whereas in the case of positive disconfirmation, only learning theory and assimilation theory predictions are consistent with the findings. Because the marketing view of cognitive dissonance theory assumes that the expectation cognition achieves priority in the cognitive change (Oliver 1980a), this theory may not be appropriate in explaining the effect of disconfirmation when only product performance is varied.

Negatively generalized theory has not received much empirical support. Anderson (1973) investigated the impact of varying levels of expectation for a ballpoint pen, and found no prediction effect to negativity generalized theory. Olshavsky and Miller (1972) and Olson and Dover (1979) suggest that negativity generalized theory may not be appropriate in the investigation of complex products. In addition, Oliver (1976), confirming prior studies (i.e., Terry, 1971 and Weaver and Buckman, 1974) finds that subjects holding strong expectations due to confidence, ego involvement, task interest, or commitment, prefer confirmation to disconfirmation. They, therefore, tend to rate products more unfavorably than their prior expectations, which suggests negativity generalized theory.

Anderson (1973) conducted the first empirical study in the consumer behavior area and investigated the effects suggested by assimilation-contrast theory. Using product (ballpoint pen) price as an indicator of actual product

performance, he manipulated six levels of expectations by providing the subjects different levels of persuasive product information. Anderson also tested other theories (contrast, generalized negativity and assimilation) and only partially confirmed Hovland, Harvey and Sherif's (1957) findings regarding contrast-assimilation effects. Anderson found a contrast effect to be operating when product performance was low and the subject had high expectations. For subjects with low disconfirmation (disparity between product claims and actual performance were relatively low), the assimilation effect was noted. However, when the product was assumed to have high performance and subjects had low expectations, a contrast effect was not found. This was attributed to insufficient commitment to a low priced product, for which it "simply may not be possible to obtain contrast effects at very low expectation levels" (Anderson, 1973, p. 42).

A Disconfirmation Model

As the evidence indicates, some of the suggested theories of disconfirmation do share similar patterns of predictions. However, the consistency of predictions is limited. Hence, some theories may be useful under specific set of conditions, i.e., disconfirmation level, personality, or situational circumstances, and so forth, but in a different situation difference theories may provide the necessary explanation. For example, Cohen and Goldberg (1970) note that under the condition of high ego-involvement

cognitive-dissonance theory would provide the appropriate prediction, whereas in the case of low ego-involvement learning theory would be the "right" theory. Alternatively, Anderson (1973) argues that when the discrepancy between expectation and performance is small, the cognitive-dissonance theory and assimilation theory are the appropriate theories, and contrast theory should be used otherwise.

In an attempt to provide a common theoretical framework for studying consumer disconfirmation, in order to explain the findings of prior empirical investigations, a conceptual model is suggested. This conceptualization of consumer disconfirmation is a frame of reference model that relies on principles from the consistency theories, the extension of Weber's law, and Anderson's (1973) interpretation of assimilation-contrast theory.

The Concept of Disconfirmation

Consumer disconfirmation is defined as the discrepancy between a prior expectation and a post-perception of product performance. Therefore, by definition, disconfirmation is a frame of reference construct; that is, the expectation is used as a reference point compared to the actual performance. Although researchers do agree on this conceptual definition of disconfirmation (e.g., Olshavsky and Miller, 1972; Oliver, 1980b; and Swan and Trawick, 1981), they differ in their operationalization of this concept. Four measures of disconfirmation have been employed--

assigned disconfirmation, objective disconfirmation, inferred disconfirmation, and perceived disconfirmation.

Assigned Disconfirmation (AD) is a measure based on the assumption that a certain type of communication exposure will arouse a specific level of expectation, and a certain product will be perceived as having a specific level of performance. Because neither expectation nor perception of performance have been measured, respondents were assigned to the type of disconfirmation, i.e., a combination of low-expectation and high performance represented a positive disconfirmation, negative disconfirmation was the case of high expectations and low performance, and confirmation was considered when both expectation and performance were either high or low. Early researchers (e.g., Anderson, 1973; Cardozo, 1965; Olshavsky and Mather, 1972; and Woodside, 1972) tended to use the method to measure disconfirmation. For example, Olshavsky and Miller (1972) manipulated expectation by changing the quality description (high and low) of tape recorders, and then provided low and high quality recordings presumably of those tape recorders.

Objective Disconfirmation (OD), although widely used in social and applied psychology, has been used only by Olson and Dover (1976, 1979) in consumer behavior. This measure is an objective disparity between prior expectations and the actual product performance obtained from an independent

unbiased control group. Olson and Dover manipulated expectation using ad like messages to describe ground coffee bitterness, and then measured expectations. Disconfirmation is calculated as follows:

$$OD = E - P$$

where: OD = objective disconfirmation

E = prior expectation of product performance

P = the actual product performance
(the unbiased control group evaluation)

Because OD is a mathematical difference, any level of disconfirmation is arbitrarily selected. Hence, if weak disconfirmation is at level "d" (as in Figure 2) all absolute levels of weak disconfirmation are equal in any expectancy level: that is, $|d_1| = |-d_1| = |d_2| = |-d_2|$.

Inferred Disconfirmation (ID) is a recent measurement method (Oliver, 1977; Madden, Little and Dolich, 1979; Swan, 1977; and Swan and Trawick, 1981a, b) of the differences between the prior expectations and the post-trial perception of product performance. Thus, the mathematical formula is:

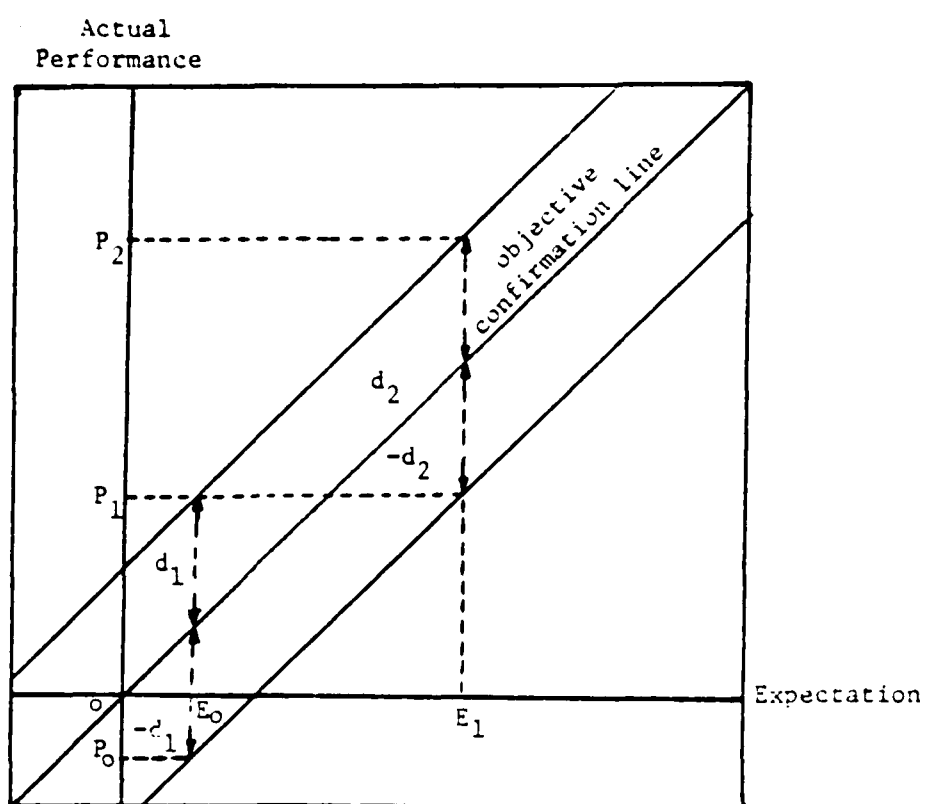
$$ID = E - PP$$

where: ID = inferred disconfirmation

E = prior expectation

PP = post-trial perceived performance

Figure 2

OBJECTIVE DISCONFIRMATION

Consequently, perceptions of product performance may or may not be consistent with objective evaluation of this performance. Thus, inferred disconfirmation does not necessarily represent an objective disconfirmation.

Perceived Disconfirmation (PD) is a direct measure of disconfirmation. A scale of "better than expected--worse than expected" is used (Oliver, 1977, 1980b; Oliver and Linda, 1981). The middle point of the scale is "just as expected" and thus represents a feeling of confirmation. Because perception of confirmation is not necessarily an indication of objective confirmation, the equivalent points on the objective disconfirmation scale should be found after subsequent modifications of the imagery of actual performance.

The points at which the change in PD scale from confirmation to disconfirmation occurs are the upper (the movement to positive disconfirmation), and lower limits (changing to negative disconfirmation) of the disconfirmation differential thresholds or of just a noticeable difference (JND). Consistent with the Weber-Fechner law, this study maintains that the relationship between expectation and the disconfirmation sensation is non-linear (probably logarithmic); that is, a change from low expectation would produce a stronger sensation of disconfirmation than the same change would create in high expectation. These differences in sensation reflect a natural human response to external stimulus. In terms of consumer disconfirmation, these

differences represent a degree of "noticeable disconfirmation" (ND), which can range from just noticeable disconfirmation to a high level of ND. Consumers' personal differences will add to ND and will determine the level of perceived disconfirmation. Thus, as Figure 3 shows, and as would be expected on any level of PD, perceived confirmation is a non-linear function of objective confirmation.

Figure 3 also indicates that the threshold between confirmation and negative disconfirmation is smaller than the upper threshold of disconfirmation. The rationale for this indication is based on the tendency of individuals to weight negative cues of information more heavily than positive ones (e.g., Abelson and Kamouse, 1966; Anderson, 1965; Feldman, 1966; and Rokeach, 1968), and thus consumers may be more sensitive to expectations that are negatively disconfirmed than those that are positively disconfirmed.

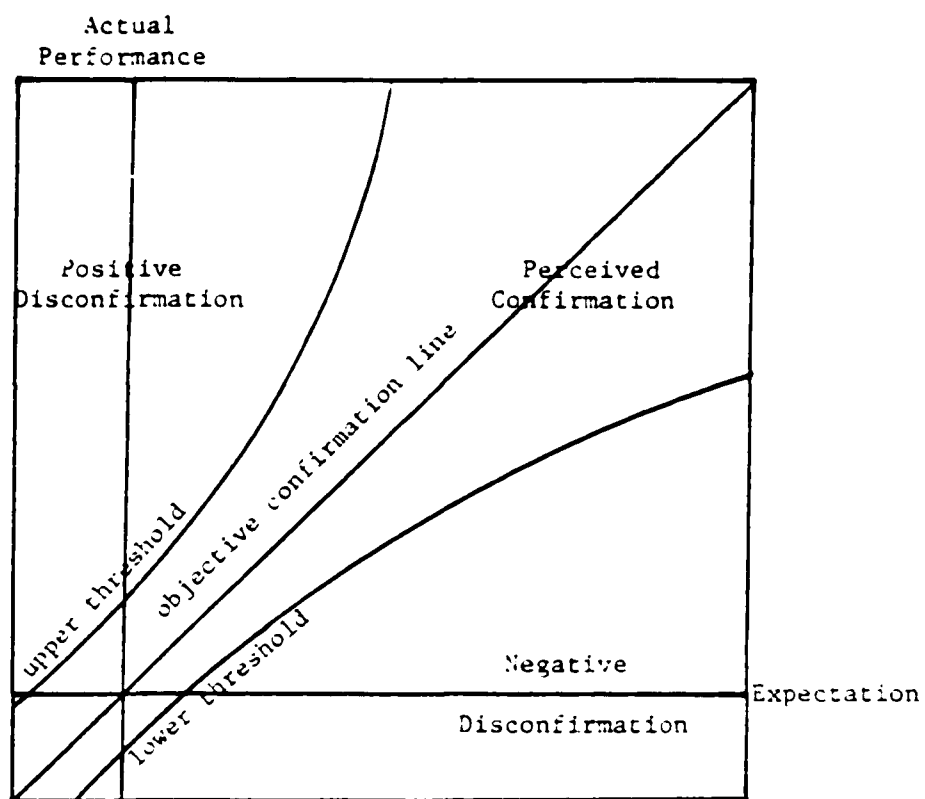
The Relationship Between Disconfirmation Measures

AD reflects an a-priori measure of objective or actual disconfirmation because expectations and actual performance are measured through an unbiased process to determine the assigned group of disconfirmation. Hence, these group ADs can be viewed as points on the continuous scale of OD.

ID, however, is a combination of a-priori and a-posteriori measures, because it represents the discrepancy between consumers' prior expectations and post-evaluations.

Figure 3

PERCEIVED DISCONFIRMATION



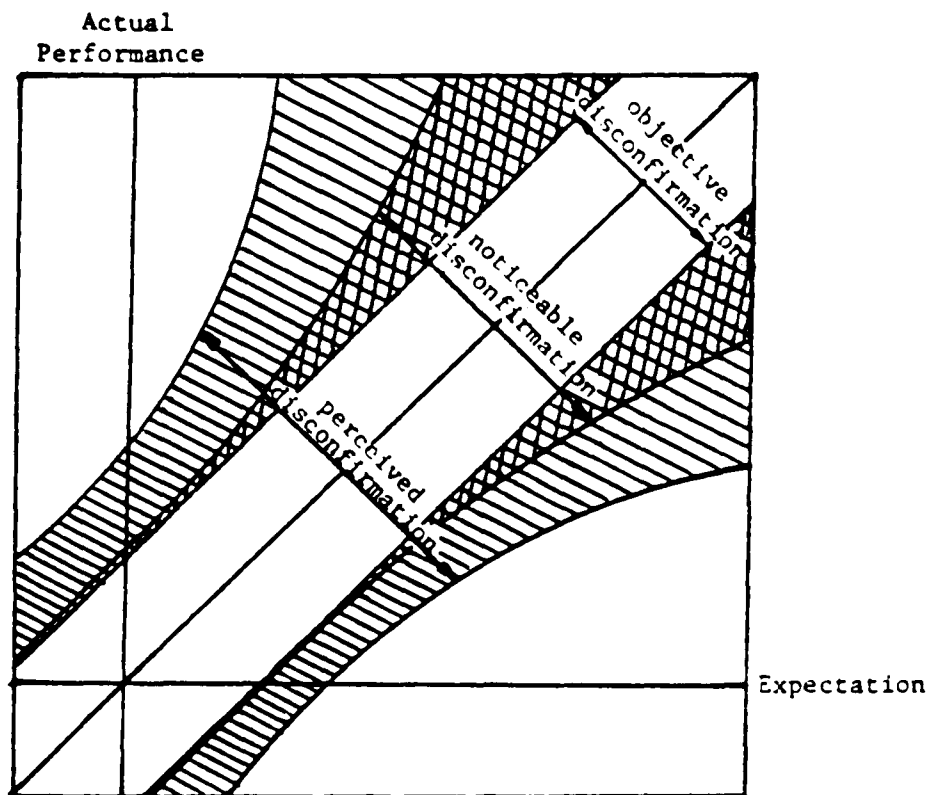
Therefore, ID may account for some personal differences. Accordingly, Swan and Trawick (1981b) find moderate relationship between ID and PD.



OD can be measured only by an objective instrument or by unbiased groups. However, consumers will rarely use an instrument in a purchasing situation and, in most cases, they will not be unbiased, especially when expectations are high. Thus, PD is not expected to be strongly related to OD. Factors that may affect this relationship are the differences in consumers' personalities and past experiences. However, as already indicated in the previous section, control of all moderating personal differences will not produce a linear relationship between OD and PD. Thus, it would seem reasonable to assume that in most cases (excluding those where an instrument is used, or where there are unbiased consumers) the highest degree of objectivity consumers may reach will reflect only the noticeable disconfirmation (ND) and not the actual or objective disconfirmation. Minimal or no expectation, for instance, may represent an unbiased predisposition in which ND is expected to be equal to OD.

As Figure 4 shows, ND will be determined by the level of OD and by consumers' prior expectations. PD, however, is expected to be a function of ND or, alternatively, a function of expectation and OD, moderated by consumers' personal differences.

Figure 4

THE RELATIONSHIP BETWEEN OBJECTIVE, NOTICEABLE,
AND PERCEIVED DISCONFIRMATIONS



-  the moderating variables effect
-  the effect of expectations level

Because PD seems to be the most direct presentation of consumers' feelings of disconfirmation, this measure is used in the following discussion.

The Model Predictions

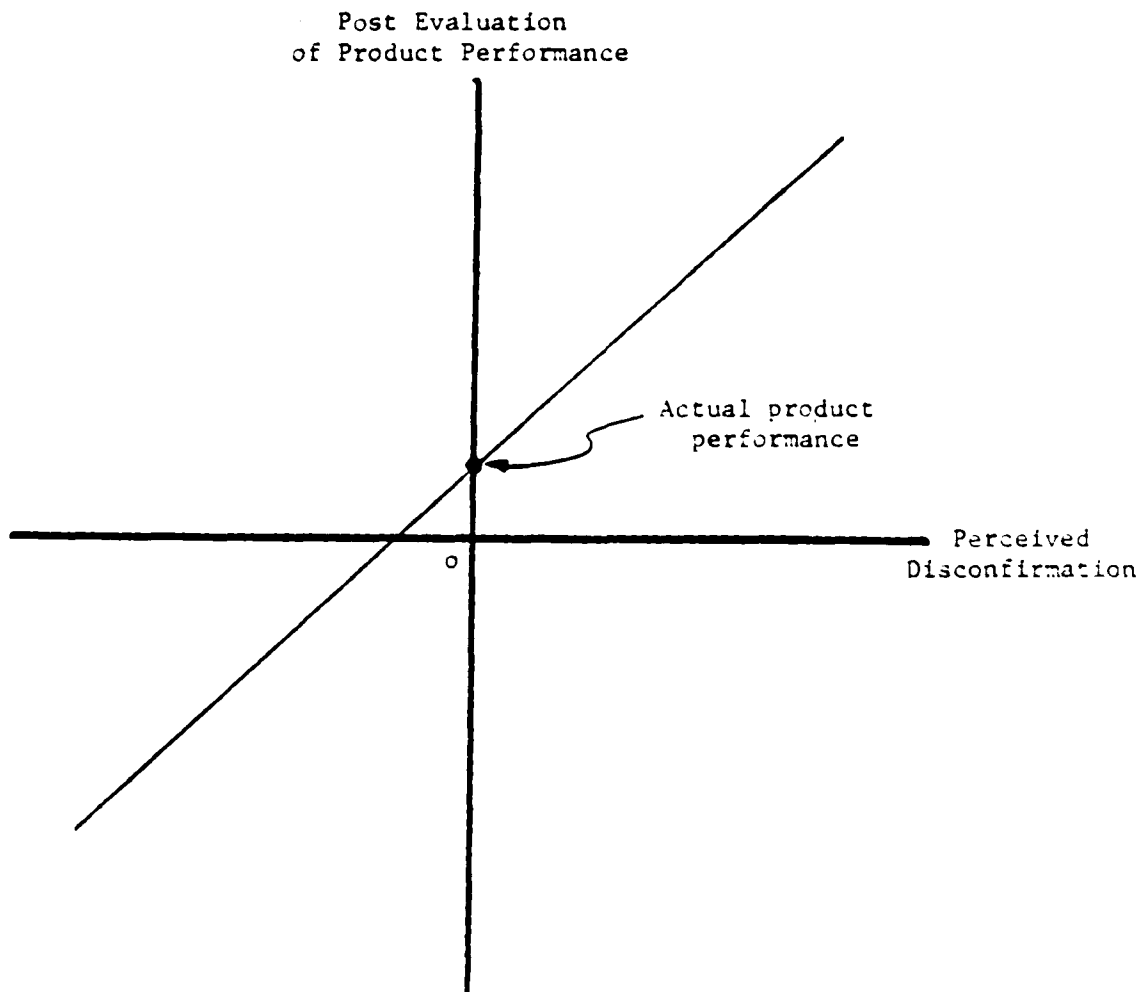
As a consistency framework, the present model shares the same principle as congruity theory (Osgood and Tannenbaum, 1955), balance theory (Heider, 1946, 1958), and cognitive dissonance theory (Festinger, 1957), that individuals tend to avoid unpleasant inconsistencies by changing cognitions and attitudes in the direction that eliminates cognitive structure inconsistency. Because disconfirmation is defined as a discrepancy between two perceptual cognitions, i.e., prior expectations and post-perceptions of actual performance, perception of confirmation does not necessarily represent objective states of confirmation. However, it would always represent a cognitive-consistency state. According to consistency theories, therefore, it would be expected to find that no cognitive structure change would occur when consumers perceive that their expectations have been confirmed. Therefore, actual performance will be distorted because the post-trial product evaluation will be more consistent with prior expectation than with the actual performance, as suggested by assimilation theory, assimilation-contrast theory, and cognitive dissonance theory.

On the other hand, feelings of disconfirmation reflect an unpleasant inconsistency state, which motivates a cognitive structure change. This change increases as disconfirmation increases. However, because post-evaluation is expected to be distorted toward prior expectations at the confirmation point, this relationship may not hold. Nevertheless, it seems reasonable to assume that the post-evaluation mean of the confirmation group is approximately equal to the actual performance. This may occur because this group's prior expectation tends to be around the actual performance due to the fact that perceived confirmation is likely to be a result of weak OD. Although the post-evaluation may differ from individual to individual, averaging over all differences will tend to eliminate this discrepancy to actual performance. This predicted relationship was recently found by Oliver (1980b) and Oliver and Linda (1981).

Consequently, as Figure 5 shows, the post-evaluation is expected to be a linear function of perceived disconfirmation. Alternatively, perceived disconfirmation can be categorized into: weak disconfirmation (WD), moderate disconfirmation (MD), and strong disconfirmation (SD). Because consumers in the WD and MD groups do perceive differences between their expectations and actual performance, although not too strong a difference, these consumers are expected to change their evaluation toward the actual performance.

Figure 5

THE RELATIONSHIP BETWEEN POST EVALUATION AND
THE PERCEPTION OF DISCONFIRMATION



Thus, a learning process of reevaluation is expected as predicted by stimulus-response learning theory.

In extreme cases, however, the differences between the prior expectations and actual performance will be magnified, as expected, because of the linear relationship. Thus, post-product evaluation will exceed actual product performance in the case of strong positive disconfirmation, and the product will be evaluated more negatively than it would be in strong negative disconfirmation. Similar predictions are expected according to contrast theory, assimilation-contrast theory, and generalized negativity theory (only in the case of strong negative disconfirmation).

Table 3 shows that the present model's predictions can help to integrate previous theories of disconfirmation into a common theoretical framework.

Moderating Effects

As indicated above, the present model suggests that the post-evaluation of the product is a positive function of perceived disconfirmation (PD). However, the same level of objective disconfirmation (OD) or noticeable disconfirmation (ND) may not be perceived equally by different consumers. Hence, perception is a distortion of reality. In this case, the distortion (perception) of the objective product performance is affected by individual differences.

TABLE 3

THEORIES OF DISCONFIRMATION: A COMMON
THEORETICAL FRAMEWORK OF EVALUATION CHANGE

PERCEPTION OF DISCONFIRMATION					
	STRONG NEGATIVE	NEGATIVE WEAK AND MODERATE	CONFIRMATION	POSITIVE WEAK AND MODERATE	WEAK POSITIVE
The Model Prediction	The product will be ev- aluated as performing worse than its objec- tive per- formance	Past-evalua- tion will be changed to- ward the objective performance	No change. Past-evalua- tion will be as the prior expectations	Post-evaluation will be changed toward the ob- jective perfor- mance	The product will be ev- aluated as performing better than its objec- tive perfor- mance
The Prediction Of Disconfirma- tion Theories	Contrast theory, dis- similation- control theory, gen- eralized negativity theory	Learning theory	Assimilation theory, cog- nitive disso- nance theory, assimilation- contrast theory	Learning theory	Contrast theory, assimila- tion-con- trast theory

Two major moderating variables have been suggested in the literature of disconfirmation: ego involvement (Anderson, 1973; Cohen and Goldberg, 1970; and Olson and Dover, 1976, 1979) and self-esteem (Darves, Singer and Lemons, 1972; Oliver, 1980a). Since ego involvement is directly related to distortion (e.g., Hovland and Sherif, 1961; Freedman, 1964; and Kiesler, Collins and Miller, 1969) it would be expected that the differences between OD and PD will increase for increasing levels of ego involvement. Thus, for example, the latitude of perceived confirmation (as a distance from the objective confirmation line) will be wider in the case of high consumer ego involvement than in the case of low consumer ego involvement. (See Figure 5).

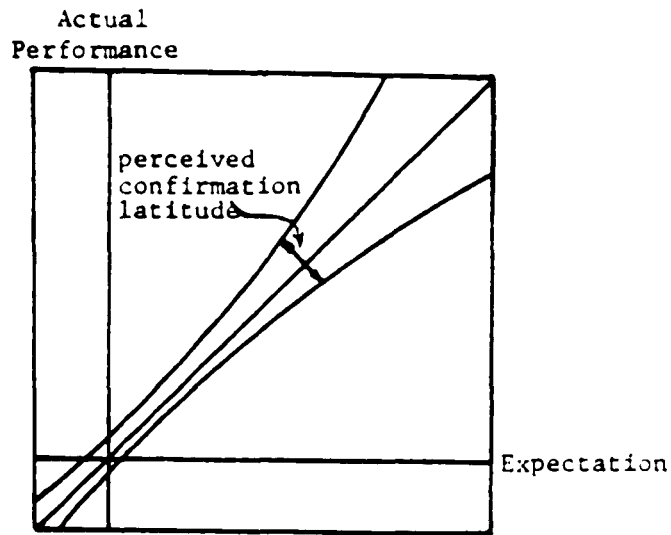
Similarly, more individuals with high self-esteem than with low self-esteem are assumed to have greater ability to judge reality with less distortion (e.g., Dobbs, 1964; Leventhal, 1970; and Kiesler, Collins and Miller, 1969). Therefore, as Figure 6 shows, consumers with high self-esteem will tend to have smaller latitude of perceived confirmation than those with low self-esteem.

Disconfirmation and Safety Hazard Information

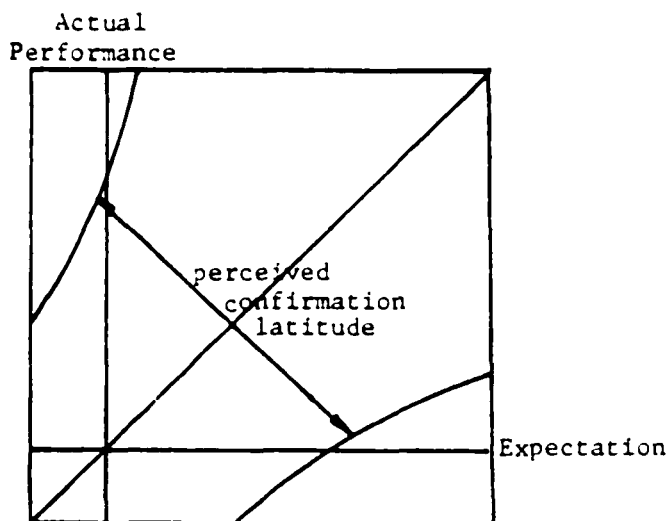
Disconfirmation is defined as the "disparity between expectations and actual or objective product performance" (Anderson, 1973, p. 38). The present study assumes that government agency communications can represent actual or objective product performance. This view is consistent

Figure 6

CHANGE OF PERCEIVED CONFIRMATION THRESHOLDS
AS A FUNCTION OF THE MODERATING EFFECTS



- a. Perceived confirmation latitude of consumers with high self-esteem or low ego-involvement.



- b. Perceived confirmation latitude of consumers with low self-esteem and high ego-involvement.

with the notion that consumers perceive product performance by "integrating a number of similar experiences; whether direct experience through usage, observation of the outcomes of others' explorations, information about performance and so forth" (Day, 1973, p. 306).

Because consumers, at the first time of awareness, acquire information from one source, which in the case of this study came from a government agency, this information may serve the consumer as an approximation of the actual product performance. Furthermore, this information is negative and thus, represents negative product performance. Alternatively, negative product performance may be defined as functional performances that cause or lead to negative outcome (hazard loss, financial loss, social loss, and psychological loss) during a regular usage of the product. Thus, safety hazard information is a specific case of these possible negative outcomes or losses--hazards to consumers' health or lives.

Accordingly, it is not difficult to show the applicability of the model of disconfirmation suggested here to hazardous product performance. The discrepancy between prior expectations and the actual performance of the hazardous product will represent an overall perception of disconfirmation. This PD, as the disconfirmation model would predict, is directly related to evaluation and attitude change. Furthermore, at the same level of OD,

consumers high in self-esteem and low in ego involvement will tend to have higher level of PD than those low in self-esteem and high in ego involvement. Thus, it is expected that at the initial awareness state, the stronger the warning the greater the attitude change will be, and this relationship will be stronger when the level of self-esteem is high, or when the level of ego involvement is low.

To sum up, the suggested integrated framework may be useful in understanding, explaining, and predicting consumers' reactions to different levels of safety hazard communication. However, the possible danger or threat to consumers' health or lives may also arouse some emotional fear. Hence, the following section of this literature review concerns the impact of safety hazard communication as fear arousal of consumers' attitudes and intentions toward the unsafe product.

CHAPTER III

FEAR AROUSING APPEALS

The preceding section of this literature review attempted to study the impact of product safety hazard information on consumer behavior through the investigation of disconfirmation research. It was concluded that the framework suggested by disconfirmation might also be applicable in studying the present subject matter. However, the disconfirmation framework is not concerned with emotional response to product hazard information. That is, the consumers' reactions to safety hazard communications were evaluated in terms of the discrepancy between expectations and negative actual product performance, but not in terms of the danger of arousing emotional fear responses.

Despite the fact that perceived disconfirmation is assumed to account for all possible moderating effects at the time of measurement, this review may provide greater insight into understanding the underlying processes of consumers' responses to safety hazard information. Moreover, it may provide some theoretical and empirical evidence about moderating variables, which may affect the formation of consumers' perceived disconfirmations that are specifically related to fear arousal responses. Thus the

following section of the literature review concerns the impact of safety hazard communication as fear arousing information on consumer behavior.

The Fear Appeal Theoretical Background

Most empirical studies of fear appeal literature are based on the assumption that individuals strive to maintain cognitive consistency or are motivated to reduce anxiety. It has been suggested by these studies that fear appeal messages have two functions: (a) arousal of anxiety or cognitive structural inconsistency, and (b) recommendations of specific means for restoring cognitive consistency or reducing anxiety. These suggestions were based on two different theoretical bases, anxiety-learning theories and consistency theories. Both theories tend, generally, to have similar predictions regarding the individual's response to fear arousal communications.

The Fear-Drive Model

Based on anxiety theories, (e.g., Freud, 1936; Sullivan, 1953) and reinforcement learning theories (e.g., Dollard and Miller, 1950; Mowrer, 1950; and Skinner, 1938), early studies in the area of fear arousal proposed a fear-drive model to explain cognitive and behavioral changes resulting from awareness of threat appeals. This model assumes that whenever strong unpleasant emotions arise due to signs of danger, individuals become motivated to reduce

this painful emotional state. More specifically, fear is a threat to values--such as health, property, security of life--and that threat is assumed to arouse anxiety as a result of the person's perception of the potential loss of the value concerned (Chu, 1966). Thus, the fear-drive model suggests that the individual will be "...highly motivated to try out various responses, both symbolic and overt, until the unpleasant state is alleviated" (Hovland, Janis and Kelley, 1953, p. 62). Consequently, individuals may take action to reduce anxiety by stopping or minimizing the behavior that may cause the threat.

Alternatively, individuals may use defense mechanisms that may take the form of motivated inattentiveness; that is, the individual discontinues exposure to the fear-arousing stimulus, or motivated distortion of the magnitude and the likelihood of the potential loss (Chu, 1966; Janis and Fishbach, 1953, 1954). As a learned drive, the first defense mechanism may cause the avoidance of anxiety, whereas the second mechanism may reduce it. If individuals reduce the anxiety of fear appeal communication by efficacious action, they might accept the message recommendation, and, thus, change their behavior. However, reduction of anxiety through motivated distortion may not lead to behavior change because the individual may deny the validity of the fear claims, may have beliefs of immunity to the danger, and so forth. Similarly, avoidance of the threatening information

through inattentiveness response, leads to the maintenance of the prior behavior.

The Consistency Model

Although the underlying theories of the fear-drive model maintain that cognitive structure change and potential behavior change are caused by individuals' motivations to reduce or avoid anxiety aroused by a fear communication, consistency theories claim that "People are motivated to maintain a state of psychological harmony within the system of beliefs and attitudes about given issue or situation" (Calder, 1973, p. 247).

Most empirical studies using this consistency principle refer to Heider's (1946, 1958) balance theory and related attitude theories stimulated by his approach. Balance theory is mainly concerned with the individual's perception of the social world. According to balance theory, social events contain three cognitive elements responding to the individual's experience--the person himself, some other persons, and some events, ideas, or objects. An imbalanced cognitive state is considered to be in effect when the mathematical product of the relationship between the cognitive elements (can be positive or negative) is negative, and a balanced state is in effect when this product is positive (Cartwright and Harary, 1956). An imbalanced state may be

resolved by the change of the relationship sign of one or more cognitive elements. However, this change may occur only if the individual thinks about or is aware of this inconsistency state (Abelson and Rosenberg, 1958; Rosenberg and Abelson, 1960). Moreover, this imbalanced state can be resolved through a defense mechanism, by simply denying the sign and the relationship of the cognitive elements that cause the inconsistency of the cognitive structure (Abelson, 1959).

Rosenberg (1956), stimulated by balance theory, suggested that the cognitive elements of attitude composed of an affective (feelings) and a cognitive (beliefs) component were assumed to have a homeostatic tendency to maintain consistency. Insko and Schopler (1967), extending Rosenberg's theory, suggested a triadic consistency model of the consumer's response to fear arousing information. They claimed that individuals try to maintain not only cognitive-affective consistency, but cognitive-affective-behavior consistency. Thus, the belief that smoking is dangerous to the health (cognitive), enjoying smoking (affect), and smoking two packs of cigarettes a day (behavior), produces an imbalanced state that may lead to change of attitude or behavior. Thus, the individual may stop smoking or may change the belief about the danger of smoking. Moreover, the imbalanced state may not be resolved as a result of individuals using a defense mechanism.

The Prediction Power

With respect to fear arousal communications, both anxiety-learning theories and consistency theories provide two courses of action that individuals can take when they are aware of threats to health, life, or other values. One course of action may be the acceptance of the message recommendation and, thus, a change of attitude, intention, and subsequent behavior. This type of response suggests a positive relationship between the magnitude of the imbalanced state or the level of anxiety and behavior change. However, the other type of response--a defense mechanism--may lead people to maintain the prior cognitive structure and behavior toward the object that poses hazards. Such defense responses may vary and include denial of the validity of the fear claims, the belief of immunity to the possible hazards, and a diffusing process that robs the claim of the true significance and, thereby, renders it impotent (Stuteville, 1970).

Although this theoretical background does not provide a distinct prediction regarding the relationship between fear arousal and cognitive change, studies in the fear arousal area have tried to pinpoint some moderating variables that are assumed to affect the general pattern of the individual's cognitive and behavior change in response to threat arousal communications.

The Findings

Research on fear appeals has yielded conflicting findings concerning the relative effectiveness of different levels of threat information on persuasion. In contrast to the need for further research that emerged from the inconclusive findings in this area of research (Higbee, 1969; Ray and Wilkie, 1970; and Sternthal and Craig, 1974), the last decade seems to have neglected the issue. Only four empirical studies were done during the 1970's in comparison to more than 30 in the 1960's.

Fear-Persuasion Relationship

Most empirical studies in this area concern the effectiveness of fear appeal communications as represented by the conformity to the message recommendation. Hence, changes of attitude, intention, and behavior are measured with respect to the fear appeal message recommendation. Moreover, Hovland, Janis and Kelley (1953) in their literature review, define fear or threat to individual's values in terms of the message recommendation. As they noted "We use the term threat appeal to refer to those contents of a persuasive communication which allude to or describe unfavorable consequences that are alleged to result from failure to adopt and adhere to the communicator's conclusions" (p. 60). Consequently, the following discussion is mainly concerned with the effectiveness of fear appeal communication and with

variables that may be moderating acceptance or rejective of the message recommendation.

As Table 4 indicates, the research evidence produced a variety of results regarding the relationship between the threat or fear communication level and cognitive change or persuasion. The conclusion that low threat appeals relate negatively to persuasion is mainly based on the study by Janis and Fishbach (1953). They studied the acceptance of three levels of threat appeal recommendations regarding the danger of dental neglect. They concluded that minimal-threat appeals are superior to high-threat appeals, as reflected by consumer conformity to the recommended procedures for tooth care. The theoretical explanation for this is the assumption that, under some conditions, individuals will use extreme defense mechanisms.

The fear-drive model suggests that the following may occur: (a) inattentiveness response when the fear communication touches off intense feelings of anxiety that disturb the attention of the person from the advocated recommendation; (b) the anxiety-arousing communication is perceived as being responsible for producing painful feelings and for causing aggression toward the communication--thus, rejection of his statements; and (c) if the fear appeal recommendation does not readily reduce the emotional tension, it may motivate individual defensive avoidance response.

TABLE 4

THE EMPIRICAL STUDIES' TOPICS AND FINDINGS
ON THE RELATIONSHIP BETWEEN FEAR AND PERSUASION

RELATIONSHIP BETWEEN FEAR AND PERSUASION	TOPIC	REPRESENTATIVE STUDIES
Negative	Dental Hygiene	Janis & Fishbach (1953, 1954; Goldstein (1959)
	Atomic Bomb Testing	Haefner (1956)
	Smoking	Janis & Terwilliger (1962); Stern, Lana & Pauling (1965)
Positive	Dental Hygiene	Evans, Rozelle, Lasater, Dembroski & Allen (1979); Haefner (1965; Leventhal & Singer (1966); Singer (1965)
	Smoking	Insko, Arkoff & Insko (1965); Leventhal & Niles (1964); Leventhal, Watts & Pagano (1967); Niles (1964) Snider (1962)
	Tetanus Innoculations	Dabbs & Leventhal (1966); Kornzweig (1968); Leventhal, Jones & Tresnbly (1966); Leventhal, Singer & Jones (1965); Radelfinger (1965)
	Automotive Safety	Berkowitz & Cottingham (1960); Leventhal & Niles (1965); Powell (1965)
	Fallout Shelters	Hewgill & Miller (1965); Miller & Hewgill (1966)
	Roundworms	Chu (1966)
	Tuberculosis	DeWolfe & Govermdale (1964)
	Eye Damage	Kraus, El-Assal & DeFeur (1966)

Although several subsequent studies supported this negative relationship between fear arousal and persuasion, most empirical studies found a positive relationship. Moreover, the positive relationship was found over a wide range of topics (see Table 4) despite the fact that topic variability "has seldom been considered as an important source of inconsistency in findings" (Higbee, 1969). Only a few studies (Frandsen, 1963; Millman, 1968; Moore, 1965; Payne, 1963; and Wheatley, 1971) found no relationship between fear arousal and persuasive effectiveness which, in part, was due to methodological problems regarding the fear appeal level manipulation (Hewgill and Miller, 1965; Kay, 1972; Moltz and Thistlethrvite, 1955; and Sastrohamidjojo, 1968).

Although the underlying theories of the fear appeal research permit both predictions (negative and positive relationships) to occur, these theories do not provide moderating variables to explain this phenomenon. The following discussion concerns possible explanations of some moderating variables suggested by the empirical findings of the fear appeal literature.

The Moderating Variables

A partial explanation of the differences in the findings about the relationship between fear and persuasion

might be due to the existence of no easy substitution or alternative behavior available except the recommended one (Stuteville, 1970). Therefore, when the "price" of accepting the message recommendation is high or too difficult to undertake (Ray and Wilkie, 1970), consumers may take their chances despite the potential danger (Ratchford, 1977). Consequently, as was found by several studies, recipients may change their attitude, but may not change their behavior responding to fear appeal communication (Dabbs and Leventhal, 1966; Leventhal, Singer and Jones, 1965; Leventhal and Watts, 1966; and Radelfinger, 1963). For instance, Leventhal and Watts (1966) found that in the case of smoking (where there is no easy alternative behavior), attitudes toward smoking were changed, but behavior was not (e.g., to go for chest x-rays).

Unfortunately, there is no accurate way of determining the comparability of the influence of the criteria by which the effectiveness of fear arousal communication is measured (attitude change, intention change, or behavior change), because the fear appeals used (responding to the criteria change) are not on the same scale (Higbee, 1969). This absence of a common scale produced the interpretation that one study of "low" fear appeal may be equivalent to other studies of "moderate" levels of fear appeal (Janis, 1967; Ray and Wilkie, 1970).

Another cause of variations in the literature about fear appeal may be the recipient's personality. Janis and Fishbach (1954) reported negative interaction between chronic anxiety and fear level. They found that strong fear appeal was less effective for subjects high in chronic anxiety than for subjects low in chronic anxiety. The underlying assumption for this interaction is that recipients high in chronic anxiety tend to avoid high fear communications, and low fear levels may not be strong enough to arouse anxiety for recipients low in chronic anxiety. However, subsequent studies did not find this relationship (Goldstein, 1959; Niles, 1964; and Singer, 1965).

Goldstein (1959) suggested that Janis and Fishbach's (1953, 1954) concept of "defensive reaction" may be related to the individual's "coping style" rather than to chronic anxiety. Goldstein suggested two modes of coping style: "copers" versus "avoiders." He found that a strong fear appeal receives greater acceptance among copers than among avoiders, whereas the minimal fear appeal receives greater acceptance among avoiders than among copers. Moreover, coping style was found to be positively related to psycho-physiological responses to tension arousal communications (Goldstein, Jones, Clemens, Flagg and Alexander, 1965).

Similarly, Leventhal and Trembly (1968) found that the coping efforts of middle and high self-esteem subjects

were strengthened; and the coping efforts of low self-esteem subjects were decreased as a result of the increasing level of threat appeal. This interaction of self-esteem and coping style was attributed to shared measured properties. That is, the "ability to cope with tension-producing material may be a facet of high self-esteem" (Higbee, 1969, p. 430).

Self-esteem itself is related to the effectiveness of fear appeal communications. Leventhal and Perloe (1962) found that subjects high in self-esteem are influenced more by optimistic communication, whereas subjects low in self-esteem are influenced more by the threatening communications. This is the only finding that suggests negative relationship between self-esteem and the effectiveness of persuasion, which may be due to the lack of variation of fear level, or to either one pessimistic (threat) appeal and one optimistic appeal. Subsequent studies have consistently found a positive relationship between self-esteem and persuasion. Dabbs and Leventhal (1966) found that intentions of respondents exposed to fear information about tetanus shots increased for high self-esteem subjects, and decreased for low self-esteem subjects. Kornzweig (1968) found the same pattern of change in measuring the actual number of individuals taking shots. Consistent with these findings, Zemach (1966) found that low guilt arousing communications were more effective for low self-esteem subjects than for high self-esteem subjects.

Vulnerability to danger was found to be related to fear appeal persuasiveness. Vulnerability is operationally defined in terms of the individual's belief and perception of past experience with the object in question. Thus, perceived vulnerability represents a subjective measure of the person's belief of susceptibility to the danger. On the other hand, past experience (usage rate) represents an objective measure of vulnerability and, hence, smokers and fast drivers are categorized as more vulnerable to danger (lung cancer and injuries or accidents, respectively) than non-smokers and slow drivers.

Except for Leventhal and Singer's (1966) study (which found no relationship), most studies regardless of measurement type (objective or subjective) found negative relationships between vulnerability and the persuasiveness of threat appeals (Berkowitz and Cottingham, 1960; Niles, 1964; Insko, Arkoff and Insko, 1965; Leventhal, Singer and Jones, 1965; Leventhal, Jones and Trembly, 1966; Leventhal and Watts, 1966; and Watts, 1967). For instance, Berkowitz and Cottingham (1960), using an objective measure of vulnerability and in measuring the use of seat belts, found that high fear communications produced increasingly favorable attitudes toward seat belts among non-regular drivers (those who drive once a week or less), whereas regular drivers (those who drive at least several times a week)

were about equally responsive to the use of seat belts in high and low fear conditions.

Similarly, Niles (1964) subdivided her sample on the basis of self-reports of vulnerability to cancer from smoking. She reported that high fear communications increase acceptance of the recommendation to stop smoking and go for x-rays only for those who perceive themselves invulnerable to cancer. This pattern of responses suggests that a person high in vulnerability, either perceived or because of past experience, is less likely to accept protective recommendations when the communications fear level is increased.

Finally, Hewgill and Miller (1965) proposed that source credibility may be an important variable moderating the effect of fear arousing communications on the individual's cognitive structure change. Based on the response of Parent Teacher Association (PTA) members to persuasion about the importance of fallout shelters, Hewgill and Miller (1965) found that strong fear appeal is more effective than mild fear appeal when both are presented by a highly credible source. Two subsequent studies by Miller and Hewgill (1966) and by Powell and Miller (1967) supported this positive relationship between source credibility and persuasiveness of increasing fear level. Similarly, Insko, et al. (1965) and Rosenblatt (1962) noted that their results were probably influenced by source credibility.

Their study yielded a positive relationship between effective persuasiveness and fear level.

In view of the evidence, it seems that an individual's response to different levels of fear elicited by the communication may vary, depending on source credibility, the audience characteristics, and some situational conditions. Specifically, source credibility, self-esteem, and coping style of recipients are positively related to the effectiveness of increasing levels of fear, whereas vulnerability is negatively related to fear and persuasion. The evidence also indicates that self-esteem and coping style are positively correlated (Leventhal and Trembly, 1968), and that vulnerability is negatively correlated with self-esteem (Niles, 1964). In addition, the evidence suggests that situational variables, such as no easy alternative or high price of alternative, combined with strong need or want, may lead to a change of attitude consistent with the recommended communication, but may not lead to the same change of intention and subsequent behavior toward the object concerned.

Although these relationships deal with the interactions between persuasiveness of different fear levels and other factors, some researchers suggest that the interaction between positive and negative moderating factors may lead to curvilinear (inverted U-shaped curve) relationships between persuasion and fear level. That is, whenever

the level of fear is too high or too low, the effectiveness of persuasion is low, and only moderate threats may produce the greater persuasion effect.

The Models of Curvilinear Relationship

Although the following models attempted to reconcile the conflicting findings about fear appeals by the suggestion of a curvilinear (Quadratic) relationship between fear level and persuasion, the selection of moderating factors (assumed to be the cause of this relationship) are reflections of these conflicting findings and, thus, maintain the inconsistency. The curvilinear relationship assumes that attitude, intention, or behavior changes increase with increases in fear level up to a certain point, then decrease with further increases in fear level.

Two-Factors Model

McGuire (1963, 1968) formulated a two-factor theory that consists of cue and drive functions of fear. As a cue, fear is assumed to distract and interfere with reception of the message. As a drive, fear energizes responses in progress, and it facilitates acceptance. These two factors are assumed to operate in opposite directions and increase monotonically. The interaction of these factors causes the curvilinear relationship between fear level and persuasion. Based on his mathematical model of the two-factor theory, McGuire (1966) suggested a factor

interaction that causes the quadratic (inverted U-shaped curve) relationship. Chronic levels of anxiety and message complexity are assumed to be negatively related to the effectiveness of increasing level of fear, whereas concern about issues is assumed to be positively related to fear and persuasion. Although McGuire's two-factor theory was criticized as being too simplistic (Janis, 1967), and chronic anxiety was criticized as not being an important variable (Higbee, 1969), message complexity and concern with the topic may be important moderating variables (Gollob and Dittes, 1965; Millman, 1968).

Multi-Factors Model

Janis (1967, 1968a, 1968b) proposed a multiple-factor theoretical model representing a curvilinear relationship between fear level and persuasion. Janis suggested two independent monotonic functions: increment function, which facilitates acceptance, and decrement function which interferes with the acceptance of a communicator's recommendation. The combined result of these two functions is non-monotonic (inverted U-shaped); the curve presents cognitive efficiency, and is based on the interactions of the thresholds of the facilitating effects (positive) and the interfering effects (negative). Those effects are influenced by persuasion and level of emotional arousal.

Thus, increases in fear lead to increases in persuasion until the fear becomes so unpleasant that the

subject rejects the message recommendation. According to Janis (1967), one type of facilitating effect is the heightened interest in finding a means for coping with anticipated danger, and another type can be a temporary increase in dependency on authorities for gaining reassurance that leads to acceptance of any recommendation from a credible source.

The interfering effects are functions of two types of personal habitual tendencies. One type involves heightened receptivity to non-recommended means of coping with the threat (search for loopholes, looking for greater reassurance, and so forth), and the other type consists of defensive avoidance tendencies. Both facilitating and interfering types of responses depend on the degree to which the initial attitude is challenged, the degree of familiarity of coping with the threat concerned, agreement or disagreement among authorities, the communicator's prestige, and various chronic personality attributes. However, Janis was criticized by Leventhal (1970) on several grounds, most importantly his statement that the "Procedure used to fit data to the curvilinear model involves rank ordering the cells of a factorial study so that the plot of attitude change against fear level is curvilinear" (p. 165). This suggests a major methodological problem in the model foundation.

A Segmentation Model

Similarly, Ray and Wilkie (1970) proposed a segmentation model to utilize the effectiveness of fear appeal persuasion in marketing. The model utilized the same approach as Janis (1967) in comparing the fear levels of prior studies. Comparing the studies of Janis and Fishbach (1953), Insko, Arkoff and Insko (1965), Cottingham and Berkowitz (1960) and Niles (1964), Ray and Wilkie argued (as did Janis, 1967) that studies that found a positive relationship between fear level and persuasion probably involved the introduction of lower fear levels than those that found negative relationships. Thus, the combined levels of fear on a continuum lead to a curvilinear relationship between fear levels and persuasion. This categorization of fear levels is inadequate and not valid because there have been no common measures of fear level among those studies (Sternthal and Craig, 1974).

However, the segmentation approach to fear appeal communication may be a useful one, especially in the context of marketing. That is, because segmentation treats different consumer segments and topics (product categories) with different curves, knowing the segment characteristics (socio-economic, personality, and usage) aids the predictability of response to fear appeal.

Burnett and Oliver (1979), testing Ray and Wilkie's segmentation model in health insurance propaganda, found

that higher level fear messages tended to be effective in attitude change of "older liberals" and "older blue collar blacks," but no consistent result was found in the other demographic and socio-psychological groups. Burnett and Oliver's results imply that single fear appeal promotional strategy cannot be appropriate in the marketing context and, therefore, the segmentation approach to fear appeal can be useful in determining appropriate strategies.

A Final Comment

Despite these early suggestions of a curvilinear relationship of fear and persuasion, only one empirical study attempted to test this hypothesis. Krisher, Darley and Darley (1973), using three levels of fear communication about the dangers of mumps, found that the choice by subject to receive actual injection (the vaccine recommended by the communications) was quadratically related to their levels of fear.

However, it seems that Krisher, et al. (1973) manipulated the fear condition unsystematically. Thus, this result is questionable. The low fear message differed from the high fear message in the amount of the possible dangers (six additional segments of danger) and the amount of fear (presented by frightening illustrations); however, the third level differed from the second (high fear) only in the amount of fear (achieved through exposure to

simulation technique of heart beats that rose and fell according to the communication fear content), but not in the amount of danger. Hence, these levels were found to differ significantly in tension production, but it is possible that individuals may respond to their emotional fear differently than they would to factual danger. Leventhal (1967, 1970) addressed this problem in developing his parallel response paradigm model.

Leventhal's model consists of two parallel independent processes (danger control and fear control) in response to fear appeal communications. The danger-control process guides adaptive behavior through the problem-solving process, which responds to external cues of the information about danger. The fear-control process guides emotional responses that reflect the individual's personality. Such responses are usually parallel to the danger-control responses. Although the danger-control process may lead to attitude and behavior change, the fear-control process may lead to defensive avoidance behavior or to behavior unrelated to the message content and recommendation, but it may still reduce the threat posed by the communication. Because these processes are parallel, highly emotional communications arouse the fear process, and highly informative communications about dangers arouse the danger process.

Although the parallel response paradigm model provides several important advantages in comparison to the other suggested models of fear appeal (see Leventhal, 1970; Sternthal and Craig, 1974), this model neither specifies the underlying variables of the fear-control and danger-control processes nor provides the direction of the combined effect of these processes on the individual's behavior. Leventhal (1970, p. 181) concluded the presentation of the parallel response model by noting that:

....It does not call for a premature commitment to a particular function before we have identified the variables in the function. It is merely a first step toward structuring a theory, and it claims to be no more.... .

Hence, the parallel response model can be useful in understanding individuals' reactions to fear appeal information, but it may not be useful in predicting their behavior.

Fear Appeal and Safety Hazard Communication

In the context of consumer behavior, safety hazard communication is fear-arousing information that is usually concerned with a product's physical performance. Despite this important relationship, safety hazard communications differ from fear communications in terms of the scope of their predictions. Although the fear literature mainly concerns general types of human behavior responding to fear, the study of safety hazards concerns a specific segment of this fear response that affects an individual's buying

behavior. Thus, rather than investigating smoking behavior or dental hygiene behavior, buyer behavior literature may be more concerned with type and brand selection of cigarettes or toothpaste, and so on.

Another difference is related to the recommendations of the fear communications. Most fear appeal studies are specific in recommendations in order to influence the individual's behavior in a certain direction. However, in the case of product safety hazard communications, government agencies usually do not explicitly recommend a specific course of action for consumers, but may "...disseminate information to correct consumer misconceptions sufficiently that they would make the same choice as under full information" (Ratchford, 1977, p. 364). Despite these differences, the fear appeal studies can serve as a basis for safety studies, because the similarities and the potential benefit outweigh the difference.

Although there is no empirical support for the curvilinear hypothesis, most models suggest that this relationship is the combined result of two cognitive processes: one that facilitates acceptance of the fear communication recommendation, and a second that may interfere with this acceptance. Although these models may not agree on most of the underlying variables of the cognitive processes, it may be concluded that fear control may induce interfering effects, and that danger control may induce facilitating

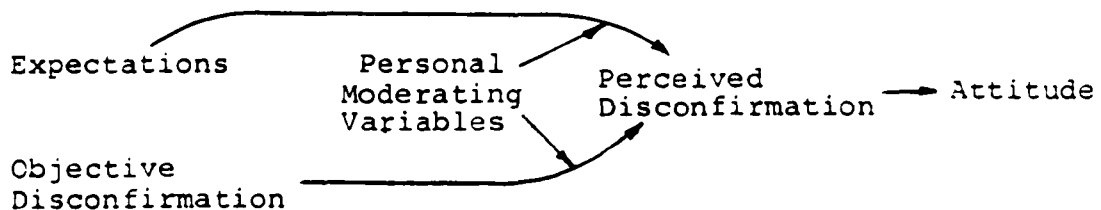
effects. However, it is not clear if the relations of the combined processes to fear are curvilinear or if they interact at all. Despite this unclear relationship, there were few variables that were found consistently among the various fear studies.

Based on these findings, it is suggested here that the effects of safety hazard communication warnings depend on the consumer's self-esteem and coping style, his or her vulnerability to possible danger, and the source credibility. Thus, strong warning may be more effective than weak warning for consumers high in self-esteem, and copers and invulnerable people will perceive the source of the communication as highly credible. Which variable may have greater impact on consumer behavior change is unknown. Moreover, some of the moderating variables might be effective in changing only attitude, but not intention and behavior. Awareness of available alternatives, their prices, and the consumer's need and want for the product may be important factors affecting the intention and behavior toward the unsafe product. In addition, a few other variables that are more related specifically to consumer behavior will be evaluated in Chapter V after the presentation in Chapter IV of the study's theoretical framework.

CHAPTER IV

THEORETICAL MODEL

This study's theoretical model attempts to explain and predict the response of consumers to product safety hazard communications. The model is an integration of principles drawn from the disconfirmation framework presented in Chapter II (pp. 29-44) with some conceptualization and findings that emerged from literature on fear arousal. This disconfirmation model suggests that post-trial product evaluations and attitudes are functions of perceived disconfirmation, and that the prior level of expectations and some personal moderating variables (ego-involvement and self-esteem) may account for the difference between perceived disconfirmation (PD) and the objective disconfirmation (OD). Furthermore, it is suggested that OD is the mathematical subtraction of the prior expectations from the actual product performance. Hence, the basic model of the disconfirmation becomes:



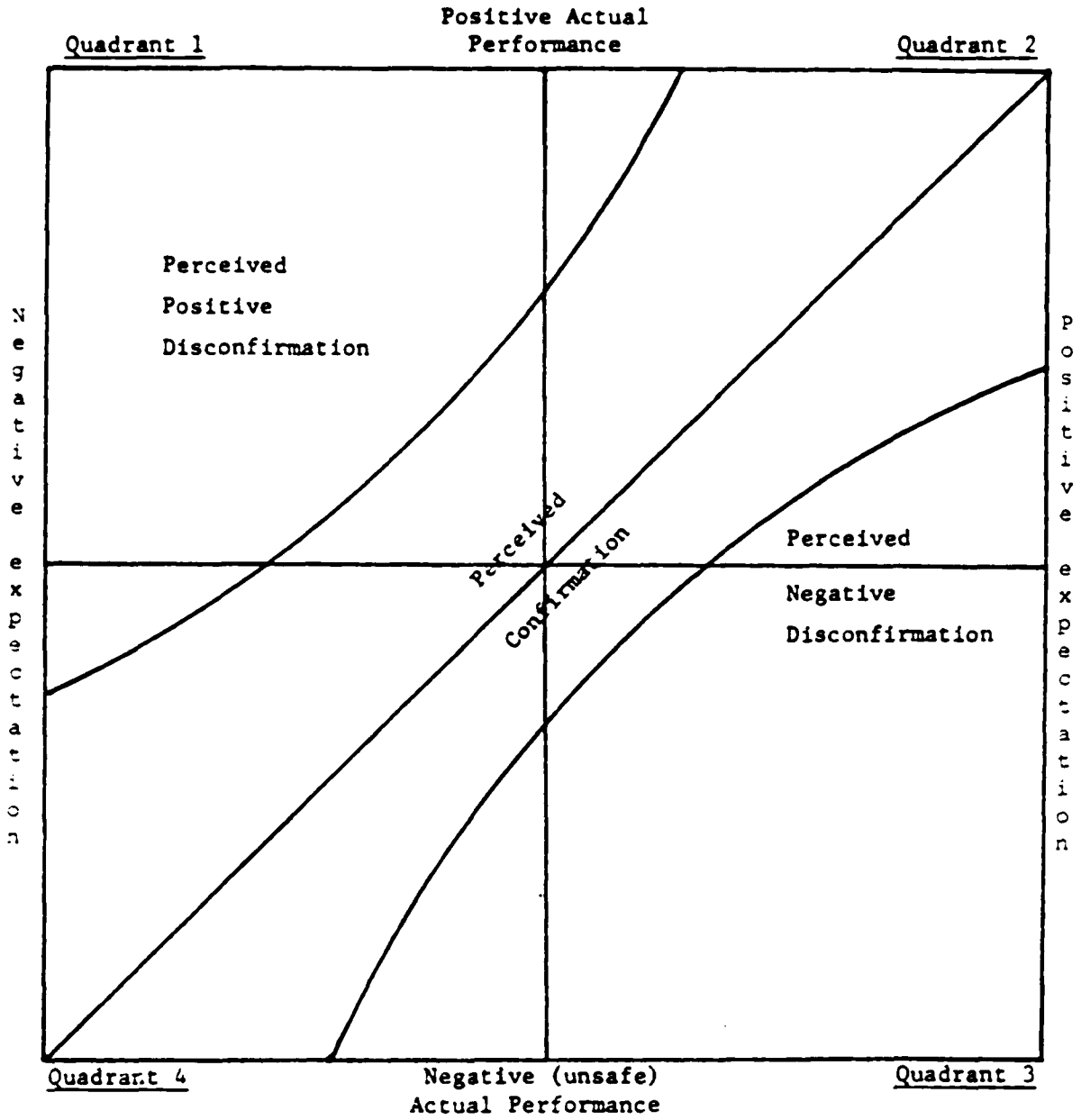
The effect of expectation on perceived disconfirmation is also assumed to be influenced by personal characteristics. Because expectation is independent of inferred disconfirmation (the discrepancy between prior-expectations and post-evaluation) and perceived disconfirmation (Oliver, 1977, 1980b; Swan and Trawick, 1981), although a strong relationship between perceived disconfirmation (PD) and post-evaluation exists (Oliver, 1980b; Oliver and Linda, 1980), it is reasonable to assume that, in the PD formation, perception of the prior expectation changes. Hence, this change in perception can be affected by an individual's differences.

Because safety hazard performance can be viewed as negative product performance, this disconfirmation model, as Figure 7 shows, can be extended to the case of the present study. Specifically, quadrant 3 presents the case where consumers did not expect hazardous performance, whereas quadrant 4 describes the situations in which there is some expectation of unsafe product performance.

In the case of product safety hazard communications, the actual performance used to measure objective disconfirmation may be obtained from the communications themselves, because the communications represent a "scientific" and objective measure of performance. However, because safety hazard communications are usually provided from external sources, and in most cases the hazard is not observed by

FIGURE 7

DISCONFIRMATION: THE EXTENSION TO
PRODUCT SAFETY HAZARD PERFORMANCE



the audience, they differ from the actual performance experienced by the user in the disconfirmation model. Moreover, the communications indicate not only a deviation from actual performance, but one that poses danger to the health or life of the user. Therefore, disconfirmation models using communications to measure the actual performance of a hazardous product should first be concerned with the unique content of the communications, namely, fear arousing information.

Communication Content Stimulus

Product safety hazard communication, as fear appeal information, represents two types of stimuli: stimuli associated with real physical danger or threat, and stimuli associated with emotional threat (Leventhal, 1970). The danger stimulus reflects the degree, presented by the communication, of the product associated with the physical danger outcome; that is, the "probability" of danger (e.g., Rely tampons may be linked with or cause Toxic Shock Syndrome). Moreover, the danger itself may have different levels of consequence, which represent the magnitude of the danger (e.g., TSS may lead to uncomfortable feelings, illness or death).

On the other hand, the communication fear stimulus represents the level of vividness assigned to the description of the danger consequences (Leventhal, 1970; Janis, 1967). For example, in the context of smoking and lung

cancer, one communication may present the consequences of smoking by color films showing closeups of a surgeon opening the chest and removing the lung, whereas other communications providing the same level of danger information may use only schematic diagrams of this operation. Thus, fear stimuli can be kept at a low level by a relatively unemotional and factual presentation, as in the latter communication, or they can be raised to a high level by an emotion-provoking description of the danger of smoking as presented in the former communication.

Previous Anxiety Models

The two communication content stimuli were assumed to arouse two types of anxieties: realistic anxiety and neurotic anxiety (Freud, 1926; Janis, 1967; Janis and Leventhal, 1965, 1968; Leventhal, 1965, 1970; and May, 1950). Although anxiety responds to the danger stimuli, neurotic anxiety is stimulated by the emotion-provoking content of the communication.

Hence, Janis and Fishbach (1954) and some subsequent fear models (Janis, 1967, 1968a, 1968b; McGuire, 1963, 1968) suggested that neurotically anxious people would be most easily frightened and would show the strongest defensive reactions to high fear stimuli, whereas subjects low in chronic (neurotic) anxiety will be more likely to respond to the danger stimuli and, thus, reduce the realistic

anxiety. This interpretation implies that high fear will reduce persuasion when it arouses neurotic anxiety and will increase persuasion when it stimulates realistic anxiety. Hence, the interaction of these two cognitive processes leads to the curvilinear relationship between fear and persuasion.

However, in presenting these processes as fear control process and danger control process, Leventhal (1967, 1970) argued that these cognitive processes reflect two parallel responses, which may not support the curvilinear hypothesis. Despite interpretation differences, both model types--Leventhal's parallel response model and Janis and McGuire's fear drive model--are based to some extent on the assumption that anxiety is a crucial variable in understanding the effect of fear communications, as was found in Janis and Fishbach (1953, 1954). However, the scale devised by Janis and Fishbach has been used in several studies and none of them has replicated the original effect of anxiety (Goldstein, 1959; Haefner, 1965; Niles, 1964; and Singer, 1965).

Thus, this study suggests a consistency conceptualization, rather than an anxiety-based interpretation, to explain these two stimuli effects on individuals cognition structural change and subsequent behavior.

A Conceptualization

Communication Stimulus-Disconfirmation and Moderating Factors Relationship

The present model suggests that the individual's response to the danger stimulus is a function of the discrepancy between the new information about the danger and prior expectations regarding this danger, and that the individual's personal characteristics may determine his response to the fear stimulus. According to the present study model of consumers' disconfirmation, this inconsistency between expectations and objective measures of danger may lead to an unpleasant cognitive state, which individuals tend to reduce. Hence, product performance expectations may serve as an "anchor" point in comparison to the actual product performance. Any deviation of reality from this anchor may lead to cognitive-structure inconsistency. The direction of the cognitive structure change depends on the magnitude of this deviation and the consumer's personality and past experience. In terms of safety hazard communications, this deviation is presented by the discrepancy between the consumer's expectations of the product danger performance and the actual performance of the product safety attribute as acquired through the safety hazard communication.

Because any safety hazard communication by definition (see p. 6) contains some level of fear stimuli (the

communication's factual presentation itself arouses fear, although a low level of fear), it would also be expected that some personality characteristics and some experience may affect the consumer's perception of the product's potential danger. The present model, therefore, suggests that the danger stimuli of safety hazard communications may affect the formation of objective disconfirmation, whereas the response to the fear stimuli may represent the level of the consumer's involvement and coping style, reflecting his personality and past experience. These two variables have been suggested to be the principal moderating factors by the disconfirmation literature and fear appeal literature. Involvement can be viewed as a degree of interest in, concern about, or commitment to a particular position on an issue (Freedman, 1964). Coping style, however, refers to the ability to cope with change or unfamiliar situations, and thus to respond more to the danger stimulus than to the fear stimulus of the communications (Goldstein, 1964).

Because perceived disconfirmation is measured by the perception of discrepancy between safety expectation and actual safety performance presented by the magnitude of danger stimulus in the communication, it would be reasonable to suggest that the credibility of the communication's source may have additional effects on this discrepancy. Thus, the consumer's perception of disconfirmation is

suggested here to be a function of prior safety expectations and the magnitude of objective disconfirmation. This relationship is moderated by the consumer's perception of source credibility, his degree of involvement, and his coping style.

The conceptualization of involvement and coping style of these two moderating factors is complex, because each may represent a cluster of moderating variables. Involvement is viewed as underlined by commitment, importance, purchase frequency, perceived risk, price (Lastovicka and Gardner, 1978; Rothschild, 1978; and Tyebjee, 1979), relevance (usage rate), and perceived vulnerability (Berkowitz and Cottingham, 1960; Leventhal, Jones and Trembly, 1966; and Niles, 1964), and coping style may be presented by self-esteem (Higbee, 1969) and brand loyalty (Roslious, 1971). However, because no reliable and validating scale has been established for either coping style or involvement, and because the present study is of an exploratory nature, most of these personal and situational variables will be used separately to formulate the hypotheses in the next chapter.

Attitude-Intention Change

The change of perceptions regarding product safety is a critical factor in determining the consumer's attitude toward the unsafe product. This assumption is based on the literature about negative information (e.g., Scott and

Tybout, 1980; Weinberger and Dillon, 1979; and Wright, 1974) that suggest that negative information cues may influence the consumer's overall evaluation of product performance more than positive ones. Moreover, Kanouse (1971) suggested negative information cues might produce a kind of general halo effect on the consumer's enjoyment of the product as a whole. Therefore, it would be expected that negative information regarding product safety may negatively affect the perception of other product attributes, which may influence the overall direction and magnitude of attitude change. According to the suggested disconfirmation framework, attitude change is expected to be a positive function of consumers' perceptions of the discrepancy between safety expectation and the actual safety performance. Specifically, perception of confirmation leads to no attitude change. Weak and moderate perceived disconfirmations produce change in the direction of the actual performance, and this attitude may exceed this level of objective performance (negatively in negative PD and positively in positive PD) when disconfirmation is perceived to be strong.

Although attitude is a necessary factor causing intention change, it is not a sufficient one. Hence, it is possible that consumers who change their attitudes negatively toward an unsafe product may not change their intention to use or to purchase the product. High price of

alternative products, lack of available alternative, or high financial loss for this exchange (as would be expected in receiving durable goods) may cause attitude change without intention and behavior change (Ratchford, 1977; Stuterville, 1970). Therefore, intention change is expected to be a function of attitude change moderated by these situational variables.

Summary

The present model suggests that two stimuli arise from safety hazard communications: danger stimulus and fear stimulus. Although the danger stimulus reflects the objective disconfirmation of product safety performance, the response to the fear stimulus affects personal characteristics moderating the impact of the danger stimulus on consumers' perceived disconfirmation.

This relationship and the study's prediction regarding the post-exposure attitude and intention can be expressed by the following equations:

- i. objective disconfirmation = actual safety performance - expectation of safety performance
- ii. perceived disconfirmation = f (expectations, objective disconfirmation) (moderated by perceived source credibility, coping style and involvement)
- iii. attitude = f (perceived disconfirmation)
- iv. intention = f (attitude change) (moderated by situational variables)

CHAPTER V

HYPOTHESES

In order to formulate specific hypotheses from the study model, a few assumptions and limitations are necessary. First, it will be assumed that government agencies publish safety hazard communications only when research findings indicate new evidence that may protect the public welfare. This has two implications: (a) Every government communication of safety hazards presents new evidence and thus is not repetitious information. Therefore, the study's hypotheses are concerned with first response safety hazard information; (b) Government agencies do not vary the emotional stimuli of these communications by "vivid" descriptions or demonstrations of dangerous consequences (this element of fear is probably varied by other concerned organizations such as consumer unions, competitive firms, and so forth) but may vary them through the language used to present the evidence. Thus, the increasing degree of message factuality represents only the increasing level of fear stimuli, whereas hazard warning change represents change of danger stimuli. Secondly, the following hypotheses

are limited in their concern to only one product class in order to reduce the complexity of this exploratory investigation.

Because the present study is concerned with the impact of new product safety hazard information on consumers' attitudes and intentions, prior expectations regarding the safety attributes are assumed to be minimal (this will be empirically verified). Thus, perception of discrepancy between low level of negative expectations and low or high level of actual negative product performance is expected to cause only negative disconfirmation. Moreover, as suggested by the negative information literature, change in the evaluation of the safety attribute has a direct effect on the overall attitude toward the "unsafe" product, and hence perceived safety disconfirmation is assumed to affect directly the overall attitude (this assumption will also be empirically verified). Finally, warning effect and hazard level are used here interchangeably to mean the level of danger used in the fear appeal literature.

Disconfirmation Formulation

The study's model, presented in the previous chapter, indicated that the formation of perceived disconfirmation depends on the level of prior expectation and the objective disconfirmation. Furthermore, it is suggested

that this relationship is moderated by some communication and personal variables. The following hypotheses will first be concerned with the relationship between perceived disconfirmation and its determinants, and then the effect of the moderating variables on this relationship will be discussed.

Perceived Disconfirmation's Determinants

According to the suggested disconfirmation model (pp. 29-44), perceived disconfirmation is expected to be a non-linear function of expectation and a linear function of objective disconfirmation. Hence, the same level of discrepancy between expectation and actual performance would be noticeable when the prior expectation is low or when it is high. However, because expectations here are expected to be minimal (within a narrow range), due to the fact that this is the first exposure to the hazardous performance, a linear relationship is also expected between perceived disconfirmation and expectations. Therefore, in terms of the safety hazard performance it is hypothesized that

- H₁ - Perceived disconfirmation of product safety performance will be positively related to the prior safety expectations and to the objective safety disconfirmation.

Moderating Variables

Several moderating variables are expected to mediate the relationship between perceived disconfirmation and its determinants (expectations and objective disconfirmation). One class of moderating variables is related to the communication characteristics, and the other reflects personal characteristics. Hence, the following hypotheses concern the effect of distortion due to these moderating variables on the formation of perceived disconfirmation. Positive effect will reflect less reality distortion and negative effect will present a greater degree of distortion. Hence, when positive effect occurs, the moderating variable will affect negatively the formation of perceived disconfirmation (PD), causing less perception of negative disconfirmation for increasing levels of the moderating variables. Negative effect, however, is expected to have a positive effect on PD, thus producing a weaker perception of negative disconfirmation or even a positive PD.

However, fear appeals and disconfirmation literature considered the impact of moderating effects on attitude change and not on perceived disconfirmation. Because attitude change is the ultimate goal of safety hazard communications, it is assumed that the greater the attitude change attributed to a moderating variable, the less distortion occurs. Thus, in formulating the

following hypotheses, distortion resulting in a stronger perception of negative disconfirmation is considered as a positive effect. Nevertheless, the effect of the moderating variables on attitude distortion is presented in the data analysis.

Communication Variables

Source Credibility: Source credibility in all fear appeal studies (Hewgill and Miller, 1965; Miller and Hewgill, 1966; and Powell and Miller, 1967) was established through pretest of several possible sources. Because the present study focuses on only one source of information (regulatory agencies), source credibility is not varied. However, it is possible that the consumer's perception of this source credibility may vary. Moreover, it might be a more accurate measurement than the present process in determining the source credibility, because it represents the respondents' perceptions and not the pretest group's perceptions.

Most studies in the communication discipline found that the high credibility sources of information had a substantially greater immediate effect on the audience's opinions than low credibility sources (e.g., Chov, 1964; Hill, 1963; Hovland and Weiss, 1951; Kelman and Hovland, 1953; and Weiss, 1953). However, in the fear appeal literature, only Powell and Miller (1967) studying

social disapproval as anxiety arousing communication, found this relationship. Nevertheless, consistent with previous studies (Hewgill and Miller, 1965; Miller and Hewgill, 1966), Powell and Miller (1967) found that high fear was more effective than low fear when source credibility is high, but not when the source credibility is low. Based on these findings, distortion seems to be greater for low credibility sources than high credibility sources: thus, it is hypothesized that

- H₂ - The consumer's perception of the communication source credibility positively affects the relationship between PD and its determinants.

Factual/Evaluative Content: Because government assumedly does not manipulate fear stimuli by vivid description and demonstration of the dangerous consequences, the communication language may be critically important, because "...language choices exert an impact on whether the persuasive attempt succeeds or fails" (Bourgoon and Bettinghaus, 1980, p. 151). One of the fundamental dimensions of verbal language choices, based on its semantic properties, is "the degree to which a message is predominantly factual or evaluative" (Holbrook, 1978, p. 547). Within the context of safety hazard communications, factual content can be defined as logical, objective descriptions of consequences resulting from specific features of an unsafe product. In contrast, evaluative content might

be viewed as emotional, subjective impressions of consequences caused by unspecified aspects of the unsafe product. The notion of a factual/evaluative dimension of the message content was not studied by the fear appeal investigations. This aspect was studied only in terms of the amount of factual material presented in the communications as it affected the message length which, in turn, influenced attitude change.

Although a few studies in communication (e.g., Eldersveld, 1956; Hartmann, 1936) investigated similar concepts (rational, documented message versus emotional message without supportive evidence), these studies did not provide clear data about the effectiveness of the use or non-use of various types of evidence (Burgoon and Bettinghaus, 1980). However, exploring this concept in a marketing context, Holbrook (1978) found that the factual content of a message was significantly stronger in forming consumers' attitudes about the three most important product attributes than evaluative message content. Thus, factual messages may cause less distortion; therefore, the present study hypothesizes that

H₃ - A factual warning communication affects more positively the relationship between PD and its determinants than an evaluative warning communication.

Involvement Variables

As already indicated, involvement represents a cluster of variables. The following involvement variables, emerging from several disciplines, were found to be useful in studying consumers' responses to safety hazard information: vulnerability (social psychology), perceived risk (marketing), product involvement (marketing), and ego-involvement (communication).

Vulnerability/Risk: Two measures were used in the fear appeal literature to measure this variable: relevance was the objective measure of vulnerability and perceived vulnerability was the subjective measure. The relevance of the safety hazard communication to consumers is defined in terms of frequency of product usage (Berkowitz and Cottingham, 1969). Hence, a consumer who uses a product frequently is subject to greater danger and risk vulnerability than a consumer who uses that product infrequently. Most empirical studies that deal with the objective relevance of a threat found that relevance is negatively related to the effectiveness of increasing the level of fear (Berkowitz and Cottingham, 1960; Insko et al., 1965; and Leventhal and Watts, 1966). Based on Miller's (1948) conflict model, Berkowitz and Cottingham (1960, p. 38) suggested that "the magnitude of the avoidance-fear reaction increases with the relevance of the message to the need of audience member." That is,

regardless of the fear level, relevance is positively related to information distortion due to the avoidance response.

Perceived vulnerability, however, represents a subjective measure of relevance. It was measured in terms of the person's belief of susceptibility to a danger, e.g., self-report of vulnerability to lung cancer in a smoking study (Niles, 1964), or feeling of vulnerability to health issues in a tetanus inoculation study (Leventhal, Jones and Trembly, 1966).

A similar construct to perceived vulnerability is the safety component of perceived risk. This component or type of loss was used in terms of the possible dangers of a product's performance to health or safety (Jacoby and Kaplan, 1972; Roselius, 1971; and Schiffman, 1972). Despite research attention to the concept of perceived risk, there has been no empirical study in the consumer behavior literature dealing with risk perception in a fear arousing situation. Nevertheless, consistent with the findings of objective relevance, most empirical studies in the fear appeals literature found that perception of vulnerability is negatively related to the persuasion of increasing levels of fear (Insko, Arkoff and Insko, 1965; Leventhal, Jones and Trembly, 1960; Leventhal, Singer and Jones, 1965; and Niles, 1964). Therefore, the present study hypothesizes

- H₄ - Vulnerability has negative effect on the relationship between perceived disconfirmation and its determinants.

As this hypothesis indicates, a higher level of vulnerability and risk causes a greater distribution of reality and, hence, affects negatively consumers' perceptions of disconfirmation. However, once one realizes and perceives the chances of being in danger, no such distortion occurs. Therefore, it would be expected that the post-exposure risk perception (post-perceived risk) will positively affect perceived disconfirmation. Because the post-perceived risk represents an awareness of the possible dangers of product performance, it would eliminate possible distortion of the safety hazard information. Thus, it would be hypothesized that

- H₅ - The post-perceived risk positively affects the relationship between perceived disconfirmation and its determinants.

Ego and Product Involvement: Although ego-involvement is viewed as a commitment to prior beliefs or expectations, and product involvement represents the degree of product importance, as involvement variables, both affect similarly the response to product safety hazard information. As assimilation-construct theory suggested, involvement is positively related to communication distortion (Kisbee, Collins and Miller, 1969). Thus, it is expected that

- H₆ - Ego and product involvement will negatively affect the relationship between perceived disconfirmation and its determinants.

Coping Style Variables

Two variables will be used to represent consumers' coping style: self-esteem and brand loyalty. Although self-esteem may reflect an inner state of general confidence, brand loyalty represents a specific type of coping style. Thus, both may predict how consumers will respond to product safety hazard information.

Self-esteem: One of the variables suggested by the disconfirmation studies and by fear appeal studies to explain differing results was the individual's self-esteem. Most fear appeal findings (e.g., Dabbs and Leventhal, 1966; Leventhal and Trembly, 1968; Kornzweig, 1968; and Zemach, 1966) indicate a positive relationship between self-esteem and persuasiveness of fear appeals; that is, high self-esteem subjects tend to be more persuaded by high-threat appeals, and low self-esteem subjects tend to be more persuaded by low-threat appeals. Hence, in contrast to low esteem individuals, and despite the danger and fear, those high in self-esteem may exert confidence, enabling them to evaluate safety hazard information more accurately. Consequently, the present study hypothesizes that

- H₇ - Self-esteem positively affects the relationship between perceived disconfirmation and its determinants.

Brand Loyalty: Brand loyalty is defined as the number of consecutive times or the proportion of time of purchasing one brand or service in a specific product category (Schiffman and Kanuk, 1973, p. 112). Roselius (1971) in view hazard loss as caused by a product that is dangerous to health or safety, found that of 11 risk perceived reduction methods, brand loyalty was the most effective method. Thus, it might be assumed that a high level of loyalty to an "unsafe" brand may lead to a distortion of the product safety hazard communication; that is, consumers may argue that their previous experiences indicate that no such hazard exists in the brand they use. Hence, brand loyalty may cause consumers to distort product safety hazard information. Therefore, it is hypothesized that

- H₈ - Brand loyalty will negatively affect the relationship between perceived disconfirmation and its determinants.

Attitude Change

Based on the present study model, the product safety attribute will have a dominating effect on the overall attitude toward the unsafe product. Moreover, because perceived disconfirmation is a post-trial measure, it was assumed to account for individual differences. Thus, as the study model suggests, it is hypothesized here that

- H₉ - Consumers' attitudes toward the unsafe product (brand) will be positively related to their perception of safety disconfirmation.

Intention Change

According to Ajzen and Fishbein (1980), intention is the function of attitude and subjective norms, which may be affected by external situational conditions. Although it seems that social norms may not be an important factor in intention formulation toward an unsafe product, several external variables were suggested: high price of alternative, no available alternative, and high financial loss of exchange for the alternative. Because the product involved in the present study is in a low price bracket, the number of alternatives available seem to be the only relevant moderating variable of intention change.

In order to test the effect of available alternatives on intention change, the safety hazard communications will be about both a specific brand and the product class of the brand. As Stuteville (1970) pointed out, using the hazards of cigarettes as an example, the number of alternatives available may exert a differential effect on the consumer's response to safety hazard information:

Had only one brand of cigarettes been suspected of being carcinogenic, it can be assumed that its demand would drop to zero as its former buyers quickly switched to other brands. However, as cigarettes were indicated as a class, no such easy substitution was available (p. 42).

Therefore, it is hypothesized that

- H₁₀ - Intention to use or buy the unsafe brand will be positively related to the change of attitude toward this brand.
- H₁₁ - Intention change will be stronger when the safety hazard communication is directed toward the specific brand consumers use than it will be when the whole class of the product is suspected of being hazardous.

CHAPTER VI

METHODOLOGY

The following discussion presents the research methodology. A presentation of the experimental design and procedure is followed by the product selection, sample description and procedure, and then variables' measurement is discussed. A short discussion of the method of analysis is presented, followed finally by the pre-test findings.

Design and Procedure

The primary purpose of this research was to examine consumers' responses to product safety hazard information published by government agencies. Therefore, a "before and after with control" experimental design was selected, which enabled us to measure change in consumers' responses that resulted from disconfirmed expectation regarding the product safety performance.

The "Before" Measure

This part of the experiment was rather lengthy. It included the measurement of safety expectations and of attitudes toward a respondent's "regular" brand (the brand used most often) and toward the "evoked-set" which measures purchase likelihood of "alternative" brands. In addition,

all of the moderating variables that were independent of the message exposure were measured at this stage. Such variables included brand performance, perceived vulnerability risk, self-esteem, ego involvement, relevance, brand loyalty, product involvement, and so forth. Finally, income, age, education and other demographic variables that may influence the response to safety hazard communication were measured.

Safety Manipulations

About three weeks after the "before" stage and just before the "after" stage, respondents received a simulated newspaper article presenting research findings from the Government Center for Disease Control. A total of seven groups were used; six experimental groups and one control group.

In order to examine the formation of the respondents' perceived disconfirmation, four groups were exposed to safety hazard information indicating safety hazard of the brand they used, i.e., their regular brand. Because safety hazard information arouses both the fear stimulus and danger stimulus two levels of each stimulus were selected. Although strong and weak danger warnings represented the possible danger of these hazards, factual and evaluative language of the message reflected the fear manipulation. Thus, the following four experimental groups were created:

- factual-strong warning effect
- factual-weak warning effect
- evaluative-strong warning effect
- evaluative-weak warning effect

For the testing of intention change when the number of available alternatives was limited, two more experimental groups were selected: weak and strong safety hazard toward the product class. Because intention change will be compared with the brand's safety hazard groups, either factual or evaluative groups could have been used. Nevertheless, the messages used were factual because only a small change of intention was expected, even under this condition.

Finally, a control group was selected. This group received no safety hazard information in order to control for possible changes that might have occurred in the experimental group during the three week period. Such changes may not have been accounted for in the safety manipulations.

All articles were presented as photocopies (see Appendix B) from a local newspaper whose name was not used in order to avoid introducing another variable. A newspaper article was selected as the means for the message manipulation because large portions of the public tend to be exposed to safety hazard communication through newspaper publications (Shuv-Ami and Schiffman, 1981).

The "After" Measure

Immediately after the message exposure, respondents were asked to complete a second questionnaire. In the first part, the questions included perception of source credibility, degree of danger magnitude perceived, perceived disconfirmation, and so forth. Then respondents answered exactly the same questions as in the before stage, measuring importance, attitude, and intention toward the "hazardous" brand, i.e., their regular brand.

Finally, after the first part of the questionnaire was completed and inserted in an envelope, respondents were asked to list all the facts they had learned from the message presented in order to insure and measure the subjects' levels of message comprehension. This part also included questions about the government's credibility in comparison to other sources of safety hazard information.

The control group, however, received the same questionnaire that they completed in the first stage with some other introductory questions that tested for the stability of the self-esteem measure and for the message effect.

Product Selection

The product used in this research was toothpaste. The rationale for this choice was based on two factors: (a) there is no publicized evidence to date indicating toothpaste safety hazard. Thus, it insures the requirement

from the previous chapter, which assumed that government publicized new research evidence (see p. 84) and (b) the selection the selection of toothpaste also simplified the experimental design because we could assume that most subjects were using this product, and there are only four brands that account for more than 75 percent of the market (Salmans, 1981).

Data Collection Procedure

The data were collected through personal interviews. All interviewers were undergraduate (junior and senior level) marketing students at Baruch College of the City University of New York. The interviewers were trained during a series of sessions over a four week period. The training consisted of instructions on general interviewing techniques, handling refusal and non-response, and role playing situations that concentrated on eliminating interviewee bias.

About four weeks before the first interview, each interviewer was asked to contact potential interviewees and to obtain their consent for the interview. Those interviewees agreeing to participate in the study signed an agreement letter (see Appendix A). This letter was used as part of the safeguard procedure (see below) and also provided participants' names that were used to prepare the personalized questionnaire and the coded return envelopes.

Each interviewer was requested to voluntarily interview each of eight respondents twice (before and after).

The before interview was a completely self-administered questionnaire, which the respondents sealed in a return envelope provided to insure confidentiality. In the after interview, the interviewer was present to administer the different parts of the questionnaire in order. First, part one (the newspaper article) was given. After this part was inserted into the return envelope (respondents were not permitted to return to this part), the second part was given, which measured recall of the article content and credibility comparison. Finally, the return envelope was sealed and the interviewers were orally notified that the newspaper article was a fabrication. They then signed a note stating that they had been duly informed of this fact (see Appendix F).

The Validation and Editing Procedures

The interviewers were requested to complete the interviews voluntarily as part of the consumer behavior research. There was no penalty for not returning the questionnaires or for conducting fewer than eight interviews each time. In order to insure that there would be no falsification of the data, all interviewers were given credit for the assignment. Furthermore, about one-fourth of the total sample was contacted by telephone to verify that the interview took place based on the specific research interviewing instructions.

As expected, not all interviewers completed their assignment, and some envelopes were returned with uncompleted

questionnaires. A total of 318 respondents returned both the first and second questionnaires. After editing, there was a total of 304 usable questionnaires that were used in the data analysis.

Safeguard Procedures

Because the present study fabricates the safety hazard information on existing brands, four safeguards were used: (a) respondents were not told the purpose of the study until the end of the experiment; they were told that it was an opinion study. (b) All respondents signed an agreement of participation prior (about four weeks) to the first stage of the study (see Appendix A). (c) Respondents received a retraction (disclaimer) note immediately after completing the second part of the after stage (see Appendix D). (d) Respondents were orally informed about the fact that the newspaper article was false when they signed the retraction note.

Sample

A non-probability convenience sample was the method used to select respondents, all of whom were toothpaste users. However, all subjects were randomly assigned to one of seven groups, six experimental groups and one control group. The interviewers selected the respondents from their neighborhoods, mostly from the five boroughs of New York City. This dispersion of interviews throughout the city provided a good cross-section of the New York City population.

A total sample of 304 respondents were obtained. Only one respondent was taken from any given household, in order to prevent exposure of the newspaper article as a fake. Table 5 shows the distribution of the sample among the experimental and control groups.

The cell sizes for cross-classification of experimental data, including the test for the effect of each of the moderating variables, were sufficient for the statistical analysis required in this research design. The method of data analysis is presented after the next section on variable measurement.

Variables Measurement

The following are operational definitions of the variables presented in the hypotheses chapter. The operational definitions begin with the presentation of the measurement of independent variables, which is followed by a discussion about the measurement of dependent variables. Finally, the measurement of moderating variables is presented, which appears in the same sequence as hypothesized in the previous chapter.

All variables are measured from 0 to 100 millimeters on a continuous 10 centimeter scale, labeling only the extreme points. For example, the agree-disagree scale appears as follows:



TABLE 5

THE EXPERIMENTAL DESIGN

GROUP	BEFORE	MESSAGE	AFTER	N
Brand Warning 1	Yes	Weak Evaluative	Yes	43
Brand Warning 2	Yes	Strong Evaluative	Yes	47
Brand Warning 3	Yes	Weak Factual	Yes	48
Brand Warning 4	Yes	Strong Factual	Yes	40
Product Warning 1	Yes	Weak Factual	Yes	39
Product Warning 2	Yes	Strong Factual	Yes	42
Control	Yes	No	Yes	45

The total sample is 304 respondents

Independent Variables

Expectation and objective disconfirmation are used as independent variables to predict perceived disconfirmation. Perceived disconfirmation is an independent variable explaining attitude, and attitude is the determinant of purchase intention. Hence, except for intention, all the above variables are used as independent variables. However, only variables of disconfirmation are presented here.

a. Perceived disconfirmation is conceptually defined, for the purpose of this study, as the perception of discrepancy between performance and expectation of product safety. It represents a post-exposure measure and, therefore it is asked in the second stage questionnaire (Appendix E).

This variable is measured by the following question, ranging from "much less safe than expected" to "much safer than expected:"

"How safe do you feel (brand name) is relative to how safe you expected it to be before you read the article?"

b. Objective disconfirmation, however, is the discrepancy between safety expectations and actual safety performance measured a priori by an unbiased, independent group of judges. This panel of judges was selected from the student members of the Graduate School of Business at Baruch College of The City University of New York.

Each judge rated the messages in a way that allowed comparison of all four safety messages to be manipulated. The messages were rate, in order to measure the degree of danger reported, on the 10 centimeter scale from "not dangerous at all" to "extremely dangerous" (see Appendix D). A similar approach was used by the originators of assimilation-contrast theory (Hovland, Harvey and Sherif, 1957) and by some of the disconfirmation studies (e.g., Olson and Dover, 1976, 1979) in order to measure the "anchor" point to which expectations (or prior stand on an issue) were compared.

Expectations were measured directly in the before questionnaire (see Appendix B). This variable was measured as one of the brand's attributes and represented a belief about the safety performance on agree-disagree scale ranging from "completely disagree" to "completely agree" that the brand was safe to use. Then the following equation was computed:

$$OD = E - P$$

where: OD = objective disconfirmation

E = prior expectation of product safety

P = the actual performance
(the "anchor" point)

Dependent Variables

Attitude and intention toward the "unsafe" brand and its alternative were measured identically in the before stage (Appendix B), and in the after stage (Appendix E).

Attitude was measured as an overall opinion about the brand performance on the centimeter scale ranging from "like extremely" to "dislike extremely."

Intention was measured directly by the following question:

"How likely are you to purchase the
(brand name)?"

This variable ranges from "would definitely buy it" to "would definitely not buy it."

Moderating Variables

Four groups of moderating variables are discussed: communication variables, involvement variables, coping-style variables, and the situational variables hypothesized to affect consumers' purchase intentions.

a. Communication Variables

Source credibility was measured by the respondents' perception of the government (the source of the safety hazard information) as trustworthy and knowledgeable. These two items seem to reflect the two major aspects of source credibility (e.g., Howard and Sheth, 1969; Schiffman and Kanuk, 1978; and Semmunds Market Research Bureau, 1978); however, they

were not used here as a "scale," but as separate variables of credibility. The agree-disagree scale was used, ranging from "completely disagree" to "completely agree."

Factual/evaluative content was measured in the same way by the same panel of judges who measured the brand degree of danger. Following Holbrook (1978), the degree of factualness/evaluativeness was measured on a scale ranging from "entirely evaluative" to "entirely factual," where factual message content was viewed as objective description of the safety hazard consequences and evaluative content was represented by a subjective impression of these consequences. These messages (see Appendix C) are modified parts of Karen De Witt's (1980) article, published in the New York Times, on the safety hazard of Rely tampons.

b. Involvement Variables

Vulnerability/Risk. Objective measure of vulnerability was considered as the degree of relevance of a product to the user. Following Berkowitz and Cottingham (1960), relevance was operationally defined in terms of frequency of product usage (see Question 8 in Appendix B). Perceived vulnerability/risk was measured as pre-exposure feelings of the possible personal danger of using an unsafe brand. A modified version of the safety component from Jacoby and Kaplan's (1972) perceived risk scale was used to measure this variable. The question was:

"What are the chances that an unfamiliar brand of toothpaste may be unsafe, i.e., harmful or injurious to your health?"

The answer to this question ranged from "not likely at all" to "extremely likely."

Post-perceived risk was measured after the exposure to the safety hazard information by the following question:

"What is the chance that you would be in danger if you regularly used the (brand name) toothpaste?"

This question was measured from "most unlikely at all" to "extremely likely." As hypothesized, this question allowed the measurement of the consumers' post-risk perceptions which reflected the distortion of the product's actual safety performance as presented by the message.

Ego and Product Involvement. As was hypothesized, both variables may affect the consumer's response in the same direction. However, they measure different aspects of involvement (Cohen and Goldberg, 1970), and thus different measures are employed.

Ego involvement is a measurement of one's commitment to a stand on an issue (Sherif and Hovland, 1961; Sherif and Sherif, 1967) or commitment to beliefs-expectations (Cohen and Goldberg, 1980; Olson and Dover, 1979).

The following belief-commitment item from Lastovich and Gardner's (1979) involvement scale was used:

"If I received information that was contrary to my choice in this product class, I would--at all costs--keep my choice."

However, product involvement is measured as the degree of product class importance (Cohen and Goldber, 1970; Hagfer and Gardner, 1971; Lastovicka and Gardner, 1970; and Rothschild and Ray, 1970). Using another item from Lastovicka and Gardner's scales, the following statement was used to measure product involvement:

"I rate this product as being of the highest importance to me personally."

Both ego involvement and product involvement were measured in the first stage of the experiment on a scale ranging from "completely disagree" to "completely agree."

c. Coping-Style Variables

Brand loyalty was measured by the number of years respondent used his or her "regular" toothpaste (the brand most often used), on a 7 point scale ranging from "used less than one year" to "used over ten years." (For the exact format see Question 5, Appendix B).

Self-esteem. Wells and Tigert's (1971) scale of generalized self-confidence was used. This scale was administered at the "before" question using the 10 centimeter scale ranging from "completely disagree" to completely agree." The following items were used:

- . I am more independent than most people.
- . I think I have a lot of personal abilities.
- . I like to be considered a leader.
- . I think I have more confidence than most people.

The scale's reliability was established here through Cronback's alpha coefficient of 0.75, as well as Spearman-Brown's and Guttman's (λ_4) split-half coefficient of 0.70.

d. The Moderating Variables of Intention

Only one moderating variable was used: the number of alternative choices available. This variable was measured on two levels: high and low. A high level number of alternatives available is present when the safety hazard is brand specific. (There are many alternative brands performing about the same). Low level of this variable is considered when the whole product class is suspected of being a health hazard (requiring a change to a totally different product class). (See Appendix C).

Method of Analysis

Following Oliver's (1980b) satisfaction model, the present study uses a just-identified, fully recursive path (Duncan, 1975; Wright, 1934) to test the process of purchase intention formulation. The complete system of the relationship hypothesized is represented in Table 6. The equations in this table also make it possible to test the relationship

TABLE 6

HYPOTHESIZED RELATIONSHIP BETWEEN THE ANTECEDENTS
AND THE CONSEQUENCES OF PERCEIVED DISCONFIRMATION
ARRANGED IN CAUSAL ORDER OF INFLUENCE

VARIABLE	STRUCTURAL EQUATION
Z_1 : Expectation	-
Z_2 : Objective disconfirmation	-
Z_3 : Perceived disconfirmation	$\frac{P_{-23}Z_2^{(a)}}{-23-2} + \frac{P_{-13}Z_1^{(a)}}{-13-1}$
Z_4 : Attitude	$\frac{P_{-34}Z_3}{-34-3} + \frac{P_{-23}Z_2}{-23-2} + \frac{P_{-14}Z_1^{(a)}}{-14-1}$
Z_5 : Intention	$\frac{P_{-45}Z_4}{-45-4} + \frac{P_{-35}Z_3}{-35-3} + \frac{P_{-25}Z_2^{(a)}}{-25-2} + \frac{P_{-15}Z_1^{(a)}}{-15-1}$

(a)

A significant coefficient hypothesized

between the variables arrayed in order of their suggested temporal precedence. If the variables are expressed in standard form (Z_i), the coefficients (p_{ij}) are the standardized regression (path) coefficients where j and i denote the dependent and independent variables, respectively.

In order to test the effect of the moderating variables between perceived disconfirmation and its determinants, analysis of covariance will be used. Finally, analysis of variance will be used in testing the effect of the number of available alternatives on purchase intention change.

The Pre-Test Findings

In order to test the questionnaire, it was administered to 102 undergraduates, (junior and senior level) marketing students at Baruch College of The City University of New York. The focus of this part of the pre-testing was the evaluation of the 10-centimeter scale. The findings showed that the scale was a reliable measure in terms of possible response bias. Compared with other scales, Likert-type scale and a full 100 millimeter scale, it was not a difficult scale to use, having all the advantages that a continuous scale has.

Also, members of the Doctoral Faculty in Business at The City University of New York, knowledgeable in marketing research, were consulted during the questionnaire's development. Their comments were reflected in the preparation of

the final version of the questionnaire. Accordingly, questions concerned with the alternative brand were deleted and several other questions were revised.

The Message

The four types of messages were tested for the magnitude of danger reported (the actual safety performance) and to determine the level of each message's factual/evaluative content. A sample of 39 graduate evening students at the Business School at Baruch College of The City University of New York were selected. These respondents were used as an unbiased group of judges for the message evaluation. They were asked to evaluate the newspaper articles as objectively as they could by assuming that they were functioning as newspaper editors. To add to their objectivity, no brand name was mentioned in the articles (see Appendix D).

Each judge evaluated all four messages. In order to eliminate the ordering effect of the presentation of the messages to be evaluated, the order was changed (see Table 7). Each format was used by about one-fourth of the judges.

Table 8 shows that the messages were ranked in the following order: weak evaluative, weak factual, strong evaluative, and strong factual. All differences, except one, were statistically significant. The strong evaluative message and weak factual message were found not to differ statistically in danger magnitude and evaluative/factual content.

TABLE 7

THE ORDER OF MESSAGE TYPES IN THE
JUDGES' QUESTIONNAIRE

FORMAT	ORDER OF MESSAGES
I	WE, SE, WF, SF
II	SF, WE, SE, WF
III	WF, SF, WE, SE
IV	SE, WF, SF, WE

- (a) WE = Weak Evaluative message
 SE = Strong Evaluative message
 WF = Weak Factual message
 SF = Strong Factual message

TABLE 8

THE JUDGES' EVALUATIONS: PAIRED T-TEST OF
THE DIFFERENCES BETWEEN THE MESSAGES' MAGNITUDES OF DANGER

MESSAGES	MEAN	MEAN ^(a) DIFFERENCE	S.D.	T VALUE	D.F.	SIGNIFICANCE
Weak Evaluative Vs. Strong Evaluative	41.0513 65.5641	-24.5128	31.890	-4.80	38	P < 0.01
Weak Evaluative Vs. Weak Factual	41.0513 55.5128	-14.4615	26.527	-3.40	38	P < 0.01
Weak Evaluative Vs. Strong Factual	41.0526 77.6316	-36.5789	28.298	-7.97	37	P < 0.01
Strong Evaluative Vs. Weak Factual	65.5641 55.5128	10.0513	38.542	1.63	38	N.S. ^(b)
Strong Evaluative Vs. Strong Factual	66.2105 77.6316	-11.4211	25.824	-2.73	37	P < 0.01
Weak Factual Vs. Strong Factual	54.6316 77.6316	-23.000	26.019	-5.45	37	P < 0.01

(a) The mean difference represents the first message minus the second message difference. For example, the first row represent the Weak Evaluation minus the Strong Evaluative mean difference

(b) $P > 0.10$

However, as was expected, weak and strong messages with the same content did not differ (see Table 9). Table 9 also shows that for the same level of danger the factual message was judged as more "factual" than the evaluative message.

Summary

This chapter has outlined the measures and procedures used in collecting the data to test the hypotheses. The experimental research design presented here is a before and after design, based on six experimental groups and one control group. The exposure consisted of four different simulated newspaper articles presented at the beginning of the after stage.

The before questionnaire included measures of expectations, attributes, ego and product involvement, self-esteem, brand loyalty, and perception of vulnerability/risk. The after questionnaire contained measures of perception of disconfirmation, attitude, purchase intention, source credibility, and post-exposure risk perception. All measures were scored on a continuous 10-centimeter scale.

The application of these measures to the testing of the hypotheses presented in the previous chapter is presented in the following chapter on data analysis and research findings.

TABLE 9

THE JUDGES' EVALUATIONS: PAIRED T-TEST OF THE
DIFFERENCES BETWEEN THE MESSAGES' FACTUAL/EVALUATIVE CONTENTS

MESSAGES	MEAN	MEAN ^(a) DIFFERENCE	S.D.	T VALUE	D.F.	SIGNIFICANCE
Weak Evaluative Vs. Strong Evaluative	40.7368 46.6053	-5.8694	30.745	-1.18	37	N.S. ^(b)
Weak Evaluative Vs. Weak Factual	40.7368 52.3947	-11.6579	28.490	-2.52	37	P < 0.02
Weak Evaluative Vs. Strong Factual	40.8462 56.4615	-15.6154	33.360	-2.92	38	P < 0.01
Strong Evaluative Vs. Weak Factual	46.6053 52.3947	-5.7895	39.460	-0.90	37	N.S.
Strong Evaluative Vs. Strong Factual	46.6053 57.0263	-10.4211	28.680	-2.24	37	P < 0.05
Weak Factual Vs. Strong Factual	52.3947 57.0263	-4.6316	28.580	-1.00	37	N.S.

(a) The mean difference represents the first message minus the second message differences. For example, the first row represent the Weak Evaluative minus the Strong Evaluative differences.

(b) $P > 0.10$

CHAPTER VII

DATA ANALYSIS AND RESEARCH FINDING

Introduction

The experimental design and research methodology employed in this study was presented in the previous chapter. Attention is now directed to the data analysis and research findings.

Main effects relationship between expectations, disconfirmation, attitude, and purchase intention are presented first. These findings are not reported in sequence with the hypotheses in order to allow a test of the complete main relationship model. A discussion on the findings of the moderating effects follows this section. The remainder of the chapter presents some additional findings that have bearings on the hypothesized relationships.

Manipulation Check

In the present experiment, two requirements indicate success of the manipulation: (a) that the change of attitude can be attributed to the exposure of the safety hazard information, and (b) that the information provided in the study is the first exposure to this product hazard information and, thus, represents an objective state of negative disconfirmation.

The findings in Table 10 show that the first requirement was satisfied. Only those exposed to the toothpaste safety hazard report, i.e., the experimental groups, significantly changed their attitude toward this brand of toothpaste. The second requirement was also satisfied. As expected, 95.3 percent of the respondents in the experimental groups were in the negative objective disconfirmation condition, i.e., the actual safety performance was poorer than they had expected.

Test for Linearity

A test for linearity is performed in order to examine the type of relationship between the variables in the path model. As will be explained in the path model below, all the effects discussed in the chapter have been tested for the type of relationship that exists between their antecedents and consequences. Although no formal discussion on these tests is provided in the present chapter, the appropriate tables for tests of linearity appear in Appendix C.

Main Effect Relationships

Path analysis has been performed in order to test the following hypotheses:

- H₁ - Perceived disconfirmation of product safety performance will be positively related to the prior safety expectations and to the objective safety disconfirmation.

TABLE 10

PAIRED T-TEST: ATTITUDE BEFORE VS. ATTITUDE AFTER IN
THE EXPERIMENTAL AND CONTROL GROUPS

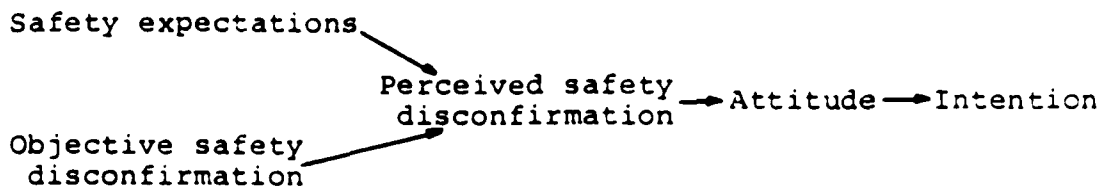
GROUP	MEASURE	MEAN	MEAN (a) DIFFERENCES	S.D.	T VALUE	D.F.	SIGNIFI- CANCE
Control group	Before vs. After	31.5854 83.7073	-2.1220	10.727	-1.27	40	N.S. (b)
Experimental groups	Before vs. After	30.5458 67.8566	13.8690	28.04	7.85	251	P < 0.01

(a)
The differences are measured as: Before-After

(b)
P > 0.10

- H₉ - Consumers' attitudes toward the unsafe product (brand) will be positively related to their perception of safety disconfirmation.
- H₁₀ - Intention to use or buy the unsafe brand will be positively related to the change of attitude toward this brand.

When these hypotheses are combined the following causal model emerges:



Although the first three hypotheses are concerned with the effect of expectation and objective disconfirmation on perceived disconfirmation, the ninth hypothesis deals with the relationship between perception of disconfirmation and attitude. The tenth hypothesis deals with the relationship between attitude and intention.

Table 11 shows the results obtained from the path analysis that tested the temporal precedence hypothesized. The findings reveal that the sequence of perceived disconfirmation → attitude → intention is statistically significant, and hence it supports the ninth and tenth hypotheses. That is, the increased level of negative disconfirmation produces a higher level of negative attitude toward the unsafe brand, and, consequently negatively affects the intention to purchase this brand. Moreover,

TABLE 11

PATH COEFFICIENTS OF THE RELATIONSHIP BETWEEN
THE ANTECEDENTS AND THE CONSEQUENCES OF PERCEIVED DISCONFIRMATION
(N=248)

VARIABLE	STRUCTURAL EQUATIONS	R ²
Z_1 : Expectation	-	
Z_2 : Objective Disconfirmation	-	
Z_3 : Perceived Disconfirmation	$-.01Z_2^{(a)} - .09Z_1^{(a)}$	.01 ^(a)
Z_4 : Attitude	$.33Z_3^{(b)} + .12Z_2^{(a)} + .30Z_1^{(b)}$	.14 ^(b)
Z_5 : Intention	$.76Z_4^{(b)} + .12Z_3^{(b)} - .08Z_2^{(a)} - .11Z_1^{(a)}$	.63 ^(b)

(a)
P > 0.10

(b)
P < 0.01

expectations appear to have a direct positive effect on attitude. Similarly, perceived disconfirmation has a direct, positive effect on purchase intention. However, both expectations and objective disconfirmation were found to be independent from perceived disconfirmation.

Although the first hypothesis was not confirmed, moderating variables may explain this result, as predicted by hypothesis 2 through hypothesis 8, which are presented in the following section.

The Moderating Effects

The moderating variables are assumed to be exogenous effects to the path model presented in the previous section. In order to test the moderating variables' effect on the relationship between perceived disconfirmation and its determinants, analysis of covariance was performed. This statistical technique allowed the test between expectation and perceived disconfirmation, and between objective disconfirmation and objective disconfirmation after removing the effect of a potential moderating variable.

The following presents the results found after using each of the moderating variables as a covariate, thereby testing the moderating effects hypothesized in Chapter V. These findings are reported in the same sequence as the hypotheses: communication variables, involvement variables, and coping style variables.

Communication Variables

The following two hypotheses regarding the communication variables have been tested:

H₂ - The consumer's perception of the communication source credibility positively affects the relationship between PD and its determinants.

H₃ - A factual warning communication affects more positively the relationship between PD and its determinants than an evaluative warning communication.

Hypothesis 2 predicted that source credibility would have a positive expectation and actual performance. Source credibility was measured here by two variables: trustworthiness and knowledgeability. Although trustworthiness may reflect the perceived intention or motivation of the source to provide the information, knowledgeability reflects the degree of the source expertise.

As hypothesized, Tables 12 and 13 show that both source credibility variables affect positively the relationship between safety expectation and perceived disconfirmation, and between objective disconfirmation and perceived disconfirmation. Because all of the covariates' raw-regression coefficient is preceded with a minus sign, it can be concluded that increasing the level of source credibility increases the source effectiveness and thus produces a stronger level of negative disconfirmation.

TABLE 12

THE MODERATING EFFECT OF SOURCE CREDIBILITY VARIABLES
ON THE RELATIONSHIP BETWEEN SAFETY EXPECTATION AND
PERCEIVED DISCONFIRMATION

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFICANCE ^(a)
Covariants				
Trustworthy	1	5878.453	8.891	P < 0.01
Main effect	8	1170.987	1.771	P < 0.09
Explained	9	1694.042	2.562	P < 0.01
Residual	240	661.144		
Total	249	698.478		
Covariate raw-regression coefficient				
Trustworthy		-0.199		
Covariates				
Knowledgeable	1	4432.055	6.584	P < 0.02
Main effect	8	1304.075	1.937	P < 0.06
Explained	9	1651.632	2.454	P < 0.02
Residual	239	673.140		
Total	248	708.650		
Covariate raw-regression coefficient				
Knowledgeable		-0.150		

(a)

N.S. = P > 0.10

TABLE 13

THE MODERATING EFFECT OF SOURCE CREDIBILITY VARIABLES
ON THE RELATIONSHIP BETWEEN OBJECTIVE DISCONFIRMATION
AND PERCEIVED DISCONFIRMATION

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFICANCE ^(a)
Covariates				
Trustworthy	1	5878.454	9.201	P < 0.01
Main effect	10	1598.175	2.501	P < 0.01
Explained	11	1987.295	3.110	P < 0.01
Residual	238	638.910		
Total	249	698.478		
Covariate raw-regression coefficient				
Trustworthy		-0.199		
Covariates				
Knowledgeable	1	4432.055	6.771	P < 0.02
Main effect	10	1618.945	2.473	P < 0.01
Explained	11	1874.688	2.864	P < 0.01
Residual	237	654.530		
Total	248	708.650		
Covariate raw-regression coefficient				
Knowledgeable		-0.150		

(a)

N.S. = P > 0.10

Another communication characteristic that was tested was the effect of the message content, i.e., factual vs. evaluative content on the formation of perceived disconfirmation. It was hypothesized that factual content will have a stronger impact on perceived disconfirmation formation than evaluative content. Since the message type is a nominal variable, Newman-Keuls range test was used to test the effect of all types of messages on perceived safety disconfirmation. The factual/evaluative content of the message is compared at one level of safety warning. Thus the following two pairs are compared: brand weak evaluative vs. brand weak factual, and brand strong evaluative vs. brand strong factual.

Table 14 shows that only the latter comparison supports the hypothesized relationship. This partial support of the third hypothesis may be explained by the fact that, although unexpected, their relationship did not occur for the weak messages. Hence, because both messages are weak, they may have a small effect on perceived disconfirmation. However, the latter suggestion was tested and no difference was found between any of the two possible pairs of messages. This test indicated no significant ($p < 0.05$) effect of the message content type on perception of danger performance. This measure of perceived performance was used because perceived disconfirmation, by definition, is a function of expectations and perception

TABLE 14

NEWMAN-KEULS RANGE TEST FOR THE DIFFERENCE OF PERCEIVED
DISCONFIRMATION BETWEEN THE TYPE OF MESSAGE EXPOSURE

GROUP	MEAN	BRAND STRONG EVALUATIVE	BRAND WEAK FACTUAL	PRODUCT WEAK FACTUAL	BRAND WEAK EVALUATIVE	BRAND STRONG FACTUAL	PRODUCT STRONG FACTUAL
BRAND STRONG EVALUATIVE	27.8750						
BRAND WEAK FACTUAL	37.6875	N.S. (a)					
PRODUCT WEAK FACTUAL	37.8205	N.S.	N.S.				
BRAND WEAK EVALUATIVE	39.8837	N.S.	N.S.	N.S.			
BRAND STRONG FACTUAL	45.4130	P < 0.05	N.S.	N.S.	N.S.		
PRODUCT STRONG FACTUAL	45.9762	P < 0.05	N.S.	N.S.	N.S.	N.S.	

(a) $P > 0.05$

of performance. Because expectation is a pre-exposure variable, perceived danger performance was selected for this analysis.

Hence, the findings suggest that the level of the message in terms of content may have an increasing effect on the magnitude of perception of disconfirmation.

Involvement Variables

Five involvement variables were tested for their effect on the relationship between perceived disconfirmation and its determinants, and the following have been hypothesized:

- H₄ - Vulnerability has a negative effect on the relationship between perceived disconfirmation and its determinants.
- H₅ - The post-perceived risk positively affects the relationship between perceived disconfirmation and its determinants.
- H₆ - Ego and product involvement negatively affects the relationship between perceived disconfirmation and its determinants.

Tables 15 and 16 present these results. The findings show a consistent pattern of effects of the involvement variables in both cases: when the moderating effect is tested between expectation and perceived disconfirmation (Table 15) and when the moderating effect is examined between objective disconfirmation and perceived disconfirmation (Table 16).

TABLE 15

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THE MODERATING EFFECT OF INVOLVEMENT VARIABLES ON THE
RELATIONSHIP BETWEEN SAFETY EXPECTATION AND PERCEIVED DISCONFIRMATION

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFICANCE ^(a)
Covariates				
Post Perceived Risk	1	11602.410	18.094	P < 0.01
Main effect	8	1441.200	2.248	P < 0.03
Explained	9	2570.229	4.008	P < 0.01
Residual	244	641.233		
Total	253	709.853		
Covariate raw-regression coefficient				
Perceived Risk		-0.253		
Covariates				
Perceived Vulnerability/Risk	1	6761.953	10.057	P < 0.01
Main effect	8	1032.779	1.536	N.S.
Explained	9	1669.354	2.483	P < 0.01
Residual	244	672.395		
Total	253	707.860		
Covariate raw-regression coefficient				
Perceived Vulnerability		0.185		
Covariates				
Relevance	1	274.522	0.396	N.S.
Main effect	8	1322.416	1.908	P < 0.06
Explained	9	1205.986	1.740	P < 0.09
Residual	245	693.031		
Total	254	711.207		
Covariate raw-regression coefficient				
Relevance		1.261		
Covariates				
Ego-involvement	1	7913.469	11.826	P < 0.01
Main effect	8	1189.757	1.778	P < 0.09
Explained	9	1936.840	2.894	P < 0.01
Residual	243	669.146		
Total	252	714.421		
Covariate raw-regression coefficient				
Ego-involvement		0.167		
Covariates				
Product-involvement	1	5547.277	8.236	P < 0.01
Main effect	8	1246.408	1.851	P < 0.07
Explained	9	1724.285	2.560	P < 0.01
Residual	242	673.520		
Total	251	711.197		
Covariate raw-regression coefficient				
Product-involvement		0.155		

(a) N.S. = P > 0.10

TABLE 16

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THE MODERATING EFFECT OF INVOLVEMENT VARIABLES ON THE
RELATIONSHIP BETWEEN OBJECTIVE DISCONFIRMATION AND PERCEIVED DISCONFIRMATION

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFICANCE ^(a)
Covariates				
Post Perceived Risk	1	11602.410	18.530	P < 0.01
Main effect	10	1474.678	2.329	P < 0.02
Explained	11	2395.306	3.783	P < 0.01
Residual	242	633.238		
Total	253	709.853		
Covariate raw-regression coefficient Perceived Risk				-0.253
Covariates				
Perceived Vulnerability/Risk	1	6761.953	10.211	P < 0.01
Main effect	10	1206.612	1.822	P < 0.06
Explained	11	1711.648	2.585	P < 0.01
Residual	242	662.233		
Total	253	707.860		
Covariate raw-regression coefficient Perceived Vulnerability				0.185
Covariates				
Relevance	1	600.355	0.886	N.S.
Main effect	10	1541.992	2.276	P < 0.02
Explained	11	1456.392	2.150	P < 0.02
Residual	243	677.474		
Total	254	711.207		
Covariate raw-regression coefficient Relevance				0.699
Covariates				
Ego-involvement	1	7913.469	11.952	P < 0.01
Main effect	10	1254.959	1.895	P < 0.05
Explained	11	1860.278	2.810	P < 0.02
Residual	241	662.121		
Total	252	714.421		
Covariate raw-regression coefficient Ego-involvement				0.167
Covariates				
Product-involvement	1	5547.277	8.729	P < 0.01
Main effect	10	1379.314	2.730	P < 0.03
Explained	11	1758.221	2.651	P < 0.01
Residual	240	663.208		
Total	251	711.197		
Covariate raw-regression coefficient Product-involvement				0.155

(a) N.S. = P > 0.10

As predicted in the fifth hypothesis, there is a positive (a negative sign of the covariate raw-regression coefficient) effect of post-perceived risk on perceived disconfirmation. Hence, when the safety hazard message creates high risk perception, it causes a greater degree of perceived negative disconfirmation. As expected the opposite effect was found for perceived vulnerability/risk (the pre-exposure safety risk perception), ego involvement, and product involvement, thereby supporting the fourth and sixth hypotheses. Although each of these moderating variables represents a different component of involvement, all of these factors reflect the avoidance response to the fear stimulus as suggested by Leventhal's (1970) parallel response model.

The objective measure of vulnerability/risk, i.e., relevance, however, was found to have an insignificant effect as a moderating variable on the relationship between perceived disconfirmation and its determinants. Because it is the only objective measure of involvement that was tested here, and the only one that was not insignificant, this, of itself, may suggest a reason for its failure to support the fourth hypothesis. Previously, this measure was used in the fear literature as representing the extremes, e.g., heavy drivers vs. light drivers (Bukowitz and Cottingham, 1960) or smokers vs. non-smokers (Insko, Arkoff and Insko, 1965), and hence may be relevant only in

those extreme cases. Therefore, the present findings may suggest that this objective message may have a lesser sensitivity than the subjective one.

Coping-style Variables

Self-esteem and brand loyalty represent the coping-style variables examined here testing the two following hypotheses:

- H₇ - Self-esteem positively affects the relationship between perceived disconfirmation and its determinants.
- H₈ - Brand loyalty negatively affects the relationship between perceived disconfirmation and its determinants.

Tables 17 and 18 respectively show that the coping-style variables do not moderate the relationship between expectation and perceived disconfirmation, and between objective disconfirmation and perceived disconfirmation.

The present study cannot explain why brand loyalty does not moderate the relationship hypothesized in the eighth hypothesis, but it offers an explanation similar to that regarding the relevance variable. Roselius's (1971) findings, which indicate that brand loyalty is the best "reliever" of feelings of potential hazard loss, were based on a subjective measure of brand loyalty. The present study's measure, on the other hand, is an objective one based on the time usage of the same brand. Therefore, it is a possible measurement problem and not a conceptual one.

TABLE 17

THE MODERATING EFFECT OF COPING-STYLE VARIABLES
ON THE RELATIONSHIP BETWEEN SAFETY EXPECTATION AND
PERCEIVED DISCONFIRMATION

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFICANCE ^(a)
Covariates				
Self-esteem	1	1777.915	2.647	N.S.
Main effect	8	1603.573	2.388	P < 0.02
Explained	9	1622.951	2.417	P < 0.02
Residual	241	671.570		
Total	250	705.820		
Covariate raw-regression coefficient				
Self-esteem		0.033		
Covariates				
Brand Loyalty	1	600.355	0.866	N.S.
Main effect	8	1264.864	1.824	P < 0.08
Explained	9	1191.035	1.717	P < 0.09
Residual	245	693.580		
Total	254	711.207		
Covariate raw-regression coefficient				
Brand Loyalty		0.699		

(a)

N.S. = P > 0.10

TABLE 13

THE MODERATING EFFECT OF COPING-STYLE VARIABLES
ON THE RELATIONSHIP BETWEEN OBJECTIVE DISCONFIRMATION AND
PERCEIVED DISCONFIRMATION

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFICANCE ^(a)
Covariates				
Self-esteem	1	1777.915	2.704	N.S.
Main effect	10	1755.940	2.671	P < 0.01
Explained	11	1757.943	2.674	P < 0.01
Residual	239	657.396		
Total	250	705.820		
Covariate raw-regression coefficient				
Self-esteem		0.033		
Covariates				
Brand Loyalty	1	274.522	0.404	N.S.
Main effect	10	1545.094	2.277	P < 0.02
Explained	11	1429.591	2.106	P < 0.03
Residual	243	678.687		
Total	254	711.207		
Covariate raw-regression coefficient				
Brand Loyalty		1.261		

(a)

N.S. = P > 0.10

Nevertheless, the reason that self-esteem was found to have an insignificant effect may be due to the fact that it is actually not a moderating variable, but an intervening one. The rationale for this suggestion is based on the fact that it is the only personality variable used here, and, by its nature, it is part of the individual's response mechanism. Hence, this coping-style variable is not product related; rather, it is a reflection of the consumer's general self-confidence. As part of a general personality characteristic, it can be considered as a pure intervening variable. Data analyses relevant to this suggestion is presented in the last part of this chapter, with other suggested intervening variables.

Purchase Intention: The Situational Effect

The following hypothesis presents the effect of situational conditions on consumers' purchase intentions after exposure to safety hazard information:

- H₁₁ - Intention change is stronger when the safety hazard communication is directed toward the specific brand consumers use than it is when the whole class of this product is suspected of being hazardous.

This hypothesis suggests that, when the number of alternative behaviors is limited, less change of purchase intention is observed than when there are more alternatives. Hence, a safety hazard communication warning of a potential

hazard of a product class will produce less intention change than the same hazard information provided only toward a specific brand name.

Table 19 reveals that this hypothesis is confirmed. Hence, one may change his attitude toward a product class but, because there are few or no alternatives, one may be reluctant to change his intention and consequently reluctant to change his behavior. This conclusion becomes more plausible because no such effect was found between product and brand messages when they were tested against the post-exposure attitude or attitude change.

Additional Findings

Here alternative models are presented after adding appropriate intervening variables together with main effects, which may provide a better understanding of the effect of a safety hazard communication on consumer behavior. In addition, relevant findings beyond these models are presented at the end of this section.

Intervening Variables' Effects

Although analysis of covariance was used earlier to test the relationship between perceived disconfirmation and its determinants after removing the effect of the moderating variables, path analysis is used in this section to examine the effect of the intervening variables on this relationship. This analysis is used here because the intervening variables are assumed to be an integral part of this study's model.

TABLE 19

ANOVA: INTENTION DIFFERENCES BETWEEN THE PRODUCT AND BRAND MESSAGES

SOURCE OF VARIATION	SUM OF SQUARES	D.F.	MEAN SQUARE	F	SIGNIFICANCE
Between Messages	7152.082	1	7152.082	8.601	P < 0.01
Within Messages	208728.125	251	831.586		
Total	215880.250	252	856.667		

Because the path analysis performed at the beginning of this chapter reveals no significant effects on perceived disconfirmation and its determinants, intervening variables are examined. A variable is considered to be intervening when the following relationships are significant: (1) expectation \rightarrow intervening variable \rightarrow perceived disconfirmation; (2) objective disconfirmation \rightarrow intervening variable \rightarrow perceived disconfirmation; or (3) both sequences. First, the moderating variables are examined as intervening variables. Table 20 and Table 21 present, respectively, the effect of source credibility variables and involvement variables as intervening variables. These tables show that objective disconfirmation is not related to any of these variables and, also, that objective disconfirmation is independent of perceived disconfirmation. Out of the six moderating variables, only three were found to be intervening variables between expectation and perceived disconfirmation. Moreover, the involvement variables were found to have a logarithmic relationship with expectation. These results support the conceptualization presented in Chapter II, which suggested a greater difficulty of stimulus differentiation (internal as well as external) as the level of expectation increases. This result was suggested by the Weber-Fechner Law of just noticeable difference.

TABLE 20

PATH COEFFICIENTS OF THE EFFECT OF CREDIBILITY
ON THE RELATIONSHIP BETWEEN THE ANTECEDENTS AND
THE CONSEQUENCES OF PERCEIVED DISCONFIRMATION

MODERATING EFFECT	VARIABLE	STRUCTURAL EQUATIONS	R ²
TRUSTWORTHY (N=243)	Z ₁ : Expectation		
	Z ₂ : Objective Disconfirmation		
	Z ₃ : Trustworthy	.03Z ₂ ^(a) + .13Z ₁ ^(c)	.03 ^(a)
	Z ₄ : Perceived Disconfirmation	-.20Z ₃ ^(b) -.04Z ₂ ^(a) -.11Z ₁ ^(a)	.05 ^(b)
	Z ₅ : Attitude	.32Z ₄ ^(b) + .00Z ₃ -.11Z ₂ ^(a) + .11Z ₁ ^(a)	.13 ^(b)
	Z ₆ : Intention	.75Z ₅ ^(b) + .11Z ₄ ^(b) -.06Z ₃ ^(a) + .08Z ₂ ^(a) + .04Z ₁ ^(a)	.53 ^(b)
KNOWLEDGEABLE (N=242)	Z ₁ : Expectation		
	Z ₂ : Objective Disconfirmation		
	Z ₃ : Knowledgeable	.14Z ₂ ^(a) + .13Z ₁ ^(a)	.02 ^(a)
	Z ₄ : Perceived Disconfirmation	-.17Z ₃ ^(b) + .05Z ₂ ^(a) -.05Z ₁ ^(a)	.04 ^(c)
	Z ₅ : Attitude	.32Z ₄ ^(b) -.06Z ₃ ^(a) -.12Z ₂ ^(a) + .10Z ₁ ^(a)	.15 ^(b)
	Z ₆ : Intention	.76Z ₅ ^(b) + .11Z ₄ ^(b) -.03Z ₃ ^(a) + .10Z ₂ ^(a) + .05Z ₁ ^(a)	.54 ^(b)

(a) P > 0.10

(b) P < 0.01

(c) P < 0.05

TABLE 21

PATH COEFFICIENTS OF THE EFFECT OF INVOLVEMENT ON THE
RELATIONSHIP BETWEEN THE ANTECEDENTS AND
THE CONSEQUENCES OF PERCEIVED DISCONFIRMATION

MODERATING EFFECT	VARIABLE	STRUCTURAL EQUATIONS	R ²
POST PERCEIVED RISK (N=247)	Z ₁ : Expectation		
	Z ₂ : Objective Disconfirmation		
	Z ₃ : Perceived Risk	.16Z ₂ ^(a) + .12Z ₁ ^(a)	.01 ^(a)
	Z ₄ : Perceived Disconfirmation	-.29Z ₃ ^(b) + .05Z ₂ ^(a) - .07Z ₁ ^(a)	.09 ^(b)
	Z ₅ : Attitude	.25Z ₄ ^(b) - .27Z ₃ ^(b) - .07Z ₂ ^(a) + .12Z ₁ ^(a)	.22 ^(b)
	Z ₆ : Intention	.72Z ₅ ^(b) + .09Z ₄ ^(c) - .13Z ₃ ^(b) - .11Z ₂ ^(d) + .04Z ₁ ^(a)	.65 ^(b)
PERCEIVED VULNERABILITY/ RISK (N=247)	Z ₁ : Expectation		
	Z ₂ : Objective Disconfirmation		
	Z ₃ : Perceived Vulnerability	-.11Z ₂ ^{(*) (a)} - .32Z ₁ ^{(*) (b)}	.06 ^(b)
	Z ₄ : Perceived Disconfirmation	.18Z ₃ ^(b) + .01Z ₂ ^(a) - .04Z ₁ ^(a)	.04 ^(c)
	Z ₅ : Attitude	.35Z ₄ ^(b) - .08Z ₃ ^(a) - .12Z ₂ ^(a) + .08Z ₁ ^(a)	.15 ^(b)
	Z ₆ : Intention	.75Z ₅ ^(b) + .13Z ₄ ^(b) - .02Z ₃ ^(a) + .08Z ₂ ^(a) + .02Z ₁ ^(a)	.63 ^(b)
EGO- INVOLVEMENT (N=256)	Z ₁ : Expectation		
	Z ₂ : Objective Disconfirmation		
	Z ₃ : Ego- Involvement	-.01Z ₂ ^(a) - .16Z ₁ ^{(*) (c)}	.02 ^(a)
	Z ₄ : Perceived Disconfirmation	.22Z ₃ ^(b) - .01Z ₂ ^(a) - .08Z ₁ ^(a)	.06 ^(b)
	Z ₅ : Attitude	.29Z ₄ ^(b) + .17Z ₃ ^(b) - .11Z ₂ ^(a) + .12Z ₁ ^(a)	.17 ^(b)
	Z ₆ : Intention	.76Z ₅ ^(b) + .12Z ₄ ^(b) + .01Z ₃ ^(a) + .08Z ₂ ^(a) + .02Z ₁ ^(a)	.63 ^(b)

(continued)

TABLE 21 (CONTINUED)

MODERATING EFFECT	VARIABLE	STRUCTURAL EQUATIONS	R ²
PRODUCT INVOLVEMENT (N=245)	Z ₁ : Expectation		
	Z ₂ : Objective Disconfirmation		
	Z ₃ : Product-Involvement	$.10Z_2^{(a)} + .06Z_1^{(a)}$	.00
	Z ₄ : Perceived Disconfirmation	$.18Z_3^{(b)} - .04Z_2^{(a)} - .12Z_1^{(a)}$	.04 ^(c)
	Z ₅ : Attitude	$.33Z_4^{(b)} - .04Z_3^{(a)} - .12Z_2^{(a)} - .10Z_1^{(a)}$	.14 ^(b)
Z ₆ : Intention	$.75Z_5^{(b)} + .12Z_4^{(b)} - .02Z_3^{(a)} + .08Z_2^{(a)} Z_2 + .02Z_1^{(a)}$	.63 ^(b)	

(a) $P > 0.10$ (b) $P < 0.01$ (c) $P < 0.05$ (d) $0.10 \geq P \geq 0.05$

(*) After logarithmic (LN) transformation

From the non-moderating variables (Table 22) only self esteem was found to be an intervening variable between expectation and perceived disconfirmation.

However, with the exception of the knowledgeability dimension of source credibility and relevance of the involvement variables, all other variables from the "non-moderating" group intervened in terms of affecting attitude or intention. Hence, these variables are important elements of this modified model, although not in the way that was initially anticipated.

Although the intervening variables affected the relationship between expectations and perceived disconfirmation, no such effect was found between objective disconfirmation and perceived disconfirmation. Moreover, how the combined effect of all intervening may affect these relationships was not revealed.

The analysis of covariance presented in Table 23 indicates a significant moderating effect for the pooled or combined intervening variables on the relationship between perceived disconfirmation and its determinants.

Model 1 in Table 24 shows that the pooled intervening effects show the same average relationship expected from all the intervening variables. Hence, in addition to the main effect relationship found earlier, the relationship between expectation and perceived disconfirmation is significant. Further, this effect also influences attitude. When removing

TABLE 22

PATH COEFFICIENTS OF THE EFFECT OF THE NON-MODERATING VARIABLES ON THE RELATIONSHIP BETWEEN THE ANTECEDENTS AND THE CONSEQUENCES OF PERCEIVED DISCONFIRMATION

EFFECT	STRUCTURAL EQUATIONS	R ²
SELF-ESTEEM (N=244)	Z_1 : Expectation -	
	Z_2 : Objective Disconfirmation -	
	Z_3 : Self-Esteem $-.03Z_2^{(a)} + .29Z_1^{(b)}$	.10 (b)
	Z_4 : Perceived Disconfirmation $.15Z_3^{(c)} .02Z_2^{(a)} -.13Z_1^{(a)}$	.03 (a)
	Z_5 : Attitude $.33Z_4^{(b)} .09Z_3^{(a)} -.12Z_2^{(a)} + .07Z_1^{(a)}$	.15 (b)
	Z_6 : Intention $.75Z_5^{(b)} + .14Z_4^{(b)} + .04Z_3^{(a)} + .35Z_2^{(a)} - .02Z_1$	.65 (b)
BRAND LOYALTY (N=244)	Z_1 : Expectation -	
	Z_2 : Objective Disconfirmation -	
	Z_3 : Brand Loyalty $.06Z_2^{(a)} -.18Z_1^{(a)}$	.02 (a)
	Z_4 : Perceived Disconfirmation $.06Z_3^{(a)} + 0.02Z_2^{(a)} -.09Z_1^{(a)}$	.01 (a)
	Z_5 : Attitude $.32Z_4^{(b)} + .10Z_3^{(a)} - 1.12Z_2^{(a)} + 1.12Z_1^{(a)}$	.15 (a)
	Z_6 : Intention $.75Z_5^{(b)} + .12Z_4^{(b)} -.08Z_3^{(c)} + .09Z_2^{(a)} + .04Z_1^{(a)}$	.64 (a)
RELEVANCE (N=248)	Z_1 : Expectation -	
	Z_2 : Objective Disconfirmation -	
	Z_3 : Relevance $-.06Z_2^{(a)} .10Z_1^{(a)}$	.00
	Z_4 : Perceived Disconfirmation $-.10Z_3^{(a)} - 0.02Z_2^{(a)} + .02Z_1^{(a)}$	.00 (a)
	Z_5 : Attitude $.33Z_4^{(b)} + .07Z_3^{(a)} -.11Z_2^{(a)} + 1.12Z_1^{(a)}$	.13 (b)
	Z_6 : Intention $.75Z_5^{(b)} + .12Z_4^{(b)} -.02Z_3^{(a)} + .08Z_2^{(a)} - .02Z_1^{(a)}$	.63 (b)

(a) $p > 0.10$ (b) $p < 0.01$ (c) $p < 0.05$

TABLE 23

THE POOLED EFFECT OF THE INTERVENING VARIABLES ON THE RELATIONSHIP
BETWEEN OBJECTIVE DISCONFIRMATION AND PERCEIVED DISCONFIRMATION, AND
BETWEEN EXPECTATION AND PERCEIVED DISCONFIRMATION

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- ^(a) CANCE
OBJECTIVE DISCONFIRMATION				
Covariates				
Pooled Intervening Effect	1	26471.016	46.922	P < 0.01
Main Effect	10	1025.090	1.817	P < 0.06
Explained	11	3338.358	5.917	P < 0.01
Residual	225	564.154		
Total	236	693.460		
Covariate Raw-regression Coefficient				
Pooled Moderating Effect		0.123		
EXPECTATION				
Covariates				
Pooled Intervening Effect	1	26471.016	46.228	P < 0.01
Main effect	10	900.044	1.572	N.S.
Explained	11	3741.264	6.665	P < 0.01
Residual	227	572.622		
Total	236	693.460		
Covariate Raw-regression Coefficient				
Pooled Moderating Effect		0.123		

(a) N.S. = $P > 0.10$

TABLE 24

PATH ANALYSIS: THE INTERVENING VARIABLES'
 POOLED EFFECT ON THE STUDY'S MODEL

(N=230)

MODEL	VARIABLE	STRUCTURAL EQUATIONS	R ²
MODEL 1	Z ₁ : Expectation	-	
	Z ₂ : Objective Disconfirmation	-	
	Z ₃ : Pooled Intervening Effect	.12Z ₂ ^(a) + .29Z ₁ ^(b)	.04 ^(c)
	Z ₄ : Perceived Disconfirmation	-.44Z ₃ ^(b) + .03Z ₂ ^(a) - .01Z ₁ ^(a)	.20 ^(b)
	Z ₅ : Attitude	.24Z ₄ ^(b) - .18Z ₃ ^(b) - .10Z ₂ ^(a) + .14Z ₁ ^(a)	.15 ^(b)
	Z ₆ : Intention	.75Z ₅ ^(b) + .09Z ₄ ^(a) - .07Z ₃ ^(a) + .13Z ₂ ^(d) + .07Z ₁ ^(a)	.64 ^(b)
MODEL 2	Z ₁ : Expectation	-	
	Z ₂ : Pooled Intervening Effect	.19Z ₁ ^(b)	.04 ^(b)
	Z ₃ : Perceived Disconfirmation	-.44Z ₂ ^(b) - .03Z ₁ ^(a)	.20 ^(b)
	Z ₄ : Attitude	.24Z ₃ ^(b) - .18Z ₂ ^(b) + .22Z ₁ ^(b)	.15 ^(b)
	Z ₅ : Intention	.75Z ₄ ^(b) + .09Z ₃ ^(c) - .07Z ₂ ^(a) + .04Z ₁ ^(a)	.64 ^(b)

(a) P > 0.10

(b) P < 0.01

(c) P < 0.05

(d) 0.10 ≤ P ≤ 0.05

objective disconfirmation from the model, all of the expected relationships remain significant.

However, it is not reasonable to assume that the actual performance is independent or that it at least indirectly affects the perceived disconfirmation, because perception of disconfirmation must start with some objective discrepancy from expectation. Nevertheless, model A in Table 25 shows that actual danger performance is not related directly or indirectly to perceived disconfirmation. However, perceived actual performance is strongly related to the pooled intervening effects, perceived disconfirmation and, although not anticipated, to purchase intention.

Figure 8 partially explains why actual and perceived performances differ. As suggested by Lichtenstein, Slovic, Fischhoff, Layman and Combs (1978) individuals tend to underestimate high frequencies of lethal events. Hence, the larger the magnitude of actual danger (frequency) the higher is the under-estimation of this frequency. It becomes even stronger when this danger is very high in terms of the whole product class. As Table 26 and Figure 8 indicate, most of these under-estimates are significant.

It is important to know what variables may affect or cause this process of under-estimation. Of all the moderating and intervening variables, only one variable was found to have a significant effect on the formation of perceived

TABLE 25

ALTERNATIVE MODELS: PATH COEFFICIENTS OF THE
RELATIONSHIP BETWEEN THE ANTECEDENTS AND THE
CONSEQUENCES OF PERCEIVED DISCONFIRMATION

MODEL	VARIABLE	STRUCTURAL EQUATIONS	R ²
MODEL A	Z ₁ : Expectation	-	
	U ₂ : Actual Performance	-	
	Z ₃ : Pooled Intervening Effect	.07Z ₂ ^(a) + .19Z ₁ ^(b)	.04 ^(c)
	U ₄ : Perceived Disconfirmation	-.44Z ₃ ^(b) + .02Z ₂ ^(a) - .03Z ₁ ^(a)	.20 ^(b)
	Z ₅ : Attitude	.24Z ₄ ^(b) - .18Z ₃ ^(b) - .05Z ₂ ^(a) + .22Z ₁ ^(b)	.15 ^(b)
	U ₆ : Intention	.75Z ₅ ^(b) + .09Z ₄ ^(a) - .07Z ₃ ^(a) + .07Z ₂ ^(a) - .04Z ₁ ^(a)	.64 ^(b)
MODEL B	U ₁ : Expectation	-	
	U ₂ : Perceived Actual Performance	-	
	Z ₃ : Pooled Intervening Effect	.41Z ₂ ^(b) + .17Z ₁ ^(b)	.19 ^(b)
	U ₄ : Perceived Disconfirmation	-.39Z ₃ ^(b) + .10Z ₂ ^(a) + .03Z ₁ ^(a)	.21 ^(b)
	Z ₅ : Attitude	.21Z ₄ ^(b) - .11Z ₃ ^(a) - .18Z ₂ ^(b) + .21Z ₁ ^(b)	.16 ^(b)
	Z ₆ : Intention	.72Z ₅ ^(b) + .18Z ₄ ^(a) - .01Z ₃ ^(a) - .16Z ₂ ^(b) - .04Z ₁ ^(a)	.65 ^(b)

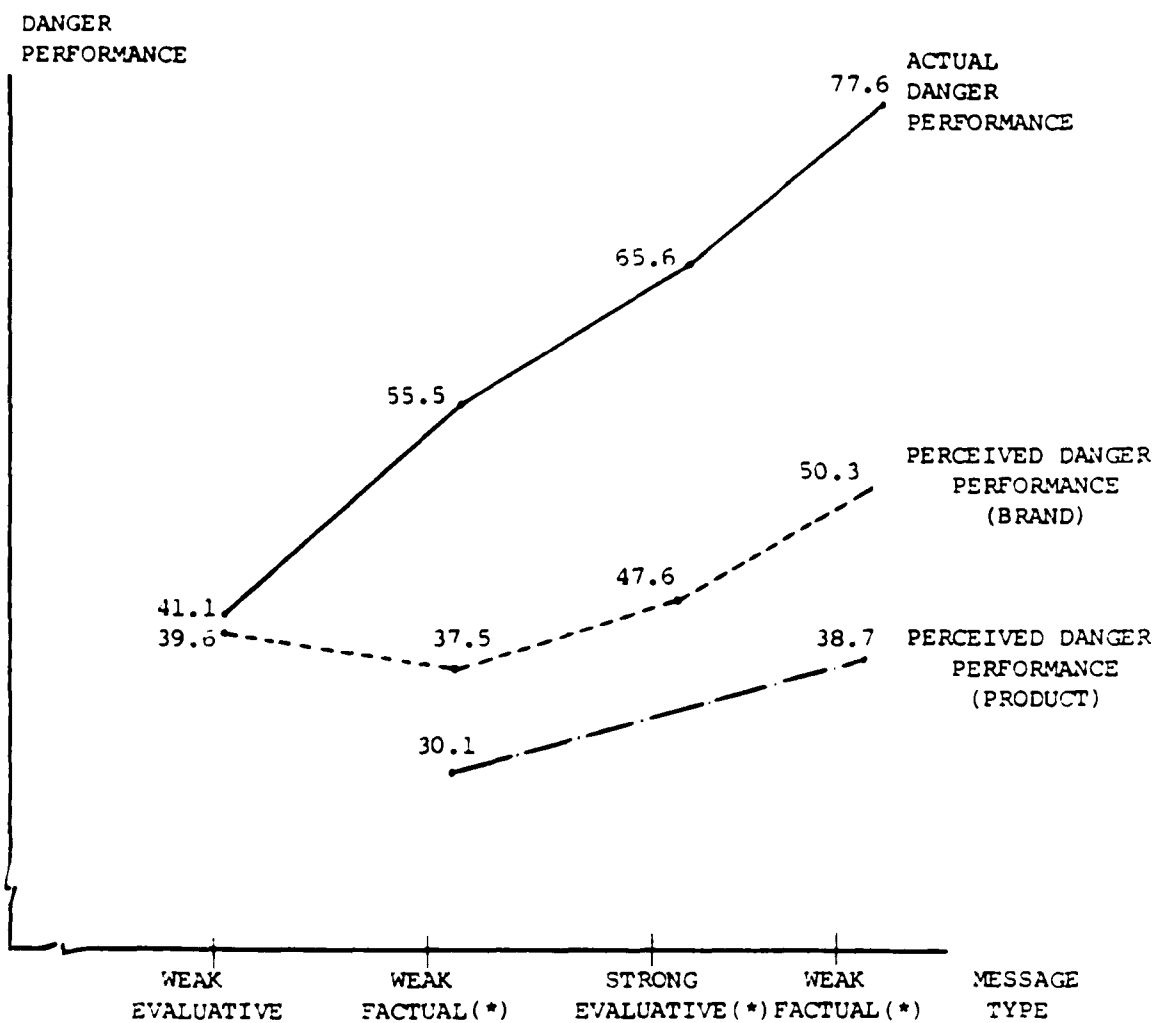
(a) P > 0.10

(b) P < 0.01

(c) P < 0.05

FIGURE 8

THE ACTUAL VS. PERCEIVED MEANS OF DANGER PERFORMANCE
BASED ON THE TYPE OF MESSAGE EXPOSURE



(*)

Based on T-TEST analysis the actual danger performance is significantly ($P < 0.05$) higher than the perceived danger performance.

TABLE 26

NEWMAN-KEULS RANGE TEST FOR THE DIFFERENCE BETWEEN
PERCEIVED DANGER PERFORMANCE DUE TO THE TYPE OF
MESSAGE EXPOSURE

GROUP	MEAN	PRODUCT WEAK FACTUAL	PRODUCT STRONG FACTUAL	BRAND WEAK FACTUAL	BRAND WEAK EVALUATIVE	BRAND STRONG EVALUATIVE	BRAND STRONG FACTUAL
PRODUCT WEAK FACTUAL	26.0256						
PRODUCT STRONG FACTUAL	30.1429	N.S. (a)					
BRAND WEAK FACTUAL	37.4583	N.S.	N.S.				
BRAND WEAK EVALUATIVE	39.6046	P < 0.05	N.S.	N.S.			
BRAND STRONG EVALUATIVE	47.5957	P < 0.05	P < 0.05	N.S.	N.S.		
BRAND STRONG FACTUAL	50.2820	P < 0.05	P < 0.05	P < 0.05	N.S.	N.S.	

(a) $p > 0.05$

disconfirmation, specifically post-perceived risk. This variable is the most natural one to explain the discrepancy between perceived and actual performance because as danger in the message increases it would be expected that perceived risk would increase. Consequently, the higher the risk perception, the higher will be the danger performance perception.

Tables 27 and 28 represent these relationships. Because the under-estimation process was stronger for those exposed to the product messages (see Figure 7) the brand and product groups were analyzed separately. For the product only, where the greater distortion of actual performance occurred, Table 28 shows that both expectation and actual performance relate to perception of risk. This may also indicate a possibility of less readiness for change as was found by testing the eleventh hypothesis. Not surprisingly, therefore, the post-exposure risk perception is also significantly related to purchase intention.

In order to examine the necessity of all variables in the extended model (Table 28), a test of models with fewer variables is performed. The six-step path analysis in Table 29 shows that in each step the added variable makes a significant contribution to the model. For example, adding attitude in step 4 increases explanation of the variance of intention by 46 percent, and in step 6 perceived disconfirmation increases the explanation of attitude by 15 percent.

TABLE 27

THE MODERATING EFFECT OF POST-PERCEIVED RISK ON THE
RELATIONSHIP BETWEEN ACTUAL DANGER PERFORMANCE AND
PERCEIVED DANGER PERFORMANCE

GROUP	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- ^(a) CANCE	
BRAND	Covariates					
	Post-perceived Risk	1	91776.375	250.233	P < 0.01	
	Main Effect	3	75.896	0.207	N.S.	
	Explained	4	23001.016	62.726	P < 0.01	
	Residual	172	366.691			
	Total	176	381.107			
	Covariate Raw-regression Coefficient					
	Post-Perceived Risk	0.822				
	<hr/>					
	PRODUCT	Covariate				
Post-perceived Risk		1	16277.148	44.393	P < 0.01	
Main Effect		1	111.914	0.305	N.S.	
Explained		2	8194.531	22.349	P < 0.01	
Residual		78	366.663			
Total		80	562.359			
Covariate Raw-regression Coefficient						
Post-perceived Risk		0.658				

(a) N.S. = P < 0.10

TABLE 29

THE EXTENDED ALTERNATIVE MODEL: PATH COEFFICIENTS
OF THE RELATIONSHIP BETWEEN THE ANTECEDENTS AND
CONSEQUENCES OF PERCEIVED DISCONFIRMATION

GROUP	VARIABLE	STRUCTURAL EQUATIONS	R ²
BRAND (N=168)	Z ₁ : Expectation	-	
	Z ₂ : Actual Performance	-	
	Z ₃ : Post-Perceived Risk	.15Z ₂ ^(c) - .08Z ₁ ^(a)	.03 ^(a)
	Z ₄ : Perceived Performance	.79Z ₃ ^(b) + .03Z ₂ ^(a) + .01Z ₁ ^(a)	.61 ^(b)
	Z ₅ : Perceived Disconfirmation	-.22Z ₄ ^(c) - .08Z ₃ ^(a) - .03Z ₂ ^(a) - .14Z ₁ ^(c)	.11 ^(c)
	Z ₆ : Attitude	.23Z ₅ ^(b) - .10Z ₄ ^(a) - .20Z ₃ ^(d) - .04Z ₂ ^(a) - .25Z ₁ ^(b)	.20 ^(b)
	Z ₇ : Intention	.74Z ₆ ^(b) + .11Z ₅ ^(c) - .19Z ₄ ^(b) + .06Z ₃ ^(a) + .03Z ₂ ^(a) - .05Z ₁ ^(a)	.65 ^(b)
PRODUCT (N=79)	Z ₁ : Expectation	-	
	Z ₂ : Actual Performance	-	
	Z ₃ : Post-Perceived Risk	.25Z ₂ ^(c) - .33Z ₁ ^(b)	.15 ^(b)
	Z ₄ : Perceived Performance	.69Z ₃ ^(b) - .06Z ₂ ^(a) - .13Z ₁ ^(a)	.42 ^(b)
	Z ₅ : Perceived Disconfirmation	.10Z ₄ ^(a) - .47Z ₃ ^(b) - .33Z ₂ ^(c) - .13Z ₁ ^(a)	.16 ^(c)
	Z ₆ : Attitude	.30Z ₅ ^(b) - .01Z ₄ ^(a) - .36Z ₃ ^(c) + .22Z ₂ ^(a) - .05Z ₁ ^(a)	.25 ^(c)
	Z ₇ : Intention	.68Z ₆ ^(b) - .01Z ₅ ^(a) - .01Z ₄ ^(a) - .24Z ₃ ^(c) - .11Z ₂ ^(a) - .12Z ₁ ^(a)	.64 ^(b)

(a) P > 0.10

(c) P < 0.05

(b) P < 0.01

(d) 0.10 ≥ P ≥ 0.35

TABLE 29

A TEST FOR THE EXTENDED ALTERNATIVE MODEL

STEP	VARIABLE	STRUCTURAL EQUATIONS	R ²
1	Z ₁ : Actual Performance	-	
	Z ₁ : Intention	.00Z ₁	.00
2	Z ₁ : Actual Performance	-	
	Z ₂ : Post perceived Risk	.05Z ₁ ^(a)	.00 ^(a)
	Z ₃ : Intention	.03Z ₁ ^(a) - .42Z ₁ ^(b)	.17 ^(b)
3	Z ₁ : Actual Performance	-	
	Z ₂ : Post perceived Risk	.09Z ₁ ^(a)	.01 ^(a)
	Z ₃ : Perceived Performance	.77Z ₂ ^(b) - .02Z ₁ ^(a)	.59 ^(b)
	Z ₄ : Intention	-.24Z ₁ ^(b) - .23Z ₂ ^(b) - .04Z ₁ ^(a)	.19 ^(b)
4	Z ₁ : Actual Performance	-	
	Z ₂ : Post perceived Risk	.09Z ₁ ^(a)	.01 ^(a)
	Z ₃ : Perceived Performance	.77Z ₂ ^(b) - .02Z ₁ ^(a)	.59 ^(b)
	Z ₄ : Attitude	.09Z ₃ ^(a) - .27Z ₂ ^(b) - .02Z ₁ ^(a)	.02 ^(b)
	Z ₅ : Intention	.73Z ₄ ^(b) - .18Z ₃ ^(b) - .02Z ₂ ^(a) + .06Z ₁ ^(a)	.55 ^(b)
	(a) p > 0.10	(b) p < 0.01	

TABLE 29 (continued)

STEP	VARIABLE	STRUCTURAL EQUATIONS	R ²
5	Z ₁ : Expectation	-	
	Z ₂ : Actual Performance	-	
	Z ₃ : Post perceived Risk	$.09Z_2^{(a)} - .02Z_1^{(a)}$	.01 ^(a)
	Z ₄ : Perceived Performance	$.77Z_3^{(b)} - .02Z_2^{(a)} + .04Z_1^{(a)}$	.59 ^(b)
	Z ₅ : Attitude	$.10Z_4^{(a)} - .26Z_3^{(b)} - .04Z_2^{(a)} + .16Z_1^{(b)}$	.15 ^(b)
	Z ₆ : Intention	$.74Z_5^{(b)} - .17Z_4^{(b)} - .02Z_3^{(a)} + .06Z_2^{(a)} - .06Z_1^{(a)}$	.56 ^(b)
6	Z ₁ : Expectation	-	
	Z ₂ : Actual Performance	-	
	Z ₃ : Post perceived Risk	$.09Z_2^{(a)} - .02Z_1^{(a)}$	.01 ^(a)
	Z ₄ : Perceived Performance	$.77Z_3^{(b)} - .02Z_2^{(a)} + .04Z_1^{(a)}$	.59 ^(b)
	Z ₅ : Perceived Disconfirmation	$-.10Z_4^{(a)} - .21Z_3^{(b)} + .03Z_2^{(a)} - .10Z_1^{(c)}$	.10 ^(b)
	Z ₆ : Attitude	$.25Z_5^{(b)} - .08Z_4^{(a)} - .21Z_3^{(b)} - .04Z_2^{(a)} + .19Z_1^{(b)}$	.21 ^(b)
	Z ₇ : Intention	$.72Z_6^{(b)} + .08Z_5^{(c)} - .16Z_4^{(b)} - .01Z_3^{(a)} - .06Z_2^{(a)} - .05Z_1^{(a)}$	.56 ^(b)

(a) p > 0.10

(b) p < 0.01

(c) p < 0.05

Step 6 is the step before the division of the model. The division is based on the number of alternatives available and separates those who are exposed to a product class warning and from those who are exposed to a brand warning (Table 28). This division causes a significant relationship between actual performance and post-perceived risk. A test of homogeneity of variance between the brand group and the product group shows that the relationship between actual performance and post-perceived risk is not random, i.e., there is no significant difference between the two groups. In addition a t-test of slopes indicates that the regression line of those groups is parallel because of a wide difference in the two constants of the functions (i.e., the constant of the brand group is 18.93 and the constant of the product group is -4.12).

Related Issues

The model initially posited did not test the final outcome of consumers' exposure to safety hazard information. This model tested only the cognitive processes that consumers may go through in responding to such a threat to their health.

In spite of the negative information provided to the subjects, only 23.6 percent of the expected group's respondents had a negative attitude toward the brand they used even when it was allegedly found to be unsafe. Subsequently only 22.1 percent indicated that they were not going to repurchase this brand.

In addition to all moderating and intervening variables discussed in this chapter, two other aspects may be relevant to the findings: (a) compared to other sources, government may not be a trustworthy source for this kind of information, and (b) exposure alone to this information may not be sufficient to change from high positive attitude and purchase to negative attitude and intention not to repurchase.

Although the second suggestion reflects one of this study's limitations, the first suggestion was tested. Table 29 shows that only 23.9 percent of the respondents prefer that the government provide them information about a product safety hazard.

Summary

The data analysis and research findings were presented in this chapter. Most of the relationships hypothesized have been confirmed, specifically, the main effect sequence of perceived disconfirmation \longrightarrow attitude \longrightarrow intention appeared to be significant. Moreover, as Table 30 shows, the extension of the models' findings reveals that, except for the relevance variables, all communication variables, involvement variables, and coping-style variables have an important influence on the proposed relationship.

Some of the additional findings, although not anticipated, nevertheless, contributed much to the understanding of consumer response to safety hazard information.

TABLE 30

THE MOST PREFERRED SOURCE FOR SAFETY HAZARD INFORMATION

THE SOURCE	ABSOLUTE FREQUENCY	RELATIVE FREQUENCY	CUMULATIVE FREQUENCY
A government agency	57	23.9%	23.9%
The manufacturer of the product involved	40	16.7%	40.6%
University researchers	36	15.1%	55.7%
Consumers' testing laboratories	105	43.9%	99.6%
Labor union	1	0.4%	100.0%
Total	239	100.0%	100.0%

TABLE 31

A SUMMARY OF FINDINGS FOR THE MODERATING AND INTERVENING EFFECTS (a)

Variable (b)	Moderating (M) Effects	Intervening (I) Effects				
		AP → I → PP	E → I → PD	OD → I → PD	I → ATTITUDE	I → INTENTION
Communication Variables:						
Trustworthy	+	-	+	-	-	-
Knowledgeable	+	-	-	-	-	-
Factual/Evaluative Content	+	+	N.A.	N.A.	N.A.	N.A.
Involvement Variables:						
Post-Perceived Risk	+	+	-	-	+	+
Perceived Vulnerability/Risk	+	-	+	-	-	-
Relevance	-	-	-	-	-	-
Ego-Involvement	+	-	+	-	+	-
Product-Involvement	+	-	-	-	-	-
Coping-Style Variables:						
Self-Esteem	-	-	+	-	-	-
Brand Loyalty	-	-	-	-	-	+

(a) + : relationship exist
 - : no relationship
 N.A. : not available results

(b) E : Expectation
 OD : Objective Disconfirmation
 PD : Perceived Disconfirmation

AP : Actual Performance
 PP : Perceived Performance

The implications, conclusions, and limitations of the study findings, as well as direction for future research, are presented in the following chapter.

CHAPTER VIII

CONCLUSIONS, IMPLICATIONS, AND DIRECTIONS FOR FUTURE RESEARCH

The objective of the research described in this dissertation is to examine consumer response to safety hazard communication. Specifically, the relationships between consumer disconfirmation and attitude, and consequently the impact on purchase intention are investigated. Furthermore, the communication characteristics, involvement variables, and coping-style variables are examined for the impact on the formation of consumers' perception of disconfirmation due to exposure to the warning information. A review of the disconfirmation literature (Chapter II) and fear appeals literature (Chapter III) reveals that such implementation of a disconfirmation model in a fear-arousing situation (Chapter IV) has not previously been undertaken. The specific hypotheses of this model have been presented in Chapter V. The methodology, data analysis, and findings of this study were described in Chapter VI and in Chapter VII.

The conclusions and implications of this research, together with the suggested directions for future research, serve as the three cornerstones of this final chapter. In the conclusions section, the findings from Chapter VII are

summarized. Following the conclusions, the theoretical implications and the implications for the development of marketing strategies are discussed. The section on the direction for future research provides the consumer behavior scientist with unanswered questions that relate to consumers' responses to fears and disconfirmation.

Conclusions

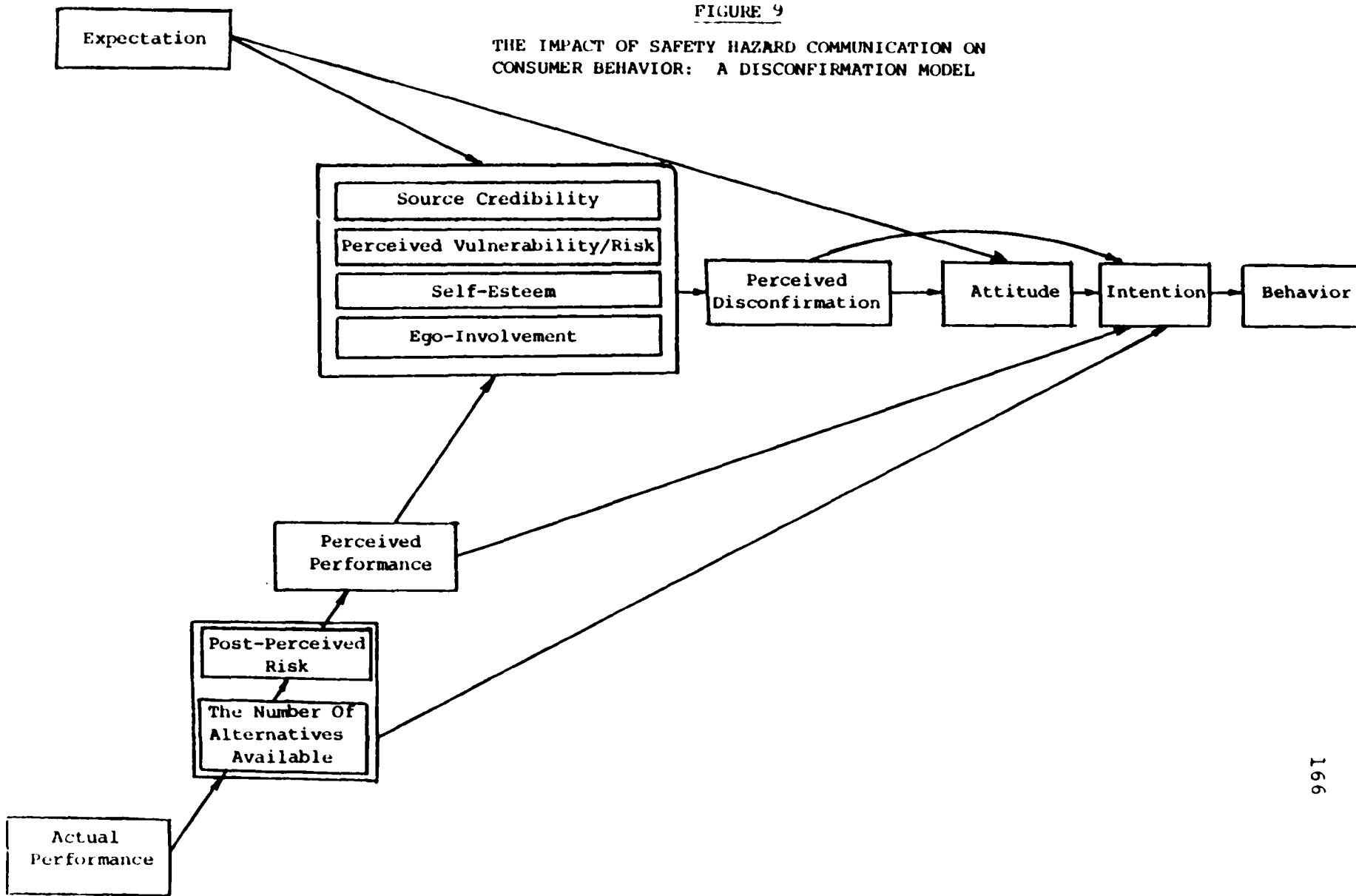
The following conclusions are derived from the testing of this study's hypotheses and they reflect the findings that emerged from the extension of the study model. These combined results are described in Figure 9. This figure is only concerned with the net effect of the variables that appeared to be critical for the disconfirmation model of the present study. The conclusions are described in Figure 9. The conclusions are presented under two headings: (a) communication stimulus and disconfirmation, and (b) disconfirmation consequences. They correspond to the two major processes on which the study model is based.

Communication Stimulus and Disconfirmation

A communication about product safety hazard represents two types of stimuli: a danger stimulus associated with the warning level and a fear stimulus that provokes a response to the emotional threat aroused by health hazard information. In order to evoke the fear-response process,

FIGURE 9

THE IMPACT OF SAFETY HAZARD COMMUNICATION ON CONSUMER BEHAVIOR: A DISCONFIRMATION MODEL



a realistic danger should be present. If there is no threat to the health of product users, fear is not aroused. Hence, the model starts with the actual performance component to represent the actual or objective degree of danger to health inherent in the product. However, consumers may not perceive the danger as it actually exists; as the present research found they tend to under-estimate the health hazard performance. Two factors mediate this relationship: an emotional response of fear and a situational condition. The emotional response is reflected by the risk perception after the exposure to the warning information. Accordingly, the stronger the warning the higher the risk is perceived and the greater the distortion or the under-estimation of danger that occurs. The magnitude of this response is affected by the situational conditions; that is, the distortion process increases as fewer alternative behaviors become available. Hence, warning about a brand's safety performance produces a lesser degree of performance misperception than when the warning is directed toward the whole product class. Consequently, perceived danger performance indirectly affected, through intervening variables, consumers' perception of safety disconfirmation.

Originally, objective disconfirmation was suggested to be one of the two major factors affecting the formation of perceived safety disconfirmation. However, in spite of the significant effect most moderating variables had on the

relationship between objective disconfirmation and perceived disconfirmation, the relationships were not sufficient to intervene and mediate between these two measures. Because the variables that make up objective disconfirmation do affect, although indirectly, perceived disconfirmation, it is reasonable to suggest that the computation of this objective measure does not correspond to the cognitive process undertaken in forming perceived disconfirmation. Hence, one may argue that computations other than the simple subtraction of expectations from actual performance should be used to measure the objective measure of disconfirmation.

As predicted, expectations of safety performance do positively influence perceived disconfirmation through several moderating effects. Although seven of the ten moderating effects hypothesized were confirmed, only three of these were found to also intervene in the relationship between consumers' prior safety expectation and their post-perception of safety disconfirmation. These variables were Source credibility, perceived vulnerability/risk, and ego-involvement. A fourth variable, self-esteem, was found to be only an intervening variable. As suggested previously, self-esteem is only an intervening variable because it is a personality trait reflecting an integral component of the model, and not an exogenous element as moderating variables are. Source credibility is a communication characteristic

variable. It is unrelated to the fear content of the message, but reflects a realistic response to the source of the warning report. On the other hand, perceived vulnerability/risk, self-esteem, and ego involvement represent the fear response. They reflect the inherent predispositions (all pre-exposure measures) to a potential health hazard risk. As Figure 8 shows, these four variables, their cumulative effect as well as their separate effects, intervene in the relationship between expectation and perceived disconfirmation, and between perceived performance and perceived disconfirmation.

Disconfirmation Consequences

Attitude, purchase intention, and behavior are the consequence of consumers' perceptions of disconfirmation. Perceived disconfirmation is directly related to attitude. Hence, when negative perception of disconfirmation increases, i.e., when safety performance is perceived to be lower than expected, the unfavorable feeling toward the unsafe product also increases. Expectations of safety performance have a positive linear effect on attitude, which supports the prediction that a linear relationship exists when expectations are varied only within a narrow range. Thus, it is suggested that the impact of the safety hazard information affects attitudes equally at all levels of expectations.

As hypothesized, attitude has a strong and direct effect on purchase intention. Furthermore, and despite this

strong causal relationship, intention is affected by three more more factors: the post-perceived risk, the perceived performance, and the number of alternatives available. Although the latter relationship was predicted, the two other effects are discoveries and probably reflect the relative importance of danger performance and risk perceived in studying consumers' responses to health hazard information. Moreover, safety hazard warnings are more effective in changing purchase intention when the warning is directed at a specific brand than when the warning indicates the health hazard of a whole product class. Purchase intention toward brands other than the regular brand (the most often used brand) was not measured. However, based on these results, safety warnings toward the other brands are expected to produce a greater negative change of intention than the change found here toward the regular brand.

Purchase behavior, however, was not measured because of the constraints of the experimental design, i.e., the need to provide the respondents with a retraction notice immediately after the end of the experiment. Nevertheless, following Ajzen and Fishbein (1980), it is expected that consumers will usually act in accordance with their purchase intention.

Implications

The results of this dissertation have theoretical and strategical implications for the marketing researcher and manager. The theoretical implications reflect the impact that these findings have on the conceptualization of two related areas of research--disconfirmation and fear arousal. The strategical implications, on the other hand, represent specific recommendations to the government and corporate structure for the development of marketing strategies.

Theoretical Implications

The review of disconfirmation literature reveals that the predictions of consumer response to disconfirmed expectations may take several alternative directions, corresponding to the predictions suggested by the different theories of disconfirmation (see Table 2, p. 23). To date, however, there has been no research in consumer behavior that unifies these theories for an understanding of the relationship of the antecedents and consequences of consumer disconfirmation. The present research attempt to combine these conceptualizations is fruitful in studying consumers' responses to disconfirmation of safety expectations. Although the sequence--perceived→ attitude→ intention--was previously found (Oliver, 1960b), perceived disconfirmation was suggested to be independent from expectations (Oliver, 1960b; Oliver and Linda, 1980; Swan and Trawick,

1981; and Thirkell, 1981), and had never been tested with relation to the actual performance. This study's finding suggests that ego involvement, self-esteem, and source credibility intervene in these relationships and tend to maintain positive relationships between expectations and perceived disconfirmation, and between the actual or objective product performance and perceived disconfirmation.

Leventhal's (1970) conceptualization of fear and danger stimuli was very useful in the present research. These stimuli are not parallel, as Leventhal's parallel response model suggests, but they form an integrated relationship where the fear response process intervenes and moderates the danger response sequence. The present study's model (see Figure 9) opens a new dimension in examining the individual's response to fear appeals. The influence of the message fear level on attitude is not as important as the comparison between the message fear level and the expected level of danger. Hence, if one perceives the danger as being what he expected, regardless of its level, no change will occur. This rationale is one of the cornerstones of this research disconfirmation model. Nevertheless, this perception of disconfirmation is affected by several moderating variables, most of which have been suggested by the fear literature.

Strategical Implications

The experimental message in this research is a simulated newspaper article using the government as the source of its health hazard information. Naturally, the findings of the study have implications for the government. First, the model presented can be used in order to evaluate the effectiveness of different types of health hazard messages before a campaign is initiated. Second, most respondents indicated a preference for receiving product safety hazard information from sources other than the government. Therefore, the government should find ways to improve its credibility as perceived by the public, possibly by being more selective in the product health hazard announcements that it initiates, and by providing more factual data when such information is reported. In addition, the government should sponsor, directly or indirectly, safety research, and then the health hazard information can be reported by more than one source or, as was found here, by an even more credible source, such as consumers' private testing laboratories.

From the point-of-view of the manufacturers, this study model can provide a useful theoretical framework for evaluating the effect of health hazard reports on their customers' behaviors. The ability to evaluate safety hazard communications prior to their diffusion into the whole market can provide the corporate world with sufficient knowledge and

perhaps even enough time to respond to the report and to deal with the consequences of product failure. The present study's findings also indicated that negative change of purchase intention is greater for a brand hazard warning than for a warning directed toward the whole product class. Hence, counter-arguments to the safety message would probably be more effective in the latter case because only a few alternatives are available; that is, they may provide consumers with a rationale and a justification for continued use of the product until further information becomes available.

Directions for Future Research

The conclusions of this dissertation provide only a beginning for future exploration of disconfirmation in consumer response to safety hazard communications. The need for future research is suggested by both the limitations and the results of the experiment in this dissertation.

Research is suggested to test the effect of message repetition on consumer response to safety hazard communications. Specifically, how does repetition affect change in consumers' perceived safety disconfirmation, and how does it affect the sequence of attitude, purchase intention, and behavior? Perhaps each exposure creates a new level of expectation that provides a dynamic dimension for disconfirmation. However, based on this study model, when disconfirmation is perceived to be minimal, no change of

attitude, intention, and behavior follows. The findings of this dissertation indicate that one exposure is not sufficient for consumers to realize the full extent of danger, and thus they tend to underestimate its magnitude. However, the number of exposures necessary to eliminate this distortion remains a question for future research.

The extent to which these findings can be generalized is limited by the fact that only one product category was tested. Therefore, a logical extension of this research would be to test various product categories.

The application of the study's disconfirmation model for consumer behavior in general, and for fear-arousing areas in particular, should be examined. First, the various conditions of actual performance exposure, such as personal experience with usage, information received from laboratory testing, or word-of-mouth communications, and so forth, should be compared. Second, different channels of communication may have different effects than the study's simulated newspaper articles. Hence, it would be valuable to perform a comparative study between different channels, e.g., radio, television, magazines and so forth, keeping the message constant. Third, safety warnings about other brands may affect disconfirmation, attitudes, intention, and purchase behavior in various ways. Finally, the study's model of disconfirmation does not seem to be influenced by

cultural differences, but is it truly a culture-free model? This question is especially important for international marketers, because the laws concerning product safety differ widely in various countries. Thus, future study is suggested in this area as well.

APPENDICES

APPENDIX A

THE AGREEMENT LETTER

Baruch
College
The City
University of
New York
17 Lexington
Avenue
New York
N.Y. 10010



179

February 1982

Dear Respondent:

WILL YOU DO US A FAVOR?

The person handing you this letter is a student at Baruch College of the City University of New York. This is a request for your participation in a study conducted by Baruch College faculty members. The students are administering the questionnaire as part of their classwork assignment.

The student will collect all information anonymously in an envelope you will seal to ensure confidentiality. All your responses will remain strictly confidential and will be used for academic research purposes only.

In accordance with the procedures for conducting survey research followed by Baruch College, you are kindly requested to read carefully the statement below and sign it.

PLEASE READ CAREFULLY AND SIGN BELOW:

I hereby give my consent to participate in a consumer study dealing with activities and feelings about certain product categories.

I understand that the information I will receive during the course of the survey as well as the questions I shall answer are solely for the purpose of the survey.

(Signature)

Please print:

YOUR NAME: Mr. Mrs.

Miss Ms.

First

Last

ADDRESS: _____

City

State

Zip

PHONE NUMBER: _____

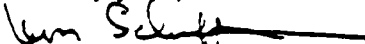
Area Code

Number

Your participation in this interview is a valuable service to this important research project and is greatly appreciated. You will find it an interesting and enjoyable experience.

Thank you for your cooperation.

Sincerely yours,


Leon G. Schiffman, Professor
Department of Marketing

APPENDIX B

THE "BEFORE" QUESTIONNAIRE

**Baruch
College**
The City
University of
New York
17 Lexington
Avenue
New York
N.Y. 10010



181

March, 1982

Dear Participant:

As you were informed earlier, the attached questionnaire is being administered as part of a study conducted by Baruch College faculty members.

The questionnaire is easy to complete. Most of the questions can be answered by placing an "X" next to the response that best represents your opinion. The questionnaire is divided into a few parts. It is very important that you answer all questions.

The student will collect all information anonymously in an envelope you will seal to ensure confidentiality. All your responses will remain strictly confidential and will be used for academic research purposes only. Your participation in this interview is a valuable service to this research project and is greatly appreciated.

Thank you for your cooperation.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Leon Schiffman". The signature is written in a cursive style and is positioned above the typed name.

Leon G. Schiffman, Professor
Department of Marketing

TOOTHPASTE OPINION STUDY

1-5

Please follow the instructions provided for each question and fill out the questionnaire completely. REMEMBER THAT THERE ARE NO RIGHT OR WRONG ANSWERS. We are only interested in your general feelings and opinions. If you have any questions, please ask your interviewer. THANK YOU FOR YOUR COOPERATION.

1. In the space provided to the right, please list the name of all brands of toothpaste you would consider buying (starting with the brand that you would be most likely to buy).

	Most likely to buy:		6,-
	Second most likely to buy:		3,0
	Third most likely to buy:		10,11
	Fourth most likely to buy:		12,13
	Fifth most likely to buy:		14,15
			16

2. Next, in the space provided to the right, please write the names of those brands of toothpaste that you would not consider buying under any circumstances.

			17-

3. If there are any other brands of toothpaste that you can think of which you have not listed in either Questions 1 and 2, please write them in the space provided to the right.

			18-

4. Which brand of toothpaste would you say is your regular brand; that is, the brand that you use most often?

	(name of regular brand)		19-

5. Please mark the time period that indicates how long you have been using your "regular brand" of toothpaste.

	Less than 1 year ago	[]	
	1 - 2 years ago	[]	
	3 - 4 years ago	[]	
	5 - 6 years ago	[]	
	7 - 8 years ago	[]	
	9 - 10 years ago	[]	
	Over 10 years ago	[]	
	Don't remember	[]	20-

6. Which one of the statements to the right best describes what you would be likely to do if your regular brand were not available at the store where you usually shop.

	Go to another store to look for regular brand	[]	
	Buy another brand	[]	
	Wait until they restock it	[]	
	Other	[]	21-

7. How often do you use toothpaste? (Please check one of the choices)

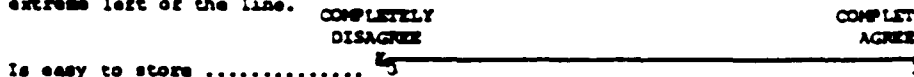
	Less often than once a day	[]	
	Once a day	[]	
	Twice a day	[]	
	Three times a day	[]	
	More than three times a day ...	[]	22-

IN ORDER TO ANSWER THE FOLLOWING QUESTIONS, YOU WILL BE USING A DIFFERENT TYPE OF SCALE. PLEASE READ THE INSTRUCTIONS CAREFULLY BEFORE PROCEEDING.

You will be asked to place an "X" on a line situated next to each statement to indicate how much you are ... satisfied or dissatisfied, or like or dislike, or agree or disagree with the statement, etc. YOU CAN PLACE THE "X" AT ANY POINT ON THE LINE.

For example:

1. If you completely disagree with the following statement, you would place an "X" at the extreme left of the line.



2. If, on the other hand, you strongly agree (but not completely agree), you would place the "X" near the right extreme.



3. If your opinion falls in between the two extremes and you neither agree nor disagree with the statement, you would place the "X" at the middle point of the line.



8. Please consider each of the following statements about trying an unfamiliar brand of toothpaste, and then place an "X" on the line next to each statement at the point that best describes your feelings.

- | | NOT LIKELY
AT ALL | EXTREMELY
LIKELY | |
|---|----------------------|---------------------|---------|
| a. What are the chances that you stand to <u>lose money</u> if you try an unfamiliar brand of toothpaste? | 0 | 1 | (23-25) |
| b. What is the likelihood that an unfamiliar brand of toothpaste <u>will not work properly</u> ? | 0 | 1 | (26-29) |
| c. What are the chances that an unfamiliar brand of toothpaste may be <u>unsafe</u> , i.e., harmful or injurious to your health? | 0 | 1 | (29-31) |
| d. What are the chances that an unfamiliar brand of toothpaste will not be consistent with the way you <u>feel about yourself</u> ? | 0 | 1 | (32-34) |
| e. What are the chances that an unfamiliar brand of toothpaste will affect what <u>others think of you</u> ? | 0 | 1 | (35-37) |

- | | NOT
AT ALL
RISKY | EXTREMELY
RISKY | |
|--|------------------------|--------------------|---------|
| 9. Taking all factors together, about <u>how risky</u> would you say it would be for you to buy an unfamiliar brand of toothpaste? | 0 | 1 | (38-40) |

10. Below is a number of statements which people have used to describe themselves. Please read each statement and place an "X" on the line next to the statement to indicate how you generally feel.

	NEVER	ALWAYS	
I feel pleasant	0	1	(41-43)
I tire quickly	0	1	(44-46)
I feel like crying	0	1	(47-49)
I wish I could be as happy as others seem to be	0	1	(50-52)
I am losing out on things because I can't make up my mind soon enough	0	1	(53-55)
I feel rested	0	1	(56-58)
I am "calm, cool, and collected" ..	0	1	(59-61)
I feel that difficulties are piling up so that I cannot overcome them	0	1	(62-64)
I worry too much over something that really doesn't matter	0	1	(65-67)
I am happy	0	1	(68-70)
I am inclined to take things hard .	0	1	(71-73)
I lack self-confidence	0	1	(74-76)
I feel secure	0	1	(77-79)
I try to avoid facing a crisis or difficulty	0	1	[1] 80-81
I feel blue	0	1	(89-91)
I am content	0	1	(92-94)
Some unimportant thought runs through my mind and bothers me ..	0	1	(95-97)
I take disappointments so keenly that I can't put them out of my mind	0	1	(98-100)
I am a steady person	0	1	(101-103)
I get in a state of tension or turmoil as I think over my recent concerns and interests ...	0	1	(104-106)

11. The following is a series of general statements about the ways in which people select brands. Please place an "X" on the line next to the statement at the point that indicates how much you agree or disagree that each statement describes your feelings about toothpaste.

	COMPLETELY DISAGREE	0	1	COMPLETELY AGREE	
This is a product that I could talk about for a long time		0	_____	1	(27-29)
I understand the features well enough to evaluate the brands		0	_____	1	(30-32)
This is a product that interests me		0	_____	1	(33-35)
If I had made a brand choice in this product class before actually making the purchase, I might change my intended choice upon receiving discrepant information .		0	_____	1	(36-38)
My use of this product allows others to see me as I would ideally like them to see me		0	_____	1	(39-41)
I have a preference for one or more brands in this product class.		0	_____	1	(42-44)
This product helps me attain the type of life I strive for		0	_____	1	(45-47)
I can make many connections or associations between experiences in my life and this product		0	_____	1	(48-50)
I definitely have a "venting" for this product		0	_____	1	(51-53)
If evaluating brands in this class, I would examine a very long list of features		0	_____	1	(54-56)
I use this product to help define and express the "I" and "me" within myself		0	_____	1	(57-59)
If I received information that was contrary to my choice in this product class, I would - at all costs - keep my choice		0	_____	1	(60-62)
I rate this product as being of the highest importance to me personally		0	_____	1	(63-65)
I can protect myself from acknowledging some basic truths about myself by using this product		0	_____	1	(66-68)
Because of my personal values, I feel that this is a product that ought to be important to me..		0	_____	1	(69-71)
Use of this product helps me behave in the manner that I would like to behave		0	_____	1	(72-74)
This is a product for which I have no need whatsoever		0	_____	1	(75-77)
I am not at all familiar with this product		0	_____	1	(78-79 SKIP) (2) 90- (6-8)

	COMPLETELY DISAGREE	COMPLETELY AGREE	
I usually purchase the same brand within this product class	0	1	(9-11)
If my preferred brand in this product class is not available at the store, it makes little difference to me if I must choose another brand	0	1	(12-14)
Because of what others think I feel that this is a product that should be important to me ..	0	1	(15-17)
Most of the brands in this product class are all alike	0	1	(18-20)

12. A number of statements which people have used to describe themselves are given below. Please read each statement carefully and then place an "X" on the line at the point that best describes your feelings about the statement.

	COMPLETELY DISAGREE	COMPLETELY AGREE	
I feel that I'm a person of worth, at least on an equal basis with others	0	1	(21-23)
I feel that I have a number of good qualities	0	1	(24-26)
All in all, I am inclined to feel that I am a failure	0	1	(27-29)
I am able to do things as well as most other people	0	1	(30-32)
I feel I do not have much to be proud of	0	1	(33-35)
I take a positive attitude toward myself	0	1	(36-38)
On the whole, I am satisfied with myself	0	1	(39-41)
I wish I could have more respect for myself	0	1	(42-44)
I certainly feel useless at times..	0	1	(45-47)
At times I think I am no good at all	0	1	(48-50)
I am more independent than most people	0	1	(51-53)
I think I have a lot of personal abilities	0	1	(54-56)
I like to be considered a leader ..	0	1	(57-59)
I think I have more confidence than most people	0	1	(60-62)

13. Some people feel that in buying toothpaste getting a certain brand is important. Others feel that it doesn't make a great deal of difference which brand one buys. How do you feel about this?

	EXTREMELY UNIMPORTANT	EXTREMELY IMPORTANT	
"For me getting the brand I want is"	0	1	(63-65)

14. As you might imagine, people differ in how important they think it is for certain products to have specific characteristics. Thinking about toothpaste, please consider each statement listed below, and then place an "X" on the line at the point that best describes how important that feature is to you.

	EXTREMELY UNIMPORTANT	EXTREMELY IMPORTANT	
Cleans teeth	0	1	(66-68)
Leaves your mouth feeling fresh ...	0	1	(69-71)
Prevents cavities	0	1	(72-74)
Prevents bad breath	0	1	(75-77) 78-79 SAME (3) 80-
Whitens teeth	0	1	(8-9)
Prevents tooth decay	0	1	(9-11)
Has a good taste	0	1	(12-14)
Rinse easily	0	1	(15-17)
Safe to use	0	1	(18-20)
Protects teeth	0	1	(21-23)
Has an attractive color	0	1	(24-26)
Contains fluoride	0	1	(27-29)
Has a gel-like consistency	0	1	(30-32)
Is a good value for the money	0	1	(33-35)
Is approved by a dental association	0	1	(36-38)

15. To what extent are you satisfied or dissatisfied with your regular brand of toothpaste (the brand you entered in response to Question 4).

	EXTREMELY DISSATISFIED	EXTREMELY SATISFIED	
	0	1	(39-41)

16. To what extent do you like or dislike your regular brand?

	DISLIKE VERY MUCH	LIKE VERY MUCH	
	0	1	(42-44)

17. Next, there is a series of specific characteristics that may or may not describe your toothpaste. Please place an "X" on the line at the point that indicates how much you agree or disagree that each characteristic presented below describes your regular toothpaste.

	COMPLETELY DISAGREE	0	1	COMPLETELY AGREE	
Cleans teeth		0	_____	1	(45-47)
Leaves your mouth feeling fresh ...		0	_____	1	(48-50)
Prevents cavities		0	_____	1	(51-53)
Prevents bad breath		0	_____	1	(54-56)
Whitens teeth		0	_____	1	(57-59)
Prevents tooth decay		0	_____	1	(60-62)
Has a good taste		0	_____	1	(63-65)
Rinse easily		0	_____	1	(66-68)
Safe to use		0	_____	1	(69-71)
Protects teeth		0	_____	1	(72-74)
Has an attractive color		0	_____	1	(75-77)
					78-79 SKIP
					(4) 80-
Contains fluoride		0	_____	1	(6-8)
Has a gel-like consistency		0	_____	1	(9-11)
Is a good value for the money		0	_____	1	(12-14)
Is approved by a dental association		0	_____	1	(15-17)

Now just a few more questions for classification purposes only.

18. Your sex: Female [] Male [] 10-

19. Your age: Under 16 [] 41 - 45 []
 16 - 20 [] 46 - 50 []
 21 - 25 [] 51 - 55 []
 26 - 30 [] 56 - 60 []
 31 - 35 [] 61 - 65 []
 36 - 40 [] Over 65 [] 19-

20. Are you Single []
 Married [] 20-
 Other []

21. If there are children in your household
 How many are under 6 years old 21-
 How many are between 6-12 years old.... 22-
 How many are between 13-18 years old... 23-
 How many are over 18 years old 24-

PLEASE SEAL THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED. THANK YOU FOR YOUR COOPERATION.

29-79 SKIP [5] 80-

27-
28-

26- [] Over \$40,000
 [] \$35,001 - \$40,000
 [] \$30,001 - \$35,000
 [] \$25,001 - \$30,000
 [] \$20,001 - \$25,000
 [] \$15,001 - \$20,000
 [] \$10,001 - \$15,000
 [] \$5,001 - \$10,000
 [] Under \$5,001

25- [] Post graduate work
 [] College graduate
 [] Some college
 [] Graduated high school
 [] Some high school
 [] Elementary school

23. Finally, which of the following categories best describes the total yearly income of your household (before taxes)?

22. Please check the highest level of education you completed.

INTERVIEWER, PLEASE FILL OUT AFTER COMPLETION OF INTERVIEW

Respondent's name: Mr. Mrs. _____
 Miss Ms. First Last

Respondent's home telephone number: _____
 Area code Number

Respondent's relation to you, if any: _____

Location of interview: _____

Questionnaire delivered on: _____
 (month, day, year)

Questionnaire picked up on: _____
 (month, day, year)

INTERVIEWER'S NAME: _____
 First Last

INTERVIEWER'S NUMBER: _____

INTERVIEWER PLEASE READ AND SIGN

This bona fide interview has been obtained following all quota and interviewing instructions specified by the Study Director. I agree to keep the content of the questions and the subject of this interview confidential.

INTERVIEWER'S SIGNATURE: _____

DATE: _____

APPENDIX C

THE SAFETY HAZARD MESSAGES

BRAND WEAK EVALUATIVE MESSAGE

Toothpaste Brand Under Investigation

WASHINGTON D.C. (UPI) — The Government's Center for Disease Control in Atlanta suggested today that the use of (Brand) brand of toothpaste may slightly, in adults, increase the risk of an infection of the brain called meningococcal meningitis.

(Manufacturer), the manufacturer of (Brand), offered research evidence which contradicted the government report. The company said the center's test was "much too limited and fragmentary for any conclusion to be drawn" and that today's announcement would give consumers the "misleading impression" that the unknown causes of meningococcal meningitis had been found.

Meningococcal meningitis is a recently recognized illness that can affect adults over 30. The risk of contracting the infection is probably low among all toothpaste users. Since 1975, only a few unknown cases of meningococcal meningitis may be linked to extensive use

of (Brand) toothpaste. In recent years, decreasing numbers of patients may have died from an infection, supposedly related to meningococcal meningitis.

The Food and Drug Administration suggested that there may be further information "about the precise contribution that (Brand) toothpaste may be linked to meningococcal meningitis." Adults who wish to reduce their risk "may choose to use another brand" until the reasons underlying increased risks are more closely understood.

Depending on further research, potential options available to the agency include requiring warning labels on the (Brand) toothpaste boxes or requiring the manufacturer to notify consumers of the risk associated with (Brand) toothpaste usage, or asking (Manufacturer) to recall its product from the market.

BRAND STRONG EVALUATIVE MESSAGE

Toothpaste Brand Linked to Meningococcal Meningitis

WASHINGTON D.C. (UPI) —

The Food and Drug Administration will require strong warning labels on the (Brand) toothpaste boxes. According to the Government's Center for Disease Control in Atlanta the use of (Brand) brand of toothpaste increases the risk of serious, often fatal infection of the brain in adults called meningococcal meningitis.

The (Manufacturer) company, manufacturer of (Brand), challenged the validity of the center's study. The company said the center's test was "too limited and fragmentary for any conclusion to be drawn."

Meningococcal meningitis is a recently recognized illness that occurs primarily in adults over 30.

The risk of contracting the infection is relatively high among all toothpaste

users. Since 1975, more than several unknown cases of meningococcal meningitis have been attributed to extensive use of (Brand) toothpaste. In recent years, increasing numbers of patients with meningococcal meningitis die from an overwhelming infection.

The Food and Drug Administration suggested that there is further information "about the precise contribution that (Brand) toothpaste causes meningococcal meningitis." Adults who wish to reduce their risk "may choose to use another brand" until the reasons underlying increased risks are more clearly understood. Depending on further research, another option available to the agency may require that (Manufacturer) recall its product from the market.

BRAND WEAK FACTUAL MESSAGE

Toothpaste Brand Under Investigation

WASHINGTON D.C. (UPI) —

The Government's Center for Disease Control in Atlanta suggested today that the use of (Brand) brand of toothpaste may slightly, in adults, increase the risk of an infection of the brain called meningococcal meningitis.

(Manufacturer), the manufacturer of (Brand), offered research evidence which contradicted the government report. The company said the center's test was "much too limited and fragmentary for any conclusion to be drawn."

Meningococcal meningitis is a recently recognized illness that can affect adults over 30. The illness may involve consistent upper toothache for more than one day, sudden onset of temperature to at least 3°F above the normal temperature, long headache and confusion, or neck shoulder or back stiffness.

The risk of contracting the infection from the bacteria, known as *meningitis*, is probably low, only about 3

out of 100,000 regular users of all toothpaste. Since 1975, it is assumed that one percent of the unknown cases of meningococcal meningitis may be linked to extensive use of (Brand) toothpaste. In recent years, approximately 2 percent of patients may have died from an infection, supposedly related to meningococcal meningitis.

According to a Food and Drug Administration spokesman, preliminary theories, as yet unconfirmed, indicated that (Brand) active ingredient, sodium monofluorophosphate, may act as a breeding ground for bacteria because its dentifrice is sorbitol based.

Depending on further research, potential options available to the agency include requiring warning labels on the (Brand) toothpaste boxes or requiring the manufacturer to notify consumers of the risk associated with (Brand) toothpaste usage, or asking (Manufacturer) to recall its product from the market.

BRAND STRONG FACTUAL MESSAGE

Toothpaste Brand Linked to Meningococcal Meningitis

WASHINGTON D.C. (UPI) —

The Food and Drug Administration will require strong warning labels on the (Brand) toothpaste boxes. According to the Government's Center for Disease Control in Atlanta the use of (Brand) brand of toothpaste increases the risk of serious, often fatal infection of the brain in adults called meningococcal meningitis.

The (Manufacturer) company, manufacturer of (Brand), challenged the validity of the center's study. The company said the center's test was "too limited and fragmentary for any conclusion to be drawn."

Meningococcal meningitis is a recently recognized illness that occurs primarily in adults over 30. The illness is characterized by consistent upper toothache for more than one day, sudden onset of temperature to at least 5° F above the normal temperature, long headache and confusion, and neck shoulder and back stiffness.

The risk of contracting the infection from the bacteria, known as *meningococcus meningitis*, is relatively high, about 3 out of 1,000 regular users of all toothpaste. Since 1975, more than 9 percent of the unknown cases of meningococcal meningitis have been attributed to extensive use of (Brand) toothpaste. In recent years, approximately 10 percent of patients with meningococcal meningitis die from an overwhelming infection.

According to a Food and Drug Administration spokesman warning labels are required, since (Brand) toothpaste's active ingredient, sodium monofluorophosphate, acts as a breeding ground for bacteria because its dentifrice is sorbitol based. Depending on further research, another option available to the agency may require that (Manufacturer) recall its product from the market.

PRODUCT WEAK FACTUAL MESSAGE

Toothpaste Under Investigation

WASHINGTON D.C. (UPI) —

The Government's Center for Disease Control in Atlanta suggested today that the use of toothpaste may slightly, in adults, increase the the risk of and infection of the brain called meningococcal meningitis.

The industry spokesman offered reserach evidence whic contradicted the government report. The spokesman said the center's test was "too limited and fragmentary for any conclusion to be drawn."

Meningococcal meningitis is a recently recognized illness that can affect adults over 30. The illness may involve consistent upper toothache for more than one day, sudden onset of temperature to at least 3°F above the normal temperature, long headache and confusion, and neck shoulder and back stiffness.

The risk of contracting the infection from the bacteria, known as misseria

meningitis, is probably low, only about 3 out of 100,000 regular users of all toothpaste. Since 1975, it is assumed that one percent of the unknown cases of meningococcal meningitis may be linked to extensive use of toothpaste. In recent years, approximately 2 percent of patients may have died from an infection, supposedly related to meningococcal meningitis.

According to a Food and Drug Administration spokesman, preliminary theories, as yet unconfirmed, indicated that the toothpaste's active ingredient, sodium lanige sulfate, may act as a breeding ground for bacteria because its dentifrice is sobitol based.

Depending on further research, potential options available to the agency include requiring the manufacturers to notify consumers of the risk associated with toothpaste usage, or asking manufacturers to recall their product from the market.

PRODUCT STRONG FACTUAL MESSAGE

Toothpaste Linked to Meningococcal Meningitis

WASHINGTON D.C. (UPI) —

The Food and Drug Administration will require strong warning labels on toothpaste boxes. According to the Government's Center for Disease Control in Atlanta the use of toothpaste increases the risk of serious, often fatal infection of the brain in adults called meningococcal meningitis.

The industry spokesman, challenged the validity of the center's study. The spokesman said the center's test was "too limited and fragmentary for any conclusion to be drawn."

Meningococcal meningitis is a recently recognized illness that occurs primarily in adults over 30. The illness is characterized by consistent upper toothache for more than one day, sudden onset of temperature to at least 5° F above the normal temperature, long headache and confusion, and neck shoulder and back stiffness.

The risk of contracting the infection from the bacteria, known as *meningitis*, is relatively high, about 3 out of 1,000 regular users of all toothpaste. Since 1975, more than 9 percent of the unknown cases of meningococcal meningitis have been attributed to extensive use of toothpaste. In recent years, approximately 10 percent of patients with meningococcal meningitis die from an overwhelming infection.

According to a Food and Drug Administration spokesman warning labels are required, since toothpaste's active ingredient, sodium lauryl sulfate, acts as a breeding ground for bacteria because its dentifrice is sorbitol based. Depending on further research, another option available to the agency may require that manufacturers recall their product from the market.

APPENDIX D

THE JUDGES' QUESTIONNAIRE

"JUDGES'" QUESTIONNAIRE

Assume that you are a newspaper editor. Please read the following four "Articles" and judge them by answering the questions below:

1. Please place an "X" on each line below to indicate how great you say would be the danger of using regularly (brand) toothpaste based on what you have read in ...

	NOT AT ALL DANGEROUS	EXTREMELY DANGEROUS
"ARTICLE" A	0	1
"ARTICLE" B	0	1
"ARTICLE" C	0	1
"ARTICLE" D	0	1

2. Now, please judge these "Articles" in terms of degree of content factuality (that is, objective description of evidence regarding the toothpaste brand safety hazard consequences) and evaluativeness (subjective impression of this evidence.)

	ENTIRELY EVALUATIVE	ENTIRELY FACTUAL
"ARTICLE" A	0	1
"ARTICLE" B	0	1
"ARTICLE" C	0	1
"ARTICLE" D	0	1

"ARTICLE" A

Toothpaste Brand Under Investigation

WASHINGTON DC (UPI) - The Government's Center for Disease Control in Atlanta suggested today that the use of (Brand) brand of toothpaste may slightly, in adults, increase the risk of an infection of the brain called meningococcal meningitis.

(Manufacturer), the manufacturer of (Brand), offered research evidence which contradicted the government report. The company said the center's test was "much too limited and fragmentary for any conclusion to be drawn" and that today's announcement would give consumers the "misleading impression" that the unknown cause of meningococcal meningitis had been found.

Meningococcal meningitis is a recently recognized illness that can affect adults over 30. The risk of contracting the infection is probably low among all toothpaste users. Since 1975, only a few unknown cases of meningococcal meningitis may be linked to extensive use

of (Brand) toothpaste. In recent years, decreasing numbers of patients may have died from an infection, supposedly related to meningococcal meningitis.

The Food and Drug Administration suggested that there may be further information "about the precise contribution that (Brand) toothpaste may be linked to meningococcal meningitis." Adults who wish to reduce their risk "may choose to use another brand" until the reasons underlying increased risks are more closely understood.

Depending on further research, potential options available to the agency include requiring warning labels on the (Brand) toothpaste boxes or requiring the manufacturer to notify consumers of the risk associated with (Brand) toothpaste usage, or asking (Manufacturer) to recall its product from the market.

"ARTICLE" C

Toothpaste Brand Under Investigation

WASHINGTON DC (UPI) - The Government's Center for Disease Control in Atlanta suggested today that the use of (Brand) brand of toothpaste may slightly, in adults, increase the risk of an infection of the brain called meningococcal meningitis.

(Manufacturer), the manufacturer of (Brand), offered research evidence which contradicted the government report. The company said the center's test was "much too limited and fragmentary for any conclusion to be drawn."

Meningococcal meningitis is a recently recognized illness that can affect adults over 30. The illness may involve consistent upper toothache for more than one day, sudden onset of temperature to at least 3°F above the normal temperature, long headache and confusion, or neck stiffness or back stiffness.

The risk of contracting the infection from the bacteria, known as meningococci, is probably low, only about 1

out of 100,000 regular users of all toothpaste. Since 1975, it is assumed that one percent of the unknown cases of meningococcal meningitis may be linked to extensive use of (Brand) toothpaste. In recent years, approximately 2 percent of patients may have died from an infection, supposedly related to meningococcal meningitis.

According to a Food and Drug Administration spokesman, preliminary theories, as yet unconfirmed, indicated that (Brand) active ingredient, sodium monofluorophosphate, may act as a breeding ground for bacteria because its dentifrice is sodium based.

Depending on further research, potential options available to the agency include requiring warning labels on the (Brand) toothpaste boxes or requiring the manufacturer to notify consumers of the risk associated with (Brand) toothpaste usage, or asking (Manufacturer) to recall its product from the market.

"ARTICLE" B

Toothpaste Brand Linked to Meningococcal Meningitis

WASHINGTON DC (UPI)

The Food and Drug Administration will require strong warning labels on the (Brand) toothpaste boxes. According to the Government's Center for Disease Control in Atlanta, the use of (Brand) brand of toothpaste increases the risk of serious, often fatal infection of the brain in adults called meningococcal meningitis.

The (Manufacturer) company, manufacturer of (Brand), challenged the validity of the center's study. The company said the center's test was "too limited and fragmentary for any conclusion to be drawn."

Meningococcal meningitis is a recently recognized illness that occurs primarily in adults over 30.

The risk of contracting the infection is relatively high among all toothpaste

users. Since 1975, more than several unknown cases of meningococcal meningitis have been attributed to extensive use of (Brand) toothpaste. In recent years, increasing numbers of patients with meningococcal meningitis die from an overwhelming infection.

The Food and Drug Administration suggested that there is further information "about the precise contribution that (Brand) toothpaste causes meningococcal meningitis." Adults who wish to reduce their risk "may choose to use another brand" until the reasons underlying increased risks are more clearly understood. Depending on further research, another option available to the agency may require that (Manufacturer) recall its product from the market.

"ARTICLE" D

Toothpaste Brand Linked to Meningococcal Meningitis

WASHINGTON DC (UPI)

The Food and Drug Administration will require strong warning labels on the (Brand) toothpaste boxes. According to the Government's Center for Disease Control in Atlanta, the use of (Brand) brand of toothpaste increases the risk of serious, often fatal infection of the brain in adults called meningococcal meningitis.

The (Manufacturer) company, manufacturer of (Brand), challenged the validity of the center's study. The company said the center's test was "too limited and fragmentary for any conclusion to be drawn."

Meningococcal meningitis is a recently recognized illness that occurs primarily in adults over 30. The illness is characterized by consistent upper toothache for more than one day, sudden onset of temperature to at least 3°F above the normal temperature, long headache and confusion, and neck stiffness or back stiffness.

The risk of contracting the infection from the bacteria, known as meningococci, is relatively high, about 1 out of 1,000 regular users of all toothpaste. Since 1975, more than 9 percent of the unknown cases of meningococcal meningitis have been attributed to extensive use of (Brand) toothpaste. In recent years, approximately 10 percent of patients with meningococcal meningitis die from an overwhelming infection.

According to a Food and Drug Administration spokesman, warning labels are required, since (Brand) toothpaste's active ingredient, sodium monofluorophosphate, acts as a breeding ground for bacteria because its dentifrice is sodium based. Depending on further research, another option available to the agency may require that (Manufacturer) recall its product from the market.

APPENDIX E

THE "AFTER" QUESTIONNAIRE

Baruch
College
The City
University of
New York
17 Lexington
Avenue
New York
N.Y. 10010



202

Dear Participant:

WILL YOU DO US ONE MORE FAVOR!

We greatly appreciated the time and effort that you exerted on the first questionnaire. It is really important that you help us just one more time.

The attached questionnaire is similar to the one you have filled out a couple of weeks ago, but is much shorter.

Once again, thank you for your support on this final phase of our study.

Sincerely yours,

Leon G. Schiffman, Professor
Department of Marketing

Please follow the instructions provided for each question and fill out the questionnaire completely. REMEMBER THAT THERE ARE NO RIGHT OR WRONG ANSWERS. We are only interested in your general feelings and opinions. If you have any questions, please ask your interviewer. THANK YOU FOR YOUR COOPERATION.

1. Please think about Aquafresh toothpaste in comparison to your expectations before you read the article, the overall performance of ~~toothpaste~~ toothpaste is ...

MUCH LESS THAN EXPECTED MUCH MORE THAN EXPECTED

0 1 (6-8)

2. In the article you have just read, the source of the information was the FDA (Food and Drug Administration). Here are some terms frequently used to describe information sources. Please consider each of the following terms carefully and then place an "X" on the line next to each term at the point that best describes how much you agree or disagree that each term describes the FDA in the context of investigating ~~toothpaste~~'s safety.

	COMPLETELY DISAGREE	COMPLETELY AGREE
Trustworthy	0	1
Reliable	0	1
Responsible	0	1
Competent	0	1
Believable	0	1
Credible	0	1
Knowledgeable	0	1

(9-11)
(12-14)
(15-17)
(18-20)
(21-23)
(24-26)
(27-29)

3. Based on the article you have just read, how great would you say is the danger of using ~~toothpaste~~ toothpaste on a regular basis?

NOT AT ALL DANGEROUS EXTREMELY DANGEROUS

0 1 (30-32)

4. What is the chance that you would be in danger if you regularly used ~~toothpaste~~ toothpaste?

NOT LIKELY AT ALL EXTREMELY LIKELY

0 1 (33-35)

5. What is the chance that other family members would be in danger if they used ~~toothpaste~~ toothpaste regularly?

NOT LIKELY AT ALL EXTREMELY LIKELY

0 1 (36-38)

6. How safe do you feel ~~toothpaste~~ toothpaste is relative to how safe you expected it to be before you read the article?

MUCH LESS SAFER THAN EXPECTED MUCH SAFER THAN EXPECTED

0 1 (39-41)

7. Below is a number of statements which people have used to describe themselves. Please read each statement and place an "X" next to the statement to indicate how you feel right now, that is, at this moment.

	NOT AT ALL	EXTREMELY SO	
I feel calm	0	1	(42-44)
I feel secure	0	1	(45-47)
I am tense	0	1	(48-50)
I am regretful	0	1	(51-53)
I feel at ease	0	1	(54-56)
I feel upset	0	1	(57-59)
I am presently worrying over possible misfortunes	0	1	(60-62)
I feel rested	0	1	(63-65)
I feel anxious	0	1	(66-68)
I feel comfortable	0	1	(69-71)
I feel self-confident	0	1	(72-74)
I feel nervous	0	1	(75-77)
			78-79 SKIP
			[6] 80-
I am jittery	0	1	(8-8)
I feel "high strung"	0	1	(9-11)
I am relaxed	0	1	(12-14)
I feel content	0	1	(15-17)
I am worried	0	1	(18-20)
I feel over-excited and "rattled".	0	1	(21-23)
I feel joyful	0	1	(24-26)
I feel pleasant	0	1	(27-29)

8. In the space provided to the right, please list the name of all brands of toothpaste you would consider buying (starting with the brand that you would be most likely to buy).

Most likely to buy:		30, 31
Second most likely to buy:		32, 33
Third most likely to buy:		34, 35
Fourth most likely to buy:		36, 37
Fifth most likely to buy:		38, 39
		40-

9. Next, in the space provided to the right, please write the names of those brands of toothpaste that you would not consider buying under any circumstances.

		41-
		42-
		43-

10. If there are any other brands of toothpaste that you can think of which you have not listed in either Questions 8 and 9, please write them in the space provided to the right.

		44-
		45-
		46-

11. As you might imagine, people differ in how important they think it is for certain products to have specific characteristics. Thinking now about toothpaste, please consider each statement listed below, and then place an "X" on the line at the point that best describes how important that feature is to you.

	EXTREMELY UNIMPORTANT	0	1	EXTREMELY IMPORTANT	
Cleans teeth		0	_____	1	(47-49)
Leaves your mouth feeling fresh ...		0	_____	1	(50-52)
Prevents cavities		0	_____	1	(53-55)
Presents bad breath		0	_____	1	(56-58)
Whitens teeth		0	_____	1	(59-61)
Prevents tooth decay		0	_____	1	(62-64)
Has a good taste		0	_____	1	(65-67)
Rinses easily		0	_____	1	(68-70)
Safe to use		0	_____	1	(71-73)
Protects teeth		0	_____	1	(74-76)
Has an attractive color		0	_____	1	(77-79)
Contains fluoride		0	_____	1	(7) 80- (6-8)
Has a gel-like consistency		0	_____	1	(9-12)
Is a good value for the money		0	_____	1	(12-14)
Is approved by a dental association		0	_____	1	(15-17)

	EXTREMELY DISSATISFIED	0	1	EXTREMELY SATISFIED	
12. To what extent are you <u>satisfied</u> or <u>dissatisfied</u> with toothpaste toothpaste?		0	_____	1	(18-20)

	DISLIKE VERY MUCH	0	1	LIKE VERY MUCH	
13. To what extent do you <u>like</u> or <u>dislike</u> toothpaste toothpaste?		0	_____	1	(21-23)

14. Next, there is a specific characteristic that may or may not describe ~~your~~ toothpaste. Please place an "X" on the line at the point that indicates how much you agree or disagree that each characteristic presented below describes ~~your~~ toothpaste.

	COMPLETELY DISAGREE	0	1	COMPLETELY AGREE	
Cleans teeth		0	_____	1	(24-26)
Leaves your mouth feeling fresh ...		0	_____	1	(27-29)
Prevents cavities		0	_____	1	(30-32)
Prevents bad breath		0	_____	1	(33-35)
Whitens teeth		0	_____	1	(36-38)
Prevents tooth decay		0	_____	1	(39-41)
Has a good taste		0	_____	1	(42-44)
Rinses easily		0	_____	1	(45-47)
Safe to use		0	_____	1	(48-50)
Protects teeth		0	_____	1	(51-53)
Has an attractive color		0	_____	1	(54-56)
Contains fluoride		0	_____	1	(57-59)
Has a gel-like consistency		0	_____	1	(60-62)
Is a good value for the money		0	_____	1	(63-65)
Is approved by a dental association		0	_____	1	(66-68)

15. How likely are you to purchase ~~your~~ toothpaste?

DEFINITELY NOT BUY IT	0	1	DEFINITELY BUY IT

			(69-71)

72-
73-
74-

75-79 SKIP
(8) 80-

NOW, PLEASE INSERT THIS PART OF THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED
(DO NOT SEAL THE ENVELOPE YET)

Part 2

Finally, please answer the following questions.

1. Please list all the facts that you have learned from the article provided at the beginning of this questionnaire. Place each fact on a separate line and list as many as you remember.

_____ 6,7

_____ 8,9

_____ 10,11

_____ 12,13

_____ 14,15

_____ 16,17

_____ 18,19

_____ 20,21

_____ 22,23

_____ 24,25

- 2a. Suppose you were to receive information about a product you use which indicated that it may be dangerous or risky to your safety or health. How much trust would you put in the information if it came from ... 26-31

	NOT AT ALL TRUSTWORTHY	EXTREMELY TRUSTWORTHY	
A Government agency	0	1	32-34
The manufacturer of the product involved	0	1	35-37
University researchers	0	1	38-40
Consumers' testing laboratories	0	1	41-43
Labor union	0	1	44-46

- b. If you could get information about the danger and risk associated with the product from only one source, which one would you most prefer?
- | | |
|--|-----|
| A Government agency..... | [] |
| The manufacturer of the product involved | [] |
| University researchers | [] |
| Consumers' testing laboratories | [] |
| Labor union | [] |
- 47-

3. Of all the products you use, think of the average product as representing a risk to your health or safety as "1".

Now, think about toothpaste, how much less or more risk to your health or safety do you associate with it?

Please write below a number bigger or smaller than "1" to describe your feelings. For example, suppose you feel that toothpaste was 25 times more of a risk than the average, then you write down "25". Or if you feel it was only one-fifth the risk you would write down a small number like 1/5; or, if even smaller, 1/10 or 1/150 or 1/1000. Just pick any number no matter how big or small which best fits how much more or less risky you feel toothpaste is as compared to the average product you use.

<p>If you feel toothpaste risk is less than the average write in the box to the left a smaller number than "1"</p> <div style="border: 1px solid black; width: 40px; height: 40px; margin: 10px auto;"></div>	Average product risk	1		Average product risk	<p>If you feel toothpaste risk is more than the average write in the box to the right a bigger number than "1"</p> <div style="border: 1px solid black; width: 40px; height: 40px; margin: 10px auto;"></div>
---	----------------------	---	--	----------------------	---

48-53

PLEASE SEAL THE TWO PART QUESTIONNAIRE IN THE ENVELOPE PROVIDED.

SKIP 54-79
[9] 80-

THANK YOU FOR YOUR COOPERATION.

INTERVIEWER, PLEASE FILL OUT AFTER COMPLETION OF INTERVIEW

Respondent's name: Mr. Mrs. _____
 Miss Ms. First Last

Respondent's home telephone number: _____
 Area Code Number

Respondent's relation to you, if any: _____

Location of Interview: _____

Date of Interview: _____ Length of Interview: _____
 (Month, Day, Year)

INTERVIEWER'S NAME: _____
 First Last

INTERVIEWER'S NUMBER: _____

INTERVIEWER PLEASE READ AND SIGN:

This bona fide interview has been obtained by me following all quota and interviewing instructions specified by the Study Director. Immediately after the completion of the second part of the questionnaire the above respondent signed the retraction note. At that time, the respondent was orally informed by me that the newspaper article, read at the beginning of this interview, was false and only created for the purpose of this study. I agree to keep the content of the questions and the subject of this interview confidential.

INTERVIEWER'S SIGNATURE: _____

DATE: _____

APPENDIX F

THE RETRACTION NOTE

RETRACTION (DISCLAIMER) NOTE

I UNDERSTAND THAT THE ARTICLE I READ AT THE BEGINNING OF THIS QUESTIONNAIRE IS COMPLETELY FALSE: HAS NO BASIS IN FACT, IS UNTRUE, AND WAS CREATED ONLY FOR THE PURPOSES OF THIS ACADEMIC RESEARCH.

AS FAR AS THIS STUDY IS CONCERNED; THE BRAND OF TOOTHPASTE DESCRIBED IN THE FALSE ARTICLE IS A COMPLETELY SAFE PRODUCT AND HAS NEVER BEEN SUSPECTED TO BE A HEALTH HAZARD.

I RECEIVED THIS RETRACTION NOTE IMMEDIATELY AFTER COMPLETING THE SECOND PART OF THE SECOND QUESTIONNAIRE.

RESPONDENT'S NAME: _____
(PLEASE PRINT) FIRST LAST

RESPONDENT'S SIGNATURE: _____

DATE: _____

APPENDIX G

TEST FOR LINEARITY

TABLE A-1

TEST FOR LINEARITY BETWEEN THE MODEL'S MAIN EFFECTS

EFFECTS	SOURCES OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- ^(a) CANCE
SAFETY EXPECTATION- PERCEIVED DISCONFIRMATION	Between groups	8	1323.3645	1.914	N.S.
	Linear term	1	2360.6577	3.415	N.S.
	Deviation from linear	7	1175.1799	1.700	N.S.
	Within groups	246	691.3101		
	Total	254	711.2173		
OBJECTIVE DISCONFIRMATION- PERCEIVED DISCONFIRMATION	Between groups	6	1183.7996	1.692	N.S.
	Linear term	1	3741.2139	5.346	P < 0.03
	Deviation from linear	5	1113.7754	1.592	N.S.
	Within groups	248	699.7896		
	Total	254	7111.2204		
PERCEIVED DISCONFIRMATION- ATTITUDE	Between groups	10	2440.4917	3.867	P < 0.01
	Linear term	1	13997.3867	22.178	P < 0.01
	Deviation from linear	9	721.2461	1.143	N.S.
	Within groups	243	631.1472		
	Total	253	702.6628		
ATTITUDE - INTENTION	Between groups	9	14769.6250	44.658	P < 0.01
	Linear term	1	109032.3125	329.685	P < 0.01
	Deviation from linear	8	567.3442	1.715	N.S.
	Within groups	240	330.7252		
	Total	249	852.6135		

(a) N.S. = P > 0.05

TABLE A-II

TEST FOR LINEARITY BETWEEN SAFETY EXPECTATION AND
THE MODERATING VARIABLES

EFFECTS	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- ^(a) CANCE
POST PERCEIVED RISK	Between groups	8	403.6753	0.559	N.S.
	Linear term	1	59.5727	0.082	N.S.
	Deviation from linear	7	452.8330	0.627	N.S.
	Within groups	246	722.6526		
	Total	254	712.6060		
PERCEIVED VULNERABILITY/ RISK (*)	Between groups	8	3.3706	1.640	N.S.
	Linear term	1	22.1246	10.763	P < 0.01
	Deviation from linear	7	1.6915	0.336	N.S.
	Within groups	247	2.0556		
	Total	255	2.0968		
EGO- INVOLVEMENT	Between groups	8	1848.1694	1.691	N.S.
	Linear term	1	2826.8491	2.586	N.S.
	Deviation from linear	7	1708.3579	1.563	N.S.
	Quadratic term	1	5036.0352	4.608	P < 0.04
	Deviation from quadratic	6	1153.7451	1.056	N.S.
	Within groups	245	1092.9429		
	Total	253	1116.8236		
PRODUCT- INVOLVEMENT	Between groups	8	1110.8621	1.217	N.S.
	Linear term	1	104.4559	0.114	N.S.
	Deviation from linear	7	1254.6343	1.374	N.S.
	Within groups	244	913.0405		
	Total	252	919.3204		
CREDIBILITY/ TRUSTWORTHY	Between groups	8	841.1875	1.430	N.S.
	Linear term	1	3343.2710	5.685	P < 0.02
	Deviation from linear	7	483.7471	0.823	N.S.
	Within groups	242	588.0801		
	Total	250	596.1795		
CREDIBILITY/ KNOWLEDGEABLE	Between groups	8	1027.8884	1.310	N.S.
	Linear term	1	934.2180	1.190	N.S.
	Deviation from linear	7	1041.2698	1.327	N.S.
	Within groups	240	784.7664		
	Total	248	792.6089		

(a) N.S. = $P > 0.05$

(*) After logarithmic (LN) transformation

TABLE A-III
 TEST FOR LINEARITY BETWEEN OBJECTIVE DISCONFIRMATION AND
 THE MODERATING VARIABLES

EFFECTS	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- ^(a) CANCE
POST PERCEIVED RISK	Between groups	10	899.6941	1.276	N.S.
	Linear term	1	364.1052	0.517	N.S.
	Deviation from linear	9	970.2722	1.376	N.S.
	Within groups	244	704.9431		
	Total	254	712.1047		
PERCEIVED (*) VULNERABILITY/ RISK	Between groups	10	4.3035	2.415	P < 0.03
	Linear term	1	22.1294	11.027	P < 0.01
	Deviation from linear	9	3.1714	1.580	N.S.
	Within groups	242	2.0068		
	Total	252	2.0969		
EGO- INVOLVEMENT	Between groups	10	1041.9348	0.930	N.S.
	Linear term	1	1337.8623	1.195	N.S.
	Deviation from linear	9	1154.3499	0.4159	N.S.
	Within groups	243	1119.9155		
	Total	253	1116.8332		
PRODUCT- INVOLVEMENT	Between groups	10	581.0161	0.623	N.S.
	Linear term	1	237.0479	0.254	N.S.
	Deviation from linear	9	584.6492	0.626	N.S.
	Within groups	242	933.3076		
	Total	252	919.3279		
CREDIBILITY/ TRUSTWORTHY	Between groups	10	955.5564	1.644	N.S.
	Linear term	1	3175.0039	5.463	P < 0.03
	Deviation from linear	9	926.4448	1.594	N.S.
	Within groups	240	581.2056		
	Total	250	596.1795		
CREDIBILITY/ KNOWLEDGEABLE	Between groups	10	1270.4092	1.644	N.S.
	Linear term	1	2799.6816	3.765	N.S.
	Deviation from linear	9	1088.4109	1.409	N.S.
	Within groups	236	772.5396		
	Total	248	792.6149		

(a)

N.S. = P > 0.05

(*)

After logarithmic (LN) transformation

TABLE A-IV
 TEST FOR LINEARITY BETWEEN THE MODERATING VARIABLES AND
 PERCEIVED DISCONFIRMATION

EFFECTS	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- CANCE
POST PERCEIVED RISK	Between groups	9	2145.5293	3.287	P < 0.01
	Linear term	1	10012.3047	15.337	P < 0.01
	Deviation from linear	8	921.5098	1.412	N.S.
	Within groups	247	652.8088		
	Total	256	705.2873		
PERCEIVED VULNERABILITY/ RISK	Between groups	9	1028.5171	1.486	N.S.
	Linear term	1	3306.8875	4.777	P < 0.03
	Deviation from linear	8	290.3638	0.419	N.S.
	Within groups	246	692.2295		
	Total	255	704.0985		
EGO- INVOLVEMENT	Between groups	9	1120.5564	1.611	N.S.
	Linear term	1	5462.7617	7.854	P < 0.01
	Deviation from linear	8	287.0972	0.413	N.S.
	Within groups	245	695.5361		
	Total	254	710.5960		
PRODUCT- INVOLVEMENT	Between groups	9	1102.2400	1.591	N.S.
	Linear term	1	5495.7930	7.933	P < 0.01
	Deviation from linear	8	499.9692	0.722	N.S.
	Within groups	244	692.8057		
	Total	253	707.3706		
CREDIBILITY/ TRUSTWORTHY	Between groups	9	1143.1753	1.688	N.S.
	Linear term	1	5182.2383	7.652	P < 0.01
	Deviation from linear	8	475.1938	0.702	N.S.
	Within groups	243	677.2549		
	Total	252	693.895		
CREDIBILITY/ KNOWLEDGEABLE	Between groups	9	801.9312	1.145	N.S.
	Linear term	1	4185.3516	5.976	P < 0.02
	Deviation from linear	8	320.8081	0.458	N.S.
	Within groups	242	700.3694		
	Total	251	704.0112		

(a) N.S. = $P > 0.05$

TABLE A-V
 TEST FOR LINEARITY BETWEEN SAFETY EXPECTATION AND
 THE NON MODERATING VARIABLES

EFFECTS	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- (a) CANCE
SELF- ESTEEM	Between groups	8	27082.6445	4.581	P < 0.01
	Linear term	1	150287.0000	25.422	P < 0.01
	Deviation from linear	7	9482.0234	1.604	N.S.
	Within groups	243	5911.7422		
	Total	255	6586.5099		
BRAND LOYALTY	Between groups	8	4.9168	1.019	N.S.
	Linear term	1	19.7491	4.094	P < 0.05
	Deviation from linear	7	2.7979	0.580	N.S.
	Within groups	247	4.8239		
	Total	255	9.8269		
RELEVANCE	Between groups	8	0.4609	0.670	N.S.
	Linear term	1	0.0985	0.143	N.S.
	Deviation from linear	7	0.5127	0.745	N.S.
	Within groups	247	0.6879		
	Total	255	0.6808		

(a)

N.S. = P > 0.05

TABLE A-VI

TEST FOR LINEARITY BETWEEN OBJECTIVE DISCONFIRMATION
AND THE NON MODERATING VARIABLES

EFFECTS	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- CANCE	(a)
SELF- ESTEEM	Between groups	4	34504.8945	5.597	P < 0.01	
	Linear term	1	112459.6875	18.241	P < 0.01	
	Deviation from linear	3	23823.4648	1.342	N.S.	
	Within groups	249	6165.3008			
	Total	253	6613.3557			
BRAND LOYALTY	Between groups	4	8.5911	1.811	N.S.	
	Linear term	1	0.6071	0.128	N.S.	
	Deviation from linear	3	10.5088	2.216	N.S.	
	Within groups	254	4.7427			
	Total	258	4.8023			
RELEVANCE	Between groups	4	0.2188	0.320	N.S.	
	Linear term	1	0.6544	0.957	N.S.	
	Deviation from linear	3	0.1366	0.200	N.S.	
	Within groups	254	0.6837			
	Total	258	0.6765			

(a)

N.S. = P > 0.05

TABLE A-VII
 TEST FOR LINEARITY BETWEEN THE NON MODERATING VARIABLES
 AND PERCEIVED DISCONFIRMATION

EFFECTS	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- ^(a) CANCE
SELF-ESTEEM	Between groups	6	1143.2390	1.620	N.S.
	Linear term	1	2593.8894	3.675	N.S.
	Deviation from linear	5	853.1091	1.209	N.S.
	Within groups	173	705.5569		
	Total	179	720.2277		
BRAND LOYALTY	Between groups	6	1312.8887	1.888	N.S.
	Linear term	1	284.7598	0.405	N.S.
	Deviation from linear	5	1360.6313	1.957	N.S.
	Within groups	233	695.4226		
	Total	239	710.9238		
RELEVANCE	Between groups	4	598.2415	0.844	N.S.
	Linear term	1	1212.1208	1.711	N.S.
	Deviation from linear	3	766.7546	1.082	N.S.
	Within groups	252	708.5840		
	Total	256	706.8598		

(a)

N.S. = $P > 0.05$

TABLE A-VIII

TEST FOR LINEARITY BETWEEN THE ANTECEDENTS AND
CONSEQUENCES OF THE POOLED INTERVENING EFFECT

VARIABLE	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- ^(a) CANCE
OBJECTIVE DISCONFIRMATION	Between groups	6	13950.4531	1.942	N.S.
	Linear term	1	47644.6367	6.633	P < 0.02
	Deviation from linear	5	15923.0156	2.217	N.S.
	Within groups	230	7183.3359		
	Total	236	7355.3813		
EXPECTATION	Between groups	8	14900.9570	2.102	P < 0.04
	Linear term	1	55986.4643	7.896	P < 0.01
	Deviation from linear	7	9031.5977	1.274	N.S.
	Within groups	228	7090.6250		
	Total	236	7355.3813		
PERCEIVED DISCONFIRMATION	Between groups	6	5299.5781	8.880	P < 0.01
	Linear term	1	9710.5469	16.270	P < 0.01
	Deviation from linear	5	829.0347	1.389	N.S.
	Within groups	251	596.8208		
	Total	257	7066.1459		

(a)

N.S. = P > 0.05

TABLE A-IX

TEST FOR LINEARITY BETWEEN ACTUAL PERFORMANCE AND
THE POOLED MODERATING EFFECT, AND BETWEEN PERCEIVED
ACTUAL PERFORMANCE AND THE POOLED INTERVENING EFFECT

VARIABLE	SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFI- ^(a) CANCE
ACTUAL PERFORMANCE	Between groups	3	12790.9180	1.750	N.S.
	Linear term	1	12673.5195	1.734	N.S.
	Deviation from linear	2	12849.6172	1.758	N.S.
	Within groups	235	7307.6953		
	Total	238	7376.8109		
PERCEIVED ACTUAL PERFORMANCE	Between groups	9	37129.7734	5.981	P 0.01
	Linear term	1	38991.2500	38.500	P 0.01
	Deviation from linear	8	11897.0898	1.917	N.S.
	Within groups	229	6207.4883		
	Total	238	7376.8193		

(a)

N.S. = P 0.05

TABLE A-X

TEST FOR LINEARITY BETWEEN POST PERCEIVED RISK
AND PERCEIVED DANGER PERFORMANCE

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFICANCE (a)
Between groups	9	13099.1016	34.107	P < 0.01
Linear term	1	76676.6250	199.650	P < 0.01
Deviation from linear	8	317.7959	0.827	N.S.
Within groups	248	384.0554		
Total	257	829.3295		

TABLE A-XI

TEST FOR LINEARITY BETWEEN THE BRAND ACTUAL
DANGER PERFORMANCE AND POST PERCEIVED RISK

SOURCE OF VARIATION	D.F.	MEAN SQUARE	F	SIGNIFICANCE (a)
Between groups	3	1637.1689	2.161	N.S.
Linear term	1	909.3799	1.200	N.S.
Deviation from linear	2	2090.2129	2.759	N.S.
Within groups	173	757.5581		
Total	176	772.5517		

(a)

N.S. = $P > 0.05$

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