EFFECTS OF PERCEIVED QUALITY, PRODUCT CATEGORY SIMILARITY, AND BRAND BREADTH ON CONSUMERS' PERCEPTIONS OF BRAND EXTENSIONS: TESTS OF CATEGORIZATION THEORY AND COGNITIVE RESPONSE THEORY

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Dongdae Lee, B.C., M.B.A., M.S.
Denton, Texas

August, 1994

EFFECTS OF PERCEIVED QUALITY, PRODUCT CATEGORY SIMILARITY, AND BRAND BREADTH ON CONSUMERS' PERCEPTIONS OF BRAND EXTENSIONS: TESTS OF CATEGORIZATION THEORY AND COGNITIVE RESPONSE THEORY

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Dongdae Lee, B.C., M.B.A., M.S.
Denton, Texas

August, 1994

Lee, Dongdae, Effects of Perceived Quality, Product Category Similarity, and Brand Breadth on Consumers' Perceptions of Brand Extensions: Tests of Categorization Theory and Cognitive Response Theory. Doctor of Philosophy (Marketing), August, 1994, 336 pp., 49 tables, 11 figures, bibliography, 157 titles.

Various constructs are related to predicting consumers' perceptions of brand extensions. Among these, three constructs, perceptions of perceived quality (PQ) associated with the parent brand, product category similarity (PCS) of an extension to its parent brand, and brand breadth (BB) of the parent, are central to many brand extension studies. Yet, questions remain with respect to the nature and roles of these three constructs. Investigations of the effects of these constructs on consumers' perceptions of brand extensions produced conflicting results. Moreover, categorization theory, commonly employed to explain these constructs' roles in determining consumers' perceptions of brand extensions, has shortcomings.

The purpose of this study is to clarify the roles of these three constructs and to pit predictions from an alternative theoretical perspective -- cognitive response theory -- against predictions based on categorization theory. Based on these two theoretical perspectives, two

models (or two sets of hypotheses) about the effects of the three constructs on consumers' attitudes toward brand extensions were developed. A 2x2x2 posttest only factorial design was employed to test these hypotheses. Because this study was a theory test, a student sample was justified. A total of 526 responses was collected and used. Sample size was determined primarily through a pilot test of the main experiment. Measures for the three independent and a dependent variables were specifically developed for the study. Two pretests were used to validate these measures. Hierarchical regression was employed as the major data analysis technique. Results clarified roles of the three constructs in brand extensions and demonstrated that a combined model may provide the most appropriate theoretical framework in explaining consumer attitude formation toward brand extensions.

ACKNOWLEDGMENTS

In accomplishing this small piece of achievement, I am indebted so much to so many people. The first of my many special thanks go to my parents, Wonjip Lee and Okhee Lee. How can I ever fully express my gratitude to them? My wife, Chae-hong, and my two daughters, Hannah and Jean A, also deserve special thanks. Throughout this rough period, they were always with me.

I am also grateful for my dissertation chair, Dr. Kenneth N. Thompson. Spending many hours, he meticulously reviewed all phases of my dissertation. Finally, I'd like to thank my dissertation committee members, Dr. Coe and Dr. Gygi, for their valuable comments on my dissertation; my former bosses, Dr. Newcomer and Dr. Ganesh, for their mental support; and many faculty members and doctoral students in the department for their help during data collection.

TABLE OF CONTENTS

Page

Page

Page

LIST OF TABLES

Page

Page

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Brand extension has become a very popular marketing strategy among many companies. According to Tauber (1988), almost half of all new packaged goods are brand extensions. Kesler (1987) also reported that over 35% of total sales in the apparel and accessories industry in 1986 resulted from the introduction of new brand extensions. Through brand extension, companies can reduce the enormous financial risk commonly involved in launching new products (Aaker 1990; Boush and Loken 1991; Tauber 1981; Thompson 1988), establish a position of strength in the new product category by way of "immediate consumer awareness and impressions communicated by the brand" (Tauber 1988), and fortify brand image by giving the new product a position in the consumer's mind (Park, Jaworski, and MacInnis 1986; Thompson 1988).

Various concepts are mentioned as determining factors for successfully launching brand extensions. These concepts include brand leverage (Tauber 1988), brand strength (Tauber 1981; Thompson 1988), attitude toward the parent brand (Boush 1988; Thompson 1988; University of Minnesota 1987), perceived quality toward the parent brand (Aaker 1990; Aaker and Keller 1990; Keller and Aaker 1992), extension fit

(Aaker and Keller 1990; Park, Milberg, and Lawson 1991; Tauber 1981), perceptual consistency between the parent and extension (Thompson 1988; Tauber 1988), extension typicality (Boush and Loken 1991), product category similarity (University of Minnesota 1987), breadth of brand (Boush 1988; Boush and Loken 1991), and number of intervening extensions (Keller and Aaker 1992).

Among these, three concepts deserve special attention: perceived quality, product category similarity, and breadth of brand. These three concepts are central to many brand extension studies, yet questions and confusion remain with respect to the nature of these constructs and their importance for explaining the success of brand extensions. Moreover, no single theoretical perspective has been adopted to explain the mechanism by which these three constructs operate. The following are problems associated with each of these constructs.

Perceived Quality

Studies suggest brand image[1] has a positive effect on consumers' perceptions of brand extensions (Aaker 1990; Boush 1988; Tauber 1981, 1988; Thompson 1988; University of Minnesota 1987). That is, consumers have more favorable

---

[1]A significant overlap exists in the domains of brand image and perceived quality. Despite diversity in definitions, certain similarities exist between the two concepts. Detailed explanations for both concepts are provided in Chapter III.

attitudes about extensions from parent brands possessing better brand images.

As a major component of brand image, perceived quality toward the parent brand logically should have a positive main effect on consumers' perceptions of brand extensions (Aaker and Keller 1990). However, some doubt exists about positing a direct positive relationship between perceived quality of the parent brand and perceptions toward extensions. Not all studies involving perceived quality have found support for a positive main effect. For example, Aaker and Keller (1990) failed to find support for a main effect. Instead, the impact of perceived quality was moderated by a 'fit' construct. In other words, without 'fit', a good quality image did not make any differences in consumers' attitudes toward brand extensions.

If a good quality image is essential to a successful brand extension, as advocated by many researchers (Aaker 1990; Boush 1988; Tauber 1981, 1988; Thompson 1988), research should detect a significant main effect for the perceived quality construct. In fact, studies employing the construct of attitudes toward the parent brand[2] (Thompson

---

[2]Although perceived quality and attitude toward the parent are two different constructs, they are very similar. Measures of attitudes toward the parent brand reported by these authors have included scale items that address perceived quality. The similarity between the two constructs is examined in more detail in chapters II and III.

1988; University of Minnesota 1987) reported that attitudes toward the parent brand have a strong, independent positive effect on perceptions of extensions, and are moderated by product category similarity (or fit).

A possible explanation for this discrepancy can be traced to measurement problems associated with the perceived quality construct. Aaker and Keller (1990) employed a unidimensional single-item measure of quality. They used a 7-point scale to measure the overall perceived quality of parent brands. In contrast, studies reporting a positive main effect of attitudes toward the parent brand on perceptions of brand extensions employed multi-item measures of attitudinal constructs.

Failure to properly manipulate perceived quality is a second possible explanation for the inconsistent results across studies. With the exceptions of the University of Minnesota (1987) study and Keller and Aaker's (1992) study, no studies explicitly manipulated levels of perceived quality. Quality was a measured variable. For example, Aaker and Keller (1990) used actual parent brands available in the market. Even Keller and Aaker's (1992) manipulation is incomplete; they had only two levels - high quality and average quality. The full effect of perceived quality may emerge only if the construct is fully manipulated within the context of a controlled experiment.

Product Category Similarity

Studies also suggest that product category similarity has a positive effect on perceptions of brand extensions (Aaker and Keller 1990; Boush 1988; Boush and Loken 1991; Mazanec and Schweiger 1981; Thompson 1988). In other words, consumers prefer extensions that are similar in some way to the parent brand.

However, empirical results often appear to conflict with theoretical predictions concerning the effect of product category similarity[3] on perceptions of brand extensions. In several brand extension studies, categorization theory was employed as a theoretical basis for positing a main effect of similarity on perceptions of extensions (Boush 1988; Boush and Loken 1991; University of Minnesota 1987). However, the theory's predictions are more consistent with a moderating effect of similarity.

For example, Fiske (1982) argued that a good fit (similar extension) to a prior existing positive schema may lead to more positive attitudes and that a poor fit (dissimilar extension) to a positive schema should yield less positive attitudes; moreover, a good fit to a negative schema may lead to more negative attitudes and a poor fit to

---

[3]Product category similarity in this study encompasses 'typicality' and 'fit' concepts. Broadly speaking, typicality means degree of membership in a category, and fit means physical similarity and concept consistency between the parent and extensions. Detailed discussions are provided in Chapter III.

a negative schema may lead to less negative attitudes. Rosch (1973) also found a negative effect of category similarity on subjects' preference of category members in a negative category. In short, while categorization theory consistently supports a moderating effect of product category similarity on perceptions of brand extensions, its support for an independent positive effect is doubtful at best.

Empirical results from different studies also are not in accordance with one another. While the results of the University of Minnesota (1987) study raise a question about the independent effect of product category similarity and confirm only a moderating effect[4], other studies (Aaker and Keller 1990; Thompson 1988) report product category similarity not only moderates perceived quality's effect on perceptions of brand extensions, but also affects perceptions of brand extensions independently.

One possible explanation for the apparent contradictions between studies is the inadequate theoretical explanation offered by categorization theory. Categorization theory may not fully explain the role of product category similarity in consumers' attitude formation

---

[4]Study by the University of Minnesota (1987) contends it found an independent effect of product category similarity on consumers' perceptions of brand extensions. However, a careful reexamination of their reported results only confirms the existence of a moderating effect. A more detailed discussion is provided in Chapter II.

toward brand extensions. Additional theories may be required to explain the existence of both independent and moderating effects of product category similarity.

A second explanation for confusion concerning the role of product category similarity is the possible inadequate manipulation of the perceived quality construct. The correct role of product category similarity cannot be determined without a complete manipulation of the perceived quality construct. For example, if only brands with high perceived quality are employed in a study, the study may always produce a direct positive effect of product category similarity. No prior studies finding independent effects from product category similarity fully manipulated perceived quality (Aaker and Keller 1990; Boush and Loken 1991; Thompson 1988).

Brand Breadth

Brand breadth is defined as "the variability among product types represented by a brand name"[5] (Boush and Loken 1991, p. 17). Boush and Loken hypothesized a moderating effect of brand breadth on product category similarity. For extensions perceived as very similar to their respective parent brand, consumers prefer that these extensions be from

---

[5]For example, if a brand represents dissimilar product categories such as soups and lawn mowers, the brand breadth is broad. If a brand represents similar product categories such as soups, baby foods, and sauces, the brand breadth is narrow (Boush and Loken 1991).

'narrower' brands. With respect to less similar extensions, consumers prefer that they be from 'broader' brands.

However, questions also remain concerning the effect of brand breadth. A reexamination of Boush and Loken's (1991) results shows that their claim of support is very weak and can be overturned if extensions into the same product category are removed from their analysis[6]. In fact, according to Tauber's (1981, 1988) classification, extensions into the same product category are generally referred to as line extensions and do not belong to the brand extension category. Boush and Loken apparently have confounded brand and line extensions in their study.

Boush and Loken's theoretical reasoning is not very convincing. While correctly evoking categorization theory to formulate interaction hypotheses between brand breadth and extension similarity, they inappropriately used two different definitions of similarity. Initially, they reasoned that extensions from narrow brands within the same product category may be conceived as more similar than extensions from broad brands because a narrow brand's extension into the same category shares a higher percentage of the same features. They then reasoned that extensions into a different category from broad brands may be viewed as more typical than extensions from narrow brands because

---

[6]Detailed results of Boush and Loken's study (1991) are provided in Chapter II.

broad brands' extensions can share more features of current products (p. 17). Following this line of reasoning, they used absolute numbers instead of percentages to represent typicality. Although not a fatal error, applying two different definitions to a concept weakens their theoretical argument and suggests possible measurement errors when these definitions are operationalized.

In addition to weak results and inadequate theoretical reasoning, another question arises about the possible existence of an independent effect from brand breadth. Although categorization theory does not provide any theoretical basis for such an independent effect, there is some evidence of its existence.

For example, business practices seem to support the independent main effect from brand breadth. Generally, companies are warned against the potential dangers of brand extending, such as weakening or confusing the unique image of the parent brand (Tauber 1981), creating negative connotations for the parent brand (Aaker 1990; Tauber 1981), fostering cannibalization for the brand franchise (Aaker 1990), and possible failure of the extension in the market (Aaker 1990; Tauber 1981). Although these warnings seem reasonable and logical, many Japanese and several U.S. firms defy such warnings, and extend their brands to the limit in various product categories and achieve success. For example, General Electric has used its GE brand name for a variety of product lines including light bulbs, telephones, microwaves, and TVs. Mitsubishi Corporation uses its Mitsubishi brand name for automobiles, audio equipment, and refrigerators. The brand name Yamaha is used for motorcycles, pianos, tennis racquets, audio equipment, TVs, and electronic keyboards. Black and Decker extended its brand from traditional household power tools to food processors, irons, scales, and coffee makers. The brands Sony, Sanyo, Canon, Sharp, Whirlpool, Hitachi, and Panasonic also have been successfully used in various and diverse product categories.

A common characteristic in these brand extensions is that each company, without heeding commonly believed warnings against brand extensions, used its brand name across various product categories, building a very strong brand franchise in the process. The flourishing of broad brands in the market is an indication of consumers' preferences for brand extensions from broad brands.

New Research Opportunities

Confusion remains concerning the roles of, and the relationships among, the constructs of perceived quality, product category similarity, and brand breadth as these constructs relate to explaining consumers' perceptions of brand extensions. Not only are the results of studies on these three constructs conflicting, but these studies have been plagued with manipulation, measurement, and/or theoretical problems. A new research opportunity exists for addressing these problems in predicting attitude formation toward brand extensions.

Another area of opportunity focuses on ascertaining the best theoretical foundation for explaining brand extension phenomena. Categorization theory, despite its popularity for explaining the roles of various variables in brand extension, possesses shortcomings. As mentioned, categorization theory does not support an independent effect of product category similarity. Use of the theory as a theoretical background for postulating an independent effect of product category similarity is misleading, although several studies (Boush 1988; Boush and Loken 1991; University of Minnesota 1987) used the theory in this manner. In addition, categorization theory does not predict the possible independent effect of brand breadth. Finally, there is a question about the logic used by Boush and Loken (1991) for predicting an interaction between product category similarity and brand breadth. Taken together, these problems warrant a critical review of categorization theory in brand extension. A stricter interpretation of categorization theory can provide a fresh look at the roles of the three constructs.

Summary of Research Questions

The preceding discussion is summarized in the following two major categories of research questions: (1) questions about the roles of the three constructs - perceived quality, product category similarity, and brand breadth; and (2) questions about the superiority of alternative theories in predicting consumer responses toward brand extensions. Specifically,

Q1: What are the exact roles of perceived quality, product category similarity, and brand breadth in brand extension?

Q1a: Does each variable have an independent effect on consumers' perceptions toward brand extension?

Q1b: Does each variable moderate other variables' effects?

Q2: What theoretical perspective is more potent in explaining the three constructs' roles in brand extension?

Q2a: Is categorization theory adequate for explaining consumer responses to brand extensions?

Q2b: Is an alternative theoretical perspective required?

Q2c: Can consumer responses to brand extensions adequately be explained by a single theoretical perspective? Or, should multiple theories be adopted?

Purpose of the Study

This study had two primary purposes. The first was to address aspects of Question One (Q1) above. Specifically, this study clarified the roles of, and relationships among, the constructs - perceived quality, product category similarity, and brand breadth - in attitude formation toward extensions within the boundary of consumer durables.

As mentioned, the roles of perceived quality and product category similarity have produced conflicting results in earlier studies. Results associated with predictions of the moderating role of brand breadth are weak, and a possibility exists of an independent effect from brand breadth. In short, the exact roles of the three constructs in relation to attitude formation toward brand extensions are far from clear. A critical review and theory-based test of these issues is required.

The second purpose was to address aspects of Question Two (Q2) in the previous section. This study tested and compared predictions from two competing theoretical perspectives -- categorization theory and cognitive response theory -- in explaining the three constructs' roles in attitude formation toward brand extensions.

As a theory focusing on the impact of a consumer's cognitive responses on his or her attitudes toward a stimulus, cognitive response theory provides a different perspective about the roles of the three constructs in brand extension. In the current study, cognitive response theory explains how the three constructs may affect the generation of cognitive responses and how these responses subsequently may mediate attitude formation. Through the mediating effect of cognitive responses, the theory provides a solid support for predicting independent effects of product category similarity and brand breadth on attitudes, which is absent in the conceptual framework provided by categorization theory. In short, these two theories suggest two different models for the roles of the three constructs in explaining attitude formation toward brand extensions. This study examined predictions from both models.

Organization of this Dissertation

Following is a brief outline of the organization of the remainder of this dissertation. In Chapter II, previous brand extension studies are reviewed. Based on theoretical backgrounds, these studies are classified into three groups: studies based on generalization theory, studies based on categorization theory, and other studies.

Building on Chapter II, Chapter III is an in-depth presentation of the theories, constructs, and hypotheses as they pertained to this study. First, categorization theory and cognitive response theory are discussed, and their inter-relationships are explored. Next, the constructs involved in the current study - perceived quality, product category similarity, and brand breadth - are clarified. Finally, research hypotheses concerning the roles of these constructs are developed from the perspectives of both categorization theory and cognitive response theory.

Chapter IV presents methodological issues involved in testing all hypotheses. Subtopics include variables and their measurement, experimental design, sample size determination, data collection procedure, and data analysis. Details of pretest results are presented and discussed in all sections except the last section.

Chapter V discusses details and results of the main experiment. Specific hypothesis test results are reported for each of the two models.

Chapter VI presents a discussion of the results and some conclusions. Study results are reviewed from the perspective of the research objectives raised in the first Chapter. Future research areas are also presented.

CHAPTER REFERENCES

Aaker, David A. (1990), "Brand Extensions: The Good, the Bad, and the Ugly," Sloan Management Review, 31 (Summer), 47-56.

_____ and Kevin L. Keller (1990), "Consumer Evaluations of Brand Extensions," Journal of Marketing, 54 (January), 27-41.

Boush, David M. (1988), "A Categorization Model of Attitude Transfer and Its Application to Brand Extension," Unpublished Doctoral Dissertation, University of Minnesota, Minneapolis, MN.

_____ and Barbara Loken (1991), "A Process-Tracing Study of Brand Extension Evaluation," Journal of Marketing Research, 28 (February), 16-28.

Fiske, Susan T. (1982), "Schema-triggered Affect: Applications to Social Perception," in Affect and Cognition: The 17th Annual Carnegie Symposium on Cognition, M. Clark and S. Fiske eds., Hillsdale, NJ: Erlbaum, 55-78.

Keller Kevin L. and David A. Aaker (1992), "The Effects of Sequential Introduction of Brand Extensions," Journal of Marketing Research, 29 (February), 35-50.

Kesler, Lori (1987), "Extensions Leave Brand in New Area," Advertising Age, (June 1), S1.

Mazanec, Josef A. and Gunter C. Schweiger (1981), "Improved Marketing Efficiency Through Multi-product Brand Names?" European Research, 7 (January), 32-44.

Park, C. Whan, Bernard J. Jaworski, and Deborah J. MacInnis (1986), "Strategic Brand Concept-Image Management," Journal of Marketing, 50 (October), 135-145.

_____, Sandra Milberg, and Robert Lawson (1991), "Evaluation of Brand Extensions: The Role of Product Feature Similarity and Brand Concept Consistency," Journal of Consumer Research, 18 (September), 185-193.

Rosch, Eleanor (1973), "On The Internal Structure of Perceptual and Semantic Categorization," in Cognitive

Development and the Acquisition of Language, Timothy E. Moore ed., New York, NY: Academic Press, 111-144.

Tauber, Edward M. (1981), "Brand Franchise Extension: New Product Benefits From Existing Brand Names," Business Horizons, 24 (March/April), 36-41.

_____ (1988), "Brand Leverage: Strategy for Growth in a Cost-Control World," Journal of Advertising Research, 28 (August-September), 26-30.

Thompson, Kenneth Neil (1988), "An Exploratory Model of Consumer Brand Extension Behavior," Unpublished Doctoral Dissertation, University of Colorado, Boulder, CO.

University of Minnesota Consumer Behavior Seminar (1987), "Affect Generalization to Similar and Dissimilar Brand Extensions," Psychology and Marketing, 4 (3), 225-237

CHAPTER II

LITERATURE REVIEW

In this chapter, previous studies concerning brand extension are reviewed. These studies are grouped into three categories: studies based on generalization theory, studies based on categorization theory, and studies either based on other theories or exploratory studies that do not depend on one specific theory.

Studies Based on Generalization Theory

"Generalization is a process inferred when a response elicited by a stimulus is also elicited by a different but similar stimulus" (Engel, Kollat and Blackwell 1973, p. 233). When two stimuli are similar, a consumer's response to a new stimulus becomes a replication of his/her response to an old stimulus (Assael 1984). Through the process of generalization, consumers can simplify the information evaluation process and maintain a state of internal stability (Assael 1984; Engel, Kollat and Blackwell 1973). Two theories are directly related to generalization and have provided theoretical bases in brand extension studies. They are semantic generalization and assimilation.

Semantic Generalization

Semantic generalization predicts that whenever some originally neutral stimulus (e.g., brand name) is repeatedly associated with another stimulus (e.g., brand image or attached quality concepts) which regularly and reliably elicits a predictable pattern of total behavior, the neutral stimulus becomes associated with some portion of this total behavior via a representational mediation (or selective association) process (Osgood 1963). These representational processes first operate on the nonlinguistic visual, auditory, and other sensory cues from objects. Then, anything that sets the mediation process in action, with or without the physical presence of the object, becomes capable of producing the label (Osgood 1963). In short, semantic generalization suggests that a brand will yield the same meaning (or image) to consumers across product categories whenever the brand name is encountered.

Kerby (1967, 1969) tested the implications of semantic generalization, using various brand names associated with four products (vacuum cleaners, automatic washers, portable TVs, and refrigerators). His hypothesis was that semantic generalization should result in consumers' attaching similar meaning to these four products in different categories as long as they possessed a common brand name. Using 47 semantic differential scales, he found a strong tendency toward semantic generalization in only six out of 99 subjects in his study. He concluded that semantic generalization generally does not occur.

However, Kerby's study has two major flaws. First, he did not focus on the importance of the repeated association of the product with brand name. He assumed all the subjects were familiar with the brands in the study. However, it is probable that, because of inadequate prior exposure to brands used in the study, subjects were unable to generalize brand meaning. Second, the semantic differential scales employed in the study were developed without reference to any specific theoretical framework. Kerby implicitly assumed that consumers can compare products in different categories by using adjectives which may represent attributes of one product category but not the other category. For example, one item used in his scale employed the unsanitary-sanitary adjective pair. This scale may be appropriate for consumers expressing their feelings about a vacuum cleaner, but probably is not appropriate when describing portable televisions.

Products in different categories can be compared at a higher abstract level (Johnson 1984, Zeithaml 1988), not at the level of specific attributes. It is impossible for consumers to directly compare a vacuum cleaner with a refrigerator on an attribute-by-attribute basis. Therefore, a test of semantic generalization across different product categories would have been better accomplished if a set of semantic scales which represents higher level abstractions applicable to all the different product categories was used.

Roman (1969) also criticized Kerby's conclusions. According to Roman, Kerby's semantic differential scales did not sufficiently isolate consumers' attitudes toward product categories from consumers' attitudes toward the brand itself. Roman argued that true brand image generalization across product categories can be identified only after consumers' attitudes toward different product categories have been partialed or removed from the consumers' overall attitudes toward new brand extensions.

Roman conducted a series of studies employing a brand called 'Cedar.' In her studies, Roman focused on the measurement of consumers' attitudinal differences between two product categories with a series of semantic differentials. To reflect consumers' semantic usage differences in different product categories, Roman utilized 34 adjective pairs, of which 22 could be used across any product category. The remaining 12 were specific to a single product category.

In her first study, Roman compared consumers' attitudes toward the brands, Cedar cleanser and Cedar bleach. Consumers' perceptual differences between the cleanser and bleach product categories were also investigated. The first study resulted in a big difference in consumer attitudes between the brands (Cedar cleanser and Cedar bleach).

However, since results also revealed a big difference in consumer perceptions between cleanser and bleach, she contended that consumers' image differences of the Cedar brand name in both product categories were heavily influenced by their attitudinal differences between the two product categories (cleanser and bleach).

In her second and third studies, Roman compared consumers' attitudes toward Cedar deodorizer and Cedar bleach. Again, consumers' perceptual differences between the deodorizer and bleach product categories also were measured. Compared with the first study, the second study revealed that the consumers' attitudinal differences between the two product categories were much smaller, and that there was a strong consistency in consumers' Cedar brand descriptions between the two product categories investigated. Results of the third study showed even smaller consumer attitude differences between the two product categories. Consumers' attitudes toward the Cedar brand in both product categories showed a higher degree of similarity than in the second study.

Roman contended that the results of these latter two studies clearly show consumers' semantic generalization tendencies. According to her, when consumers' attitudes toward two product categories (deodorizer and bleach) are similar, consumers tend to have similar attitudes toward the Cedar brand in these product categories (Cedar deodorizer and Cedar bleach). Conclusively, Roman said that semantic generalization occurs across product classes.

Although quite insightful, Roman's study has some problems. First, no specific data analysis technique was used. Roman simply showed lists of adjectives used in semantic differentials which were identified as 'significantly different' between product categories. Therefore, no clear distinction between consumer attitudes toward product categories and consumer attitudes toward Cedar products could be made. Second, as a result, it is unclear whether the results of the second and third studies (i.e., similar attitudes toward Cedar deodorizer and Cedar bleach) support semantic generalization tendency or simply reflect consumers' attitudinal similarity between two product categories (deodorizer and bleach).

Mazanec and Schweiger (1981) argued that consumer experience, factual knowledge about product performance, and non-rational evaluation criteria are associated with brand names. Based on semantic generalization, they argued that image transfer from an established brand in a product category to new product categories depends on the differences (or similarities) between the original product category and the new product categories. They investigated two major hypotheses:

H1: The suitability of two partner products (for example, cigarettes and coffee) for an image transfer

> decreases with the growing distance of technological differences between the two products (p. 34).
>
> H2: The suitability of two partner products for an image transfer decreases with the growing distance of innate image differences between the two products (p. 34).

To test these hypotheses, Mazanec and Schweiger (1981) employed a cigarette brand and tested the transferability of its brand image to six other product categories: beer, after-shave perfume, coffee, mineral water, brandy, and jeans. Multidimensional scaling was utilized to determine consumers' perceptions of technological similarity and product image similarity for all products. Four indicators of consumer acceptance (perceived coincidence of the brand name and product categories, distinctiveness of brand identification, number of incompatible denotative criteria aroused, and predisposition towards a trial purchase) were used to check the success of image transfer. Their results indicated that, regardless of types of similarity, image transfer (i.e., semantic generalization) was easier for products with higher similarity than those with lower similarity.

One problem with Mazanec and Schweiger's (1981) study is the lack of a clear theoretical base from which to postulate the role of similarity in the transfer of image from the original product to new products. Although they cited semantic generalization as their theoretical base, it is questionable whether semantic generalization supports the role of similarity in the process of meaning transfer. In fact, theoretical support for suggesting that the degree of meaning transfer for the same brand name is a function of the degree of similarity is not explicit in semantic generalization (Osgood 1963).

Assimilation Effect

The assimilation effect is rooted in Sherif's social judgment theory (Sherif, Sherif, and Nebergall 1965) and provides another theoretical basis for brand extension studies. Social judgment theory suggests two kinds of effects: assimilation and contrast.

According to social judgment theory, a consumer's preexisting attitudes serve as reference points against which he or she classifies incoming stimuli into either zones of acceptance or zones of rejection. If the new stimulus does not overly contrast with the consumer's existing attitude (i.e., falls in the region of acceptance), she or he will show an assimilation effect in which judgments concerning the new stimulus are shifted to minimize the degree of differences with her or his existing opinion. Conversely, if the new stimulus is counter to the consumer's existing position (i.e., falls in the region of rejection), the response will be a contrast effect in which the consumer tends to exaggerate the differences between the new stimulus and her or his existing attitudinal position (Sherif, Sherif, and Nebergall 1965).

Fry (1967) argued that the assimilation effect is predominant in the consumer's choice of the same brand. Although not ruling out the possibility of a contrasting effect, Fry maintained that contrasting effects are rare. An assimilation effect should dominate the consumer's choice of the same brand name because (1) characteristics of products under the same brand name are rarely different unless it is a brand extension; (2) consumers generally lack the ability to differentiate brands along tangible dimensions such as quality; (3) consumers lack the ability to differentiate family branded products on the basis of intangible factors such as perceptions of prestige unless products are highly differentiated through promotional activities (Fry 1967).

Using a set of consumer panel data, Fry investigated the extent to which consumers really purchase the same brands across different product categories, as suggested by the assimilation effect. He developed various pairs of different product categories and employed an index to check the degree of deviation in consumers' tendencies to purchase the same brand between each pair of product categories. Fry also developed two other indices for variables which he believed represent factors affecting generalized preference formation. The two variables were similarity of the product categories and price similarity of the object brand between categories. Based on the results from a contingency table analysis employing the first index, Fry concluded that consumers do form generalized preferences in brand choice situations. From the results of a regression analysis, in which the first index was used as the criterion variable and two other indices were used as predictors, Fry concluded that the degree of generalization varies directly with both the similarity of product categories and the brand's price similarity across different product categories.

Because of its non-experimental nature, however, Fry's study does not establish the role that assimilation plays in the consumer's brand choice process. It merely confirms the existence of generalized preference formation in the brand choice process. Fry did not provide any theoretical explanations or predictions of why product category similarity and price similarity affect generalized preference formation. Moreover, though results of the regression analysis were significant, it is unclear whether there exists a causal relationships between generalized preference, similarity of product category, and similarity of price.

Extending Fry's study, Neuhaus and Taylor (1972) tested variables which, they believed, were related to generalized preference formation (or the assimilation effect) in consumer brand choice. All three independent variables (display, price, and product categories) were identified as having a significant effect on consumers' generalized preferences. Without any theoretical background explaining why those three variables are important for generalized preference formation, however, the value of their results is questionable.

Despite its contribution, generalization theory has not attracted much attention in recent years. Broadly, neither semantic generalization nor assimilation effect possesses a good mechanism for describing how consumers accumulate knowledge about brands and process that information to evaluate brand extensions (Boush 1988). Without such a mechanism, generalization theory cannot provide an appropriate framework in which the roles of various brand extension related factors are explained. Moreover, semantic generalization overly emphasizes the physical characteristics of words and ignores differences in physical product attributes. Similarly, the assimilation effect determines consumers' attitudes based on judgmental distortions which are more or less dichotomized (Boush 1988). To summarize, generalization theory is inadequate for explaining a consumer's brand extension related behavior, and is not addressed further in this study.

Studies Based on Categorization Theory

Mervis and Rosch (1981) argued that categorization is one of the most basic functions of living organisms. Through the categorization process, consumers enhance information processing speed and efficiency, as well as cognitive stability (Alba and Hutchinson 1987; Cohen and Basu 1987). Although it is still not clear how consumers develop initial category knowledge, it is believed that a category exists whenever two or more distinguishable objects or events are treated equivalently (Mervis and Rosch 1981).

Consistent with categorization theory, consumers are expected to store knowledge about products or brands in integrated schema-like structures in memory (Cohen and Basu 1987). Upon receiving a new stimulus, consumers compare the stimulus with existing categorical knowledge, develop inferences about features, and make evaluative judgments concerning the new stimulus (Cohen and Basu 1987). The new stimulus is subsequently stored in memory keyed to this prestructured categorical knowledge.

Categorization theory suggests that consumers form a categorical knowledge structure for a brand. Products represented by a brand name are indeed stored in memory according to the property of graded structures (Boush 1988; Park, Lawson and Milberg 1989). Generally, consumers associate a brand with a specific product category more frequently than other product categories. For a brand, consumers are more familiar with some product categories than others. The more familiar a product category is, the more easily a consumer will evoke that product category as representative of the brand.

For example, most consumers will first activate a camera with the brand name 'Canon' because cameras are the most widely known and main product category for 'Canon.' Some people may evoke other product categories such as copiers, camcorders or wordprocessors, but these consumers will be fewer in number than those who first associate cameras with the brand.

Boush's study (1988) confirmed that consumers apply graded categorical structure when associating product categories with brand names. According to his results, inter-subject agreement about the relative typicality of products for a brand was highly significant. In the case of the Sony brand, subjects rated TVs, VCRs, and radios as more typical of Sony products than microwave ovens, personal computers, and cameras which, in turn, were considered more typical of Sony products than shoes, macaroni and cheese, and popsicles (Boush 1988, p. 66).

According to categorization theory, upon encountering a new product that is a brand extension, consumers will check the similarity of the new product against existing categorical knowledge associated with the parent brand.

Then, depending on the subjective degree of similarity between the new product and the existing parent brand, consumers will assign evaluative judgments to the new product or evoke inferences about the new product (Alba and Hutchinson 1987; Fiske 1982; Gilovich 1981; Kahneman and Tversky 1972, 1973; Read 1983; Sujan 1985). If the new product is very similar to the existing category, attitudes toward the new product should be consistent with attitudes toward the parent brand. In contrast, if the extension is quite different from the existing category, attitudes toward the extension will tend to be less similar, or even diametrically opposed to, attitudes toward the parent brand (Fiske 1982; Mandler 1982; Myers-Levy and Tybout 1989).

A study sponsored by the Consumer Behavior Seminar of the University of Minnesota (1987) was the first to utilize categorization theory in brand extension. The study tested the effects of product category similarity and attitudes toward the parent brand on consumers' evaluations of brand extensions. A 7x10 mixed factorial design was employed with seven quality levels of the parent brand and ten levels of product category similarity. The latter was a within subjects factor. A hypothetical brand, Tarco, was used as the parent brand in the experiment. The Tarco brand consisted of six models of hand-held calculator. Parent brand attitudes were manipulated by using two types (good vs. poor) of preassigned quality ratings that were assigned to each of six calculator models. Seven treatment groups were established based on the possible ratios of 'good' to 'bad' models from a set of six models (i.e., from no good model to all good models). The ten levels of product category similarity (i.e., extension product categories) were: calculators, home computers, electronic cash registers, VCRs, digital watches, digital clock radios, color TVs, bicycles, ball point pens, and desk chairs.

The dependent variables in the study were: (1) attitudes toward each of the six models of Tarco calculators, (2) overall attitudes toward the parent brand, (3) attitudes toward a new calculator, and (4) attitudes toward each of the nine new extensions. Attitudes toward the parent brand were measured with three seven-category semantic differential scales (favorable - unfavorable, desirable - undesirable, and satisfactory - unsatisfactory) after subjects were shown preassigned ratings on four attributes - versatility, ease of use, battery life hours, and warranty period. Each scale was scored from +3 to -3, and sums of the responses to the three scales were used to represent the attitude scale. The same scales were used to measure other attitudes. The perceived degree of product category similarity between hand-held calculators and nine different product categories was measured on a single seven-category scale from 'extremely similar (+3)' to 'extremely dissimilar (-3).' Two hypotheses were tested:

H1: If consumers' global evaluations of the parent are positive, consumers' evaluations of a new extension in the same product category will be positive (p. 229).

H2: Consumers' evaluations of extensions will be positively associated with the degree of product category similarity (p. 229).

The study found supporting evidence for hypothesis one. As shown in Table 2-1, a direct relationship existed between the proportion of 'good' models in the treatment group and consumers' mean ratings of attitude toward a new line extension in the same category (i.e., new Tarco calculator).

Table 2-1
Results for Hypothesis One

Treatment Condition (# of good models among six models)	Mean ratings of Attitude (to new Tarco Calculator)
zero	-7.00
one	-4.24
two	-2.54
three	1.60
four	1.77
five	2.53
six	3.00

The study also claimed support for the second hypothesis. The claim was based on the results of a series of correlation analyses between attitudes toward the parent and attitudes toward various extensions and the results of a oneway ANOVA comparing the seven treatment conditions (see Table 2-2).

Table 2-2
Results for Hypothesis Two

ANOVA F-value	Correlation Coefficient	Category Similarity	Extension Product Type
9.52	0.75	0.94	Cash Register
11.08	0.76	0.40	Computer
5.02	0.63	0.28	Digital Watch
4.98	0.58	-0.23	Radio
7.03	0.62	-0.79	VCR
3.66	0.51	-1.16	Color TV
1.20	-0.17	-2.54	Ball Point Pen
1.15	-0.11	-2.65	Desk Chair
1.89	-0.11	-2.68	Bicycle

However, these results merely indicate that the more similar the product categories are to one another, the greater the correlation between attitudes toward the parent and attitudes toward extensions. The results do not provide support for a positive relationship between attitudes toward extensions and product category similarity.

In fact, Table 2-2 shows that, with very large degrees of dissimilarity, attitudes toward extensions may become negative even though attitudes toward the parent are positive. Moreover, as shown in Table 2-3, the study reported that average attitudes toward the three most similar extensions tended to increase as the ratio of good products in the treatment conditions increased (i.e., from zero to six). However, average attitudes toward the less similar extensions tended to decrease as the ratio of good products in the treatment conditions increase. These results in Tables 2-2 and 2-3 strongly indicate existence of a moderating effect of product category similarity on the relationship between attitudes toward the parent brand and attitudes toward brand extensions. From the analysis techniques and results provided, however, there is no evidence supporting a positive relationship between attitudes toward brand extensions and product category similarity.

To claim support for the second hypothesis, the study could have used ANOVA to compare mean ratings of attitudes for each of the extension product types. An alternative analytic approach would have been hierarchical regression (Cohen 1968) in which treatment groups were contrast coded and entered into a multiple regression equation to test the main effects of both treatment, perceptions of similarity, and their interaction on extension attitudes.

Table 2-3
Average Attitude Ratings toward Extensions Based on Similarity

Treatment groups (# of good models among six models)	Average Attitudes toward similar extensions	Average Attitudes toward less similar extensions
zero	-4.08	-0.36
one	-2.81	-1.16
two	-1.95	-2.85
three	0.58	-2.94
four	-0.16	-2.96
five	1.44	-3.11
six	0.67	-2.35

Boush and Loken (1991), in a more recent study, focused on the impact of brand breadth and extension typicality (or similarity) on consumers' attitudes toward brand extensions. They employed a 2 x 5 mixed factorial design using two levels of brand breadth (narrow vs. broad) and five levels of brand extension typicality with two different experimental replicates (grocery products and electronic products). Brand extension typicality was treated as a within-subject factor. Brand extension typicality, which served as a dependent as well as an independent variable, was measured on a seven-point bipolar scale (1 = dissimilar, 7 = similar). Attitudes were measured on two seven-point semantic differentials (favorable - unfavorable, desirable - undesirable). Both scales were summed to obtain an overall attitude rating. Major hypotheses tested were:

H1: Typicality ratings for narrow brands are more extreme than typicality ratings for broad brands (p. 18).

H2: Extremely typical and extremely atypical brand extensions are evaluated more rapidly than moderately typical brand extensions (p. 19).

H3: Extremely typical and extremely atypical brand extensions elicit fewer cognitive responses than moderately typical brand extensions (p. 19).

H4: For positively evaluated parent brands, typicality of extension (product category similarity) is positively related to the evaluation of the extension (p. 19).

H5: Extensions from narrow brands elicit more extreme attitudes than extensions from broad brands (p. 19).

All hypotheses were supported, yielding two general conclusions. First, extension typicality (product category similarity) had a direct positive effect on attitudes toward brand extensions. Second, brand breadth had an interaction effect with extension typicality on consumers' perceptions of brand extensions. In other words, extensions into similar categories from narrow brands were perceived more typical than extensions from broad brands; extensions into less similar categories from narrow brands were perceived less typical than extensions from broad brands.

Some questions remain unanswered from Boush and Loken's study. First, the effect of extension typicality (product category similarity) cannot be generalized across all brands. As mentioned in hypothesis four, the effect is confined to the brands with positive evaluations only. Boush and Loken never fully manipulated the construct of perceived parent quality. They simply showed subjects a uniform product description designed to induce positive attitudes toward the parent brand and then measured subjects' attitudes toward the parent brand. They reported that attitude measures "yielded means ranging from 5.3 to 6.0" on a 7-point scale, "all acceptably positive."

Second, hypothesis one, which says that typicality ratings of narrow brands are more extreme than those of broad brands, cannot be supported if extensions into the same product category are excluded from their results.

Although there may be a controversy about what is the best definition of a brand extension, an extension into the same product category is generally called a line extension, while an extension into a different product category is called a brand extension (Tauber 1981; Thompson 1988). If this view is adopted, their conclusion must be questioned.

As shown in Table 2-4, typicality ratings for grocery products ranged from 6.72 to 1.38 for narrow brands and from 6.32 to 1.32 for broad brands. For grocery products, hypothesis one was partially supported if line extensions into the same product category are included. However, if the line extensions are excluded from the analysis, typicality ratings for broad brands (between 5.07 and 1.32) become more extreme than typicality ratings for narrow brands (between 4.67 and 1.38), yielding a totally different conclusion. The same reasoning holds true for electronic products. For electronics, the average typicality ratings ranged from 6.83 to 2.26 for narrow brands and from 6.56 to 2.11 for broad brands. If the same category is removed, typicality ratings range from 4.69 to 2.26 for narrow brand and from 5.53 to 2.11 for broad brand, resulting in the opposite conclusion.

Third, Boush and Loken's claim of support for hypothesis five is questionable. Hypothesis five predicted that extensions from narrow brands would elicit more extreme attitudes than extensions from broad brands. In the grocery products replicate, results generally supported this hypothesis. However, as in Table 2-4, the opposite result occurred in the electronic products replicate. In this replicate, the broad brand's attitude ratings ranged from 12.22 to 7.66, compared with the narrow brand's 11.66 to 7.87.

Table 2-4
Typicality Rating and Attitude Rating

	Typicality		Attitudes	
	Narrow	Broad	Narrow	Broad
Grocery products				
Same category	6.72	6.32	12.22	11.44
Canned fruit	4.67	5.07	9.76	10.53
Breakfast cereal	3.34	3.76	8.66	8.94
Toothpaste	1.99	1.92	6.45	6.87
Floor wax	1.38	1.32	5.59	5.79
Electronic products				
Same category	6.83	6.56	11.66	12.22
Camera	4.69	5.53	10.00	10.83
Refrigerator	3.08	3.76	8.14	8.94
Ballpoint pen	2.26	2.11	7.87	7.66

In fact, Boush and Loken stated that "results in the electronic products replicate indicate that the extensions of the broad brand generally were perceived more favorably than the extensions from the narrow brand (p. 25)." Even in the grocery products replicate, the claim of support for hypothesis five is questionable if extensions into the same product category are removed from the analysis (see Table 2-4).

Chakravarti, MacInnis, and Nakamoto (1990) questioned the importance of product category similarity in brand extensions. Instead of category similarity, they focused on associations between parent and extended product categories, relative salience of these associations in memory, and marketing cues which affect such associations. To test these three factors' impacts on consumers' perceptions of the extended brand, they utilized three independent variables: salient attributes vs. non-salient attributes, similar attributes vs. dissimilar attributes, and advertising vs. no advertising.

According to the results of their study, consumers' judgment of fit (or consumers' perception of the "goodness" of the extended brand) is primarily determined by the extent to which parent and an extension share similar attributes, regardless of the salience of these attributes. Effects of advertisements were inconsistent. Chakravarti et al. (1990) also found that consumer inferencing is an essential procedure in evaluating brand extensions. Specifically, extensions into similar product categories tended to elicit fewer inferences; extensions into dissimilar product categories elicited more inferences. Interestingly, this latter finding provides supporting evidence for a cognitive response perspective in brand extensions - a major variable examined in this dissertation.

Park, Lawson, and Milberg (1989) focused on consumers' brand name category structures. They hypothesized that functional or usage related brand name concepts are understood and organized in memory according to either the product's characteristics or its usage situation. In contrast, symbolic brand name concepts are organized in terms of their direct linkage to a superordinate concept. For example, products associated with a brand name such as General Electric (a functional brand) share features of electronics, while products associated with a brand name such as Gucci (a symbolic brand) are linked by a more abstract concept, such as status or prestige.

Their study suggests that parent brands known primarily for functional/usage concepts should extend into product categories possessing similar features and usage situations. Parent brands that emphasize symbolic brand name concepts can extend into various product categories that are linked to the parent by a higher level superordinate concept.

Although insightful, their study contains certain caveats. Most parent brands possess a mixture of functional, usage, and symbolic concepts. Assigning a specific concept to a brand may become quite artificial. For example, although Park et al. (1989) treated the brand name 'Sony' as a functional brand, it can be a symbolic brand for many consumers. Therefore, what is really important is to find specific circumstances appropriate for a brand to represent one concept. Restricting a brand's extensions only to suggested areas based on the brand's one primary concept may limit the marketing decision maker's range of options in brand extension.

In a related study, Park, Milberg, and Lawson (1991) identified two factors that appear to determine consumers' evaluations of the goodness of fit of a brand extension: 'product feature similarity' and 'brand concept consistency.' Product feature similarity means the degree to which an extension product's features, attributes, and usage situations are matched to the parent brand. Brand concept consistency means the degree to which an extension product can accommodate a certain brand name concept. They also noted that some brands are functionally oriented while others are prestige oriented. Based on the fact that functions are closely related to the feature similarity of products and that prestige is closely related to brand image or brand concept, they formulated two hypotheses.

> H1: For functionally oriented brands, consumers favor physically similar extensions more than conceptually similar extensions (p. 187).

> H2: For prestige oriented brands, consumers favor conceptually similar extensions more than physically similar extensions (p. 187).

Results supported both hypotheses and suggested that consumers evaluate brand extensions most favorably when both types of similarity are high, regardless of the type of brand. Moreover, the effect of product feature similarity is weaker in prestige oriented brands than in functionally oriented brands. Prestige brands can extend to less physically similar category than can functional brands.

In a non-empirical study, Farquhar, Herr, and Fazio (1990) introduced a relational model in which three types of memory associations were found to be related to a successful brand extension: brand-to-category association, category-to-brand association, and category-category relatedness. Brand-to-category association is a measure of the likelihood that the observation of a parent brand activates various features that characterize a basic category. This is commonly referred to as typicality by others (Barsalou 1985; Boush and Loken 1991; Ward and Loken 1988). Category-to-brand association measures the ease with which a brand will be retrieved from memory, given exposure to a category. Category-category relatedness measures the strength and accessibility of superordinate concepts linking two categories. This is commonly referred to as category similarity or fit (Aaker and Keller 1990; Chakravarti, MacInnis, and Nakamoto 1990).

The distinction of brand-to-category and category-to-brand association parallels Mervis and Rosch's (1981) asymmetry in similarity ratings. According to Mervis and Rosch, "less representative exemplars are often considered more similar to more representative exemplars than vice versa (1981, p. 97)." For example, subjects may feel that

Mexico is more similar to the US than the US is to Mexico. Empirical studies about the effect of this difference on brand extensions do not exist.

Hartman, Price, and Duncan (1990) introduced a conceptual model in which various variables determining attitudes toward brand extension are considered. They used the following as major variables in their model: prior knowledge, similarity between brand extension and prior knowledge, motivation for processing the brand extension, and other situational and individual factors. What they emphasized in their model was the procedure relevant to how consumers evaluate brand extensions.

Other Studies

Although most brand extension studies used either generalization theory or categorization theory as their theoretical base, there are some exceptions. Among these exceptions are Thompson's (1988) study which was based on associative network theory and Aaker and Keller's (1990) and Keller and Aaker's (1992) studies which were performed more as exploratory investigations.

Thompson (1988) conceptualized his study framework based on associative network theory. With the theory, he focused on cognitive aspects of mental processes likely to occur when consumers are exposed to brand extensions

(Thompson 1988, p. 67). His study investigated various factors related to the transfer of brand-related affect to extension products. Parent Brand Affect (PBA), Parent-Extension Logical Consistency (P-ELC), Parent Brand Strength (PBS), Extension Product Category Involvement (EPCI), Inter-Brand Differentiation (IBD), and subjects' Knowledge of the Extension Product Category (EPCK) were the independent variables. Affect toward the Extension Brand (EBA) was the dependent variable.

PBA, the consumer's affective response to the parent brand, was assessed with four scale items. The same scale items were used for the measurement of EBA, the consumer's affective response to an extension. P-ELC, which focused on the degree to which consumers perceive the extension to make sense based on their image of the parent brand, was measured with eight items. Five items were employed to measure PBS which was defined as characteristics of the parent brand which enhance image transfer to an extension. EPCI or the consumer's involvement level to the extension category was measured with Zaichkowsky's (1985) involvement scale (20 semantic differentials). IBD, the perceived difference between brands within a given product category, was measured with four items. EPCK, which represents consumers' subjective knowledge toward the extension product category, was assessed with seven scale items.

Thompson employed a 2 x 2 between subject design using PBS (High vs. Low) and P-ELC (High vs. Low) as factors. He manipulated PBS using Timex as a high PBS brand and Armitron as a low PBS brand. Manipulation of P-ELC was replicated twice across two product categories. In the first replication, a clock-radio and a VCR were used to represent high consumer product category involvement and high inter-brand differentiation conditions. In the second replication, pen-watches and disposable razors were used to represent low consumer product category involvement and low inter-brand differentiation conditions. Major hypotheses tested were:

H1: Consumers' affect toward the parent brand has a direct positive effect on affect toward an extension product (p. 68).

H2: Parent brand strength has a positive moderating effect on the transfer of parent brand affect to extension products (p. 71-72).

H3: Parent-extension logical consistency has a direct positive effect on extension brand affect (p. 75).

H4: Parent-extension logical consistency has a positive moderating effect on the transfer of parent brand affect to extension products (p. 76).

H5: Consumers' knowledge of the extension product category has a moderating effect on the transfer of parent affect to extension products (p. 82).

H1 was supported. Affect toward the parent brand had a direct positive effect on consumers' affective responses to the extension product. H2 was not supported. Parent brand strength did not have a significant moderating effect on the transfer of parent brand affect to extension product. H3 was supported, meaning parent-extension logical consistency had a positive direct relationship with affect toward extensions. H4 was also supported. Perceptions of the appropriateness of a parent brand name for an extension had a significant interaction effect with affect toward the parent brand on consumers' affective responses to the extension product. H5 was not supported. Subjects' knowledge of the extension product category did not have a significant moderating effect on the transfer of parent brand affect to the extension product.

Aaker and Keller (1990) focused on three independent variables' effects on consumers' attitudes toward brand extensions. The three independent variables were: perceived quality of original brand, perceived difficulty associated with making the extension products, and 'fit' between the extended product category and the parent brand's image.

Perceived quality was measured with a seven-point scale (1=inferior, 7=superior)[7]. Difficulty perceptions were also measured with a seven point scale (1=not at all difficult, 7=very difficult). In measuring 'fit', they used three different dimensions: fit as a SUBSTITUTE product, fit as a COMPLEMENTary product, fit as TRANSFERring existing skills.

---

[7]Aaker and Keller (1990) considered perceived quality the same as attitude. According to them, "attitude is conceptualized in terms of consumer's perception of the overall quality of the brand (p. 29)."

Fit as SUBSTITUTE product dimension measured the extent to which consumers view two product categories as substitutes. Fit as a COMPLEMENTary product measured the extent to which consumers view two product categories as complements. Fit as TRANSFER measured consumers' perceptions of the ability of any firm operating in the parent product category to make a product in the extension category. All three dimensions of fit were measured via 7-point scales. The dependent variable, attitude toward the extension, was assessed with two scales: perceived quality of the extension (1=inferior, 7=superior) and the likelihood of trying the extension (1=not at all likely, 7=very likely). Four hypotheses were tested:

H1: Higher quality perceptions toward original brand are associated with more favorable attitudes toward the extension (p. 29).

H2: The transfer of a brand's perceived quality is enhanced when the two product classes in some way fit together. When the fit is weak, the transfer is inhibited (p. 30).

H3: The fit between the two involved product classes has a direct positive association with attitudes toward extension (p. 30).

H4: The relationship between difficulty of making extensions in a product class and attitudes toward extensions is positive (p. 30).

H1 was not supported. In other words, there was no direct relationship between perceived quality of a brand and attitudes toward the extension. H2 was partially supported. The interactions of perceived quality with two fit dimensions - COMPLEMENT and SUBSTITUTE - were significant. However, the interaction of perceived quality with fit as TRANSFERring existing skills was not significant. H3 was also partially supported. Only fit as 'TRANSFERring existing skills' was directly related to attitudes toward extensions. H4 was supported in that extremely easy-to-make extensions are less likely to be favored.

One problem with Aaker and Keller's study (1990) is its measurement of perceived quality. Because the study adopted a traditional unidimensional single-scale measure of the quality construct, it (the measure) may not correctly represent consumers' perceived quality of brands. To reflect the domain of perceived quality more clearly, perceived quality should have been assessed by a multi-scale measure. Weak measurement of perceived quality may explain why their study failed to produce a significant independent effect of perceived quality on extension attitudes.

In a second study, Keller and Aaker (1992) investigated the impact of perceived quality of core parent brands, the number of previous extensions, success and failure of previous extensions, and the similarity of previous extensions on the evaluation of new extensions. According to their results, product category similarity had a weaker impact on high quality products than on average quality products. Also, while the existence of successful previous extensions improved perceptions of average quality brands' extensions, unsuccessful previous extensions degraded perceptions of high quality brands' extensions.

A major strength of their study lies in dealing with the effects of the sequential introduction of brand extensions by a parent. As in their first study, however, they did not use a multidimensional multi-item scale for the assessment of perceived quality. They did, however, manipulate perceived quality at two levels - high quality and average quality.

CHAPTER REFERENCES

Aaker, David A. and Kevin L. Keller (1990), "Consumer Evaluations of Brand Extensions," Journal of Marketing, 54 (January), 27-41.

Alba, Joseph W. and J. Wesley Hutchinson (1987), "Dimensions of Consumer Expertise," Journal of Consumer Research, 13 (March), 411-454.

Assael, Henry (1984), Consumer Behavior and Marketing Action, 2nd ed. Boston, MA: Kent Publishing Co.

Barsalou, Lawrence W. (1985), "Ideals, Central Tendency, and Frequency of Instantiation as Determinants of Graded Structure in Categories," Journal of Experimental Psychology: Learning, Memory, and Cognition, 11 (4), 629-654.

Boush, David M. (1988), "A Categorization Model of Attitude Transfer and Its Application to Brand Extension," Unpublished Doctoral Dissertation, University of Minnesota, Minneapolis, MN.

_____ and Barbara Loken (1991), "A Process-Tracing Study of Brand Extension Evaluation," Journal of Marketing Research, 28 (February), 16-28.

Chakravarti, Dipankar, Deborah J. MacInnis, and Kent Nakamoto (1990), "Product Category Perceptions, Elaborative Processing and Brand Name," Advances in Consumer Research, 17, 910-916.

Cohen, Jacob (1968), "Multiple Regression as a General Data-Analytic System," Psychological Bulletin, 70 (6), 426-443.

Cohen, Joel B. and Kunal Basu (1987), "Alternative Models of Categorization: Toward a Contingent Processing Framework," Journal of Consumer Research, 13 (March), 455-472.

Engel, James F., David T. Kollat, and Roger D. Blackwell (1973), Consumer Behavior, 2nd ed., New York, NY: Holt, Rinehart and Winston Inc.

Farquhar, Peter H., Paul M. Herr, and Russell H. Fazio (1990), "A Relational Model for Category Extensions of Brands," Advances in Consumer Research, 17, 856-860.

Fiske, Susan T. (1982), "Schema-triggered Affect: Applications to Social Perception," in Affect and Cognition: The 17th Annual Carnegie Symposium on Cognition, M. Clark and S. Fiske eds., Hillsdale, NJ: Erlbaum, 55-78.

Fry, Joseph N. (1967), "Family Branding and Consumer Brand Choice," Journal of Marketing Research, 4 (August), 237-247.

Gilovich, Thomas (1981), "Seeing the Past in the Present: The Effect of Associations to Familiar Events on Judgments and Decisions," Journal of Personality and Social Psychology, 40 (5), 797-808.

Hartman, Cathy L., Linda L. Price, and Calvin P. Duncan (1990), "Consumer Evaluation of Franchise Extension Products: A Categorization Processing Perspective," Advances in Consumer Research, 17, 120-127.

Johnson, Michael D. (1984), "Consumer Choice Strategies for Comparing Noncomparable Alternatives," Journal of Consumer Research, 11 (December), 741-753.

Kahneman, Daniel and Amos Tversky (1972), "Subjective Probability: A Judgment of Representativeness," Cognitive Psychology, 3 (July), 430-454.

_____ and _____ (1973), "On the Psychology of Prediction," Psychological Review, 80 (4), 237-251.

Keller Kevin L. and David A. Aaker (1992), "The Effects of Sequential Introduction of Brand Extensions," Journal of Marketing Research, 29 (February), 35-50.

Kerby, Joe Kent (1967), "Semantic Generalization in the Formation of Consumer Attitudes," Journal of Marketing Research, 4 (August), 314-317.

_____ (1969), "Borrowing From the Behavioral Sciences," Journal of Business, 42 (April), 152-161.

Mandler, George (1982), "The Structure of Value: Accounting for Taste," in Affect and Cognition: The 17th Annual Carnegie Symposium on Cognition, M. Clark and S. Fiske eds., Hillsdale, NJ: Erlbaum, 3-36.

Mazanec, Josef A. and Gunter C. Schweiger (1981), "Improved Marketing Efficiency Through Multi-product Brand Names?" European Research, 7 (January), 32-44.

Mervis, Carolyn B. and Eleanor Rosch (1981), "Categorization of Natural Objects," Annual Review of Psychology, 32, 89-115

Myers-Levy, Joan and Alice M. Tybout (1989), "Schema Congruity as a Basis for Product Evaluation," Journal of Consumer Research, 16 (June), 39-54.

Neuhaus, Colin F. and James R. Taylor (1972), "Variables Affecting Sales of Family-Branded Products," Journal of Marketing Research, 9 (November), 419-422.

Osgood, Charles E. (1963), "Psycholinguistics," in Psychology: A Study of a Science, Volume 6., Sigmund Koch ed., NY: McGraw-Hill Book Company, 244-316.

Park, C. Whan, Robert Lawson, and Sandra Milberg (1989), "Memory Structure of Brand Names," Advances in Consumer Research, 16, 726-731.

_____, Sandra Milberg, and Robert Lawson (1991), "Evaluation of Brand Extensions: The Role of Product Feature Similarity and Brand Concept Consistency," Journal of Consumer Research, 18 (September), 185-193.

Read, Stephen J. (1983), "Once is Enough: Causal Reasoning From a Single Instance," Journal of Personality and Social Psychology, 45 (2), 323-334.

Roman, Hope S. (1969), "Semantic Generalization in Formation of Consumer Attitudes," Journal of Marketing Research, 6 (August), 369-373.

Sherif, Carolyn W., Muzafer Sherif, and Roger W. Nebergall (1965), Attitude and Attitude Change: the Social Judgment - Involvement Approach, Philadelphia, PA:Saunders.

Sujan, Mita (1985), "Consumer Knowledge: Effects on Evaluation Strategies Mediating Consumer Judgments," Journal of Consumer Research, 12 (June), 31-46.

Tauber, Edward M. (1981), "Brand Franchise Extension: New Product Benefits From Existing Brand Names," Business Horizons, 24 (March/April), 36-41.

Thompson, Kenneth Neil (1988), "An Exploratory Model of Consumer Brand Extension Behavior," Unpublished Doctoral Dissertation, University of Colorado, Boulder, CO.

University of Minnesota Consumer Behavior Seminar (1987), "Affect Generalization to Similar and Dissimilar Brand Extensions," Psychology and Marketing, 4 (3), 225-237

Ward, James and Barbara Loken (1988), "The Generality of Typicality Effects on Preference and Comparison: An Exploratory Test," Advances in Consumer Research, 15, 55-61.

Zaichkowsky, Judith L. (1985), "Measuring the Involvement Construct," Journal of Consumer Research, 12 (December), 341-352.

Zeithaml, Valarie A. (1988), "Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence," Journal of Marketing, 52 (July), 2-22.

CHAPTER III

THEORIES, CONSTRUCTS, AND HYPOTHESES

In this chapter, the two theories employed in the current study, categorization theory and cognitive response theory, are discussed in detail. Conceptual and operational definitions of the three constructs, perceived quality, product category similarity, and brand breadth, are then presented. Finally, specific research hypotheses are developed based on the theories and constructs.

Theories

As discussed in the previous chapter, some early brand extension studies employed generalization theory as their conceptual framework. However, generalization theory is too simplistic to explain the complex cognitive activities involved with consumer responses to brand extensions. In contrast, categorization theory and cognitive response theory provide a rich conceptual framework from which hypotheses can be developed.

In this section, categorization theory and cognitive response theory are explained, and the relationships between these theories are discussed from the perspective of brand extensions. A classification scheme for possible cognitive responses to brand extensions also is proposed.

Categorization Theory

Categorization is a fundamental cognitive activity of human beings. It can occur in any task that calls for differential responding, such as pattern recognition and naming and describing objects and states of affairs (Harnad 1987). People use the categorization process for stimulus perception, organizing knowledge in memory, semantic analysis of the stimulus, and forming inferences based on information contained in the activated category (Medin and Barsalou 1987). Through categorization, people can reduce the numbers of entities in the world to manageable numbers, communicate information economically by category labels, and maintain coherence in their views of the world (Cantor and Mischel 1979; Mervis and Rosch 1981; Tversky and Hemenway 1984).

Categories, the platform of the categorization process, serve four functions: classification, inference and prediction, generation, and productivity (Medin and Barsalou 1987). Classification means assigning an exemplar to an appropriate category. Although people have to deal with various incoming stimuli and these stimuli are often quite different from one another, people do not treat all of them as unique. Generally, people respond to new stimuli in terms of their category membership, rather than based on characteristics that make them unique (Cohen and Basu 1987). Incoming stimuli are grouped into categories on the basis of perceived similarities and resemblances (Ozanne, Brucks, and Grewal 1992).

Inference and prediction means retrieving information contained in categories which then become associated with the incoming stimulus. Categorization allows people to establish predictive relationships among members of the same category, to infer properties of category members from knowledge of the category, and to equalize an incoming stimulus to an existing category based on the degree to which the stimulus resembles the category (Cohen and Basu 1987; Murphy and Medin 1985; Tversky and Hemenway 1984; Wyer and Srull 1981). Even if a consumer knows nothing about the stimulus but is told it is an instance of the category, she or he can infer that the stimulus has all or many of the category's properties, such as the physical features and evaluative judgments associated with other members of the category.

Generation means a stimulus can evoke various exemplars from several categories. In other words, when a person faces a stimulus, she or he may retrieve exemplars of the most relevant category and of other related categories, depending on the degree of similarity between the stimulus and these additional categorical exemplars. For example, if a person plans a trip (stimulus), the evoked categories may include budget, transportation, locations, time, lodging, etc.

Productivity means that higher-order categories may be formed from basic categories. With the increase of categorical knowledge, people develop more abstract and complex categories based on knowledge contained in related subordinate categories (Medin and Barsalou 1987). Generally, experts are believed to use far more abstract and complex categories than novices (Adelson 1984; Alba and Hutchinson 1987; Murphy and Wright 1984; Schoenfeld and Herrmann 1982; Sujan 1985). In case of computer programming problems, for example, while novices focus more on surface features of the problem, experts form more abstract representations of the same problem (Adelson 1984). In an experiment on mathematical problems solving, Schoenfeld and Herrmann (1982) found similar results.

There are three views about how an object's category membership is determined. They are classification by rules, classification by prototypes, and classification by exemplars.

Classification by rules is the classical view of how concepts are represented. This classification scheme requires specific defining criteria or rules for each category. If a stimulus possesses all of the properties required by the defining criteria of a category, the stimulus belongs to the category.

Classification by prototypes is a probabilistic view. This view argues that a category is represented by a prototype which is assumed to have the most common characteristics of all category members. Under this view, instances of a concept (or category) are not fixed as assumed in the classical view. Rather, instances of a category vary in the degree to which they share certain categorical properties, and thus represent the concept only in a probabilistic term. Typicality or goodness of membership determines an object's category.

Classification by exemplars contends that people categorize various stimuli based on their similarity to category members in memory (or exemplars). This view does not accept a rule or an ideal prototype. Instead, it argues that people compare a stimulus with exemplars of the category held in memory at that time to determine category membership of the new stimulus.

Individuals can use any of these classification rules. In fact, people are believed to use a mixture of all three classification rules (Cohen and Basu 1987; Medin and Barsalou 1987; Smith and Medin 1981). Generally, however, application of the classical view is limited to easily definable and unambiguous categories. The classical view may not provide appropriate accounts of the categorization process in most consumer behavior settings (Cohen and Basu 1987). The prototype view, despite its significant contribution for the development of categorization theory, is also criticized. There is little agreement over the meaning and implications of the prototype concept (Cohen and Basu 1987). Also, it is not clear how an existing prototype (which represents the original category) and a new prototype (which represents the new modified category) will be linked to a stimulus which has the same characteristics of both prototypes (Cohen and Basu 1987).

The current study adopts the exemplars view because it is the most advanced and has the fewest flaws[8]. Whichever of the last two views (prototype view or exemplars view) is adopted, however, the theoretical implications for the current study are the same because both views support the typicality concept and attitude association (Medin and Barsalou 1987).

Two characteristics of categories are particularly important in understanding consumers' responses to brand extensions. They are the graded structure of categories and the hierarchy of categories. Each explains different facets of categorical structures in memory. Graded structure means that all members of a given category are not equally

---

[8]The major problem with the exemplars view is "the lack of well specified information processing mechanisms to account for exemplar-based categorization (Cohen and Basu 1987, pp. 461-462)."

representative of the category (Mervis and Rosch 1981). Or, as Alba and Hutchinson (1987) stated, membership in a category is a matter of degree. Due to this graded structure, consumers consider some members of a category as better exemplars of the category than others. Graded structure will manifest itself in several ways. Consumers will show differences in their speed of processing different category-related stimuli, in their free production of exemplars, and in their learning and developing of new categories (Mervis and Rosch 1981).

Typicality (or prototypicality) is a concept commonly used to represent the graded structure within categories. Typicality means 'cleanness' of cases (Rosch and Mervis 1975) or 'goodness of membership' (Cohen and Basu 1987). To the extent that a member shares the same information, features, and evaluative judgments associated with its category, it is considered to be 'typical' of that category (Cohen and Basu 1987; Fiske 1982). Operationally, typicality is determined by the associative strength between a category concept and members of the category.

In addition to the graded structure, which represents the horizontal structure of categories, categories also possess a vertical hierarchical structure. People categorize objects in a taxonomical structure; i.e., some objects are more inclusive and higher in categorical structure than others. In this knowledge hierarchy, some levels become more predominant in structuring concepts (Alba and Hutchinson 1987; Mervis and Rosch 1981; Tversky and Hemenway 1984). There appears to be a certain pattern in how categorical structures are developed in the consumer's memory. A category that is acquired before categories at other hierarchical levels is called the basic category (Alba and Hutchinson 1987; Mervis and Rosch 1981; Rosch, Mervis, Gray, Johnson, and Boyes-Braem 1976).

Basic level categories are psychologically and linguistically more primary than categories at other hierarchical levels (Mervis and Rosch 1981; Tversky and Hemenway 1984). Attributes of categories at the basic level are those that are most commonly shared by different people and are the easiest to retrieve. Basic level categories have more distinctive and perceptual attributes than those at other categorical levels (Murphy and Smith 1982). Feature similarity dominates the formation of categories at the basic level (Alba and Hutchinson 1987; Tversky and Hemenway 1984).

At the basic level, within-category similarity is maximized relative to between-category similarity (Alba and Hutchinson 1987; Mervis and Rosch 1981; Murphy and Smith 1982). For example, 'car' rather than 'vehicle' or 'station wagon' is considered as the basic level category. At the category of car, people can list a great number of similar attributes. The number of similar attributes at the category of vehicle is far less than that at the car level (i.e., lower within category similarity). Although the category of station wagon includes objects with more similar attributes (i.e., higher within category similarity) than the category of car, the category of station wagon also has a far higher between category similarity than the category of car because 'station wagon' is categorically similar to 'sedan' or 'truck.'

Categorical knowledge below or above the basic level is developed from an increase in familiarity at the basic level (Mervis and Rosch 1981). Categories below the basic level are called subordinate categories. Categories at the subordinate level have more discriminative, more detailed, and more specific features than those at the basic level (Alba and Hutchinson 1987; Rosch, Mervis, Gray, Johnson, and Boyes-Braem 1976; Tversky and Hemenway 1984).

Categories existing above the basic level are called superordinate categories. Categories at the superordinate level are naturally more inclusive than those at the basic level. While categories at the basic level are generally determined by concrete perceptual attributes, features characterizing a superordinate category are more abstract, more qualitative, more general, and less concrete (Alba and Hutchinson 1987; Murphy and Smith 1982; Tversky and Hemenway 1984). Members of superordinate categories are more strongly related with certain causal mechanisms because the cohesiveness of a superordinate category is determined by abstract relationships or subjective theories rather than perceptual features (Alba and Hutchinson 1987; Murphy and Medin 1985; Tversky and Hemenway 1984). For example, a superordinate category of vehicles which includes cars, boats, motorcycles, sleds, and spacecrafts, has very limited feature similarity between category members; however, a functional relationship such as transporting people or objects makes all of the physically different members 'stick together' under the category.

Cognitive Response Theory

Cognitive response theory is one of many theories related to attitude formation and/or change. It is closely related to the central route for information processing in the Elaboration Likelihood Model of attitude change (Petty and Cacioppo 1983; Petty, Cacioppo, and Schumann 1983). Cognitive response theory deals with consumers' thoughts and ideas evoked by incoming messages (Brock and Shavitt 1983).

When consumers receive a stimulus or message, they attempt to relate this new information to their preexisting attitudes, knowledge, feelings, and so on. In so doing, consumers rehearse their cognitions and develop associations beyond the content of incoming information. These new associations or issue-relevant beliefs that are spontaneously activated upon facing the incoming stimulus are referred to as cognitive responses (Belch 1981; Cialdini, Petty, and Cacioppo 1981; Dholakia and Sternthal 1977; Greenwald 1968; Sternthal, Dholakia, and Leavitt 1978; Wright 1973, 1974). Cognitive response theory emphasizes that these spontaneous inner responses are more important mediators of attitude formation toward the stimulus than is the consumer's learning of the stimulus content itself (Greenwald 1968; Lutz and Mackenzie 1982; Olson, Toy, and Dover 1982; Toy 1982; Wright 1973, 1974).

Cognitive response theory is commonly applied in advertising for predicting attitude change. It also provides a solid theoretical perspective for understanding consumers' responses to brand extensions. Upon facing a brand extension, consumers will form cognitive responses, and, as with advertising applications, these responses will directly impact the formation of attitudes about the extension. Unlike advertising, however, presentation of the stimulus (i.e., exposure to the new extension) is not necessarily accompanied by a specific commercial message. Without the information provided in such accompanying ads, consumers will make inferences about the extension and, in the process, cognitive responses may become all the more important ingredients needed to form attitudes toward a brand extension.

Because cognitive responses are assumed to serve as mediators of attitudes formation and change, much attention has been given to identifying the types of possible cognitive responses. Various classification schemes for cognitive responses have been proposed (Brucks, Armstrong, and Goldberg 1988; Cacioppo, Harkins, and Petty 1981; Greenwald 1968; Lutz and MacKenzie 1982; MacKenzie 1986; Mitchell 1967; Roberts and MacCoby 1973; Wright 1974). Greenwald (1968) divided cognitive responses into two categories: those supporting the existing position and those opposing the existing position.

Wright (1973, 1974) categorized cognitive responses into four groups: support arguments, counterarguments, source derogation, and curiosity thoughts. The support arguments and counterarguments are the same as Greenwald's (1968) supporting responses and opposing responses, respectively. Support arguments represent cognitions congruent to the subject's existing opinions and contribute to developing favorable attitudes toward the object. Counterarguments represent cognitions opposed to existing opinions and lead to more unfavorable attitudes. Source derogation is a resistive response focusing on the source of the information. Curiosity thoughts are expressions of simple interest in the attitude object.

Cacioppo, Harkins, and Petty (1981) proposed three dimensions of cognitive responses including target, origin, and polarity. Target means the focal point of the cognitive responses. Origin refers to the primary source of the information leading to cognitive responses. Polarity is the affective valence of cognitive responses, such as 'supporting' and 'opposing.'

Expanding on Cacioppo et al.'s (1981) three dimensions, Brucks, Armstrong, and Goldberg (1988) proposed four dimensions for their study: target, origin, polarity, and relevance. Relevance refers to whether or not cognitive responses relate to the message.

Although there are many ways to classify cognitive responses, this study focused on the polarity of response dimension because this dimension is very basic and is commonly used in cognitive response related studies (Belch 1981; Gorn and Weinberg 1984; Greenwald 1968; Hastak and Olson 1989; Love and Greenwald 1978; Mackenzie and Spreng 1992; Olson, Toy, and Dover 1982; Sternthal, Dholakia, and Leavitt 1978; Toy 1982; Wright 1973, 1974). For this study, the polarity of response dimension was divided into three subcategories: favorable responses, neutral responses, and unfavorable responses. Favorable responses are thoughts favoring the brand extension, such as optimism or appreciation about the new product. Unfavorable responses refer to thoughts expressing opposition to the brand extension, such as skepticism or pessimism about the product. Neutral responses are attitude-irrelevant thoughts, such as seeking more information.

Relationships Between the Two Theories

As mentioned, categorization provides tremendous insight into consumer information processing. As a fundamental cognitive activity, categorization explains how stimuli are perceived and provides a basis for understanding other information processing activities such as retrieving categorical information, forming inferential beliefs, and organizing knowledge.

Although the usual application areas and the theoretical roots of cognitive response theory are different from those of categorization theory, cognitive response theory and categorization theory are closely related. Cognitive response theory deals with consumers' thoughts and beliefs beyond information directly linked with the stimulus. Because these thoughts and beliefs are activated from memory through categorical cues[9], cognitive responses are the result of the categorization process (Bruner 1957; Fiske and Pavelchak 1986).

Despite such a close relationship, the two theories do not necessarily lead to the same conclusions about the effects of the constructs in the current study of attitude formation toward brand extensions. Overall, categorization

---

[9]Perceptual categorization determines types of matching cues for the activation of specific categories. Once a cue is activated, spread of activation occurs through nodes of concepts or propositions. Categorical information associated with the activated category is retrieved by this spread of activation.

theory is more limited in its predictions about attitude formation than is cognitive response theory. The relative limitation in the categorization theory approach results from an overemphasis on automatic attitude transfer and 'typicality' of the stimulus.

Generally, information processing within a categorization framework is considered to be automatic and holistic (Alba and Hutchinson 1987; Cohen and Basu 1987; Fiske 1982; Fiske and Pavelchak 1986; Sujan 1985). Upon identifying a particular exemplar (i.e., a new extension) of a category (i.e., a familiar brand name), category related information is instantly triggered. Identification of the stimulus also implies a spontaneous attitude formation toward the stimulus because affective judgments are believed to be at the top of the knowledge schema related to the category (Cohen and Basu 1987; Fiske 1982; Sujan 1985).

Along with this automatic transfer of attitudes, categorization theory emphasizes the importance of typicality in attitude formation. To the degree a stimulus resembles the activated category (i.e., typicality), the stimulus will share features, information, and evaluative judgments associated with the category (Cohen and Basu 1987; Fiske 1982). Therefore, consumer attitudes toward a stimulus depend on the typicality of the stimulus to the activated category. The more typical a stimulus is to a category, the more closely will attitudes toward the stimulus resemble those of the category (Alba and Hutchinson 1987; Fiske 1982; Gilovich 1981; Kahneman and Tversky 1972, 1973; Read 1983; Sujan 1985).

However, categorization theory in consumer behavior overly emphasizes the roles of attitudes associated with the activated category and typicality in predicting attitude formation. From the viewpoint of consumer cognitive activity, the consumer's attitudes toward a specific stimulus may not necessarily be dependent on attitudes associated with the activated category and the stimulus's typicality level. Various thoughts, ideas, and beliefs generated upon categorization of a stimulus may precede and affect attitudes toward the stimulus. Most importantly, these beliefs may not be confined to the typicality-related categorical features of the activated category. The potential impact of these thoughts, ideas, and beliefs on attitudes are generally ignored in categorization theory.

Moreover, many studies employing categorization theory assume that consumers access only one category upon categorization of a stimulus (Boush and Loken 1991; Ozanne, Brucks, Grewal 1992; Sujan 1985; Sujan and Dekleva 1987). For example, in brand extension studies, researchers commonly assume consumers will activate only the category cued by the brand name (Boush and Loken 1991). Although the parent brand may be the most strongly related category to a new extension, it is not the only category that can be accessed during the consumer's categorization efforts. Multiple categories can be cued upon the categorization of a stimulus (Medin and Barsalou 1987). In the case of a brand extension, consumers may access the category associated with the new product class instead of the parent brand name category. The effect of this kind of categorization on consumer attitudes toward an extension is unknown and unexplored.

In contrast, predictions from cognitive response theory are not subject to such problems. As discussed, under the perspective of cognitive response theory, various thoughts and beliefs beyond the given information are considered as mediators in forming attitudes toward the stimulus, and there is no implied restriction on the types of thoughts and beliefs to be considered. Cognitive response theory provides an excellent competing approach for explaining consumer responses to brand extensions. This dissertation pitted these two theories against one another. Hypotheses were derived based on predictions from both theories to determine which theory better withstood the falsification process.

Constructs

Perceived quality (PQ), product category similarity (PCS), and brand breadth (BB) are the key constructs in the current study. Although many previous brand extension studies dealt with these constructs, a lack of clarity in definitions of these constructs remains. In this section, definitions of these constructs are clarified, along with explanations of related concepts.

Perceived Quality (PQ)

Perceived quality is commonly assessed in brand extension studies (Aaker and Keller 1990; Boush 1988; Boush and Loken 1991; Keller and Aaker 1992; University of Minnesota 1987), yet the conceptual and operational definitions of perceived quality remain ambiguous. In many brand extension studies, perceived quality is confused with brand image (Boush 1988; University of Minnesota 1987). To understand the roles of perceived quality and brand image more clearly for brand extending, definitions of both concepts and their interrelationships need to be clarified. First, the definitions and domains of both constructs are discussed. Then, similarities and differences between brand image and perceived quality are explained from the viewpoint of definition and measurement.

Brand Image. A number of studies (Boush 1988; Fry 1967; Kerby 1967, 1969; Mazanec and Schweiger 1981; Neuhaus and Taylor 1972; Roman 1969; Tauber 1981; Thompson 1988) agree that the transference of good brand image from one product category to another product category is a key issue in launching a successful brand extension. However, the construct of brand image is elusive and ambiguous. There is no consensus on the definition of brand image (Dobni and Zinkhan 1990; Reynolds and Gutman 1984). For example, some researchers (Bird, Channon, and Ehrenberg 1970; Doyle and Fenwick 1974; Jain and Etgar 1976; Martineau 1957) view brand image as an attitude or a feeling about a given brand. In other words, brand image is the total set of evaluative judgments concerning the attributes of a brand. According to Reynolds and Gutman (1984), this approach primarily focuses on affective connotations associated with the physical (or intrinsic) attributes of a brand.

To other researchers, however, brand image is devoid of affect. According to Kotler (1984), brand image is merely the set of beliefs about where the brand stands on each attribute. Thompson (1988) agrees, saying brand image is "a totality of beliefs which a consumer possesses with respect to a brand (p. 3)." Unlike the attitudinal approach, this definition excludes affective connotations from brand image.

To another group of researchers, brand image is separated from the measurement of brand attitudes based on objective and physical attributes. With this view, brand image is a holistic judgment about the brand based only on subjective criteria. For example, Gensch (1978) defines brand image as an abstract concept consisting of factors extrinsic to the product such as past promotion, reputation, and peer evaluation of the product. Mazanec and Schweiger (1981) concur, saying brand image is an abstract concept which does not include evaluative judgments on the brand's intrinsic attributes. According to them, brand image "implies an evaluation process based on some overriding impression or stereotype as a substitute for missing factual knowledge (p. 33)."

A fourth group of researchers (Assael 1984; Hirschman, Greenberg, and Robertson 1978; Lindquist 1974; Marks 1976) propose a more encompassing viewpoint. They define brand image as the consumer's overall perception of the brand. Although the meaning and boundary of perception is not clear in this view, the essence of this definition is in the combination of beliefs and attitudes (Assael 1984), combined evaluations on intrinsic attributes and extrinsic attributes (Oxenfeldt 1974), and joint judgment on objective factors and subjective factors (Marks 1976).

A similar definition is provided by Park, Jaworski, and MacInnis (1986) in which brand image is the understanding which consumers derive from the total set of brand related activities engaged in by the firm. In this context, 'understanding' is consistent with 'perception.' In the same article, they say "image is a perception created by the marketer's management of the brand (p. 136)."

Recently, a more extended view of brand image has been suggested (Friedman 1986; Friedman and Lessig 1987).

According to this view, brand image (or the psychological meaning of the brand as used in their paper) represents the consumer's holistic understanding and evaluation of the product. Although similar to the previous definition, this view contends that brand image is determined not only by evaluations on attributes of a brand but also by the consumer's psychological mode of perception and the experiential context in which perception takes place. Specifically, the attributes which consumers perceive include both tangible and intangible attributes. Tangible attributes are objective and verifiable features of the product. Intangible attributes are subjective impressions of the product. Psychological mode refers to whether perception is 'data-oriented' (for tangible attributes) or 'concept-oriented' (for intangible attributes). Experiential context includes individual characteristics (perceptual style, sensation seeking, fantasy life, etc), social characteristics (social class, occupation, reference group, etc), and situational characteristics (environment, different alternatives, budget, etc).

The previously presented definitions of brand image which are based on subjective criteria only (Gensch 1978; Mazanec and Schweiger 1981) are too narrow. There is no good rationale to detach brand image from the evaluative judgments of objective attributes. Brand image is determined by both and objective attributes; it is better viewed as being derived from physical (or functional) attributes and extrinsic (or psychological) attributes.

This view is also reflected in Dobni and Zinkhan's (1990) study. Based on an extensive literature review, they concluded that brand image is formed through consumer interpretation, whether reasoned or emotional, based on physical and psychological attributes. Consequently, brand image can be defined as:

> the consumer's perception formed through evaluative judgments of physical as well as psychological attributes of a brand.

Perceived Quality. Like brand image, the definition of perceived quality is controversial. It is a highly debatable and subjective construct (Parasuraman, Zeithaml, and Berry 1985). According to Garvin (1984b), there are at least five approaches in defining quality. They are the transcendent approach, the product-based approach, the user-based approach, the manufacturing-based approach, and the value-based approach. Each is briefly examined next.

* Transcendent approach - The transcendent approach proposes that quality, like beauty, cannot be precisely defined. According to this view, quality can be understood only after consumers are successively exposed to those characteristics.

* Product-based approach - Product-based definitions focus on the attributes possessed by the product. If a product has more desired attributes than other products, the product is considered as a higher quality. The quantity of an attribute possessed is a determining factor of overall quality judgment. This definition is widely adopted in the economics literature.

* User-based approach - User-based definitions concentrate on the consumer's viewpoint. Products which best satisfy consumers are high quality products. According to this definition, if a product does not satisfy consumers, the product cannot be a higher quality product even though it has objectively better characteristics. Under this viewpoint, quality becomes a very subjective concept focusing on consumer preferences.

* Manufacturing-based approach - Manufacturing-based definitions focus on the supply side of a product. The very essence of this viewpoint is "conformance to requirements." Though this approach does not ignore the consumer's side, the primary emphasis is engineering and production control to reduce overall costs.

* Value-based approach - The value-based approach suggests that a quality product is one which provides good performance at an acceptable price or cost (Broh 1982).

Among these five definitions, user-based definitions are generally equated with "perceived quality" (Parasuraman, Zeithaml, and Berry 1988; Steenkamp 1990; Zeithaml 1988). The major focus of perceived quality is the consumer's satisfaction and related subjective perceptions of the product's attributes (Garvin 1984b). Although there is variation in the definitions of perceived quality, the essence of all these definitions is similar to Garvin's (1984b) user-based definition. For example, Maynes (1976) defines perceived quality as "the extent to which the specimen provides the service characteristics that the individual consumer desires (p. 56)." Kotler (1984) states that perceived quality is "the rated ability of the brand to perform its function (p. 479)" from the viewpoint of consumers. Monroe and Krishnan (1985) define perceived quality as "the perceived ability of a product to provide satisfaction relative to available alternatives (p. 212)."

Despite the similarity in their main focus, one common problem in these definitions is that they lack a strong and clear rationale. Recent in-depth studies on perceived quality offer insights on the theoretical underpinnings of perceived quality and, therefore, deserve special attention (Steenkamp 1990; Zeithaml 1988). Zeithaml (1988) defines perceived quality as the consumer's judgment about a product's overall excellence or superiority. Zeithaml clarifies her definition of perceived quality by focusing on four points. First, perceived quality is different from objective quality. Objective quality ratings, such as those published by Consumer Reports, do not always reflect consumers' judgments. A quality perception gap among different interest groups (e.g., consumers, manufacturers) naturally exists such that objective quality may not exist (Morgan 1985). Second, perceived quality is a higher level abstraction, rather than a specific attribute of a product. Based on the means-end chain model, Zeithaml argues that consumers' quality judgments consist of an abstraction derived from perceptions of intrinsic and extrinsic attributes. Intrinsic attributes involve the physical composition of the product. Extrinsic attributes are product related, but are not part of the physical product itself. Third, perceived quality is a global assessment similar to attitude (Olshavsky 1985; Parasuraman, Zeithaml, and Berry 1988). In other words, quality is a combined evaluation formed through a process similar to the process defined by the multiattribute attitude model (Fishbein and Ajzen 1975; Wilkie and Pessemier 1973). Fourth, perceived quality is a judgment usually made within a consumer's evoked set. The context and specific nature of quality comparisons are confined to the consumer's, not the firm's, assessment of competing products. Not all possible alternative brands in the market participate in the consumer's quality comparisons.

Steenkamp (1990) defines perceived quality as "an idiosyncratic value judgment with respect to fitness for consumption, which is based upon the conscious and/or unconscious processing of quality cues in relation to relevant quality attributes within the context of significant personal situational variables (p. 317)." Steenkamp focuses on three points to explain this definition of perceived quality. First, perceived quality should be studied under the broader topic of values. Because perceived quality involves preference, it is neither completely objective nor wholly subjective, and does not reside in purchasing itself, but rather in the product's consumption. Second, perceived quality is an evaluative judgment. In other words, perceived quality is a consumer's overall evaluative judgment and a higher level abstraction based on the perception of the product on quality attributes. Third, perceived quality is formed through subject-object interaction. Perceived quality is an evaluation resulting from a contextual setting consisting of comparative, personal, and situational factors which do not allow complete subjectivity nor objectivity.

Whether, as Steenkamp maintains, the concept of perceived quality should include a value perspective is somewhat controversial. Monroe and Krishnan (1985) state that perceived quality and perceived value are two different constructs. Garvin (1984b) and Zeithaml (1988) also refuse to include value in the definition of quality, saying that one major problem with the value approach is that quality becomes a measure of worth instead of a measure of excellence.

Regardless of this controversy, most studies agree that consumers' satisfaction-related judgments are based on both intrinsic and extrinsic attributes, and this is the key to perceived quality. Following Zeithaml's (1988) and Steenkamp's (1990) definitions, perceived quality in this study is defined as:

> consumer's evaluative and affective judgments concerning the overall excellence of a brand based on intrinsic as well as extrinsic attributes which are directly related to his or her satisfaction with that brand.

<u>Relationships Between Brand Image and Perceived Quality.</u> Certainly, brand image and perceived quality are not the same. They are different constructs. Definitions of brand image focus on the overall perceptions of a brand. Brand image reflects both the cognitive and affective dimensions of a brand. In contrast, definitions of perceived quality focus on evaluation of affective components of a brand as they are related to the ability of the brand to provide utility and satisfaction. While both constructs reflect the totality of judgments based on various attributes, brand image focuses more on the overall relationship among judgments made on attributes, and perceived quality focuses more on goal-oriented evaluative judgments.

Despite the apparent differences between these two constructs, they are often operationalized using the same measurement techniques. For example, both are measured by viewing the totality of consumers' evaluations on attributes. Both constructs require evaluations on physical attributes as well as on psychological attributes of a brand. Brand image is measured by perceptual and evaluative judgments of a brand's attributes. Perceived quality is also measured by evaluative judgments of a brand's attributes.

Inclusion of one construct as a component of the other construct is another source of confusion. For example, some researchers looking at brand image include measures of quality for their measurement scheme for brand image (Oxenfeldt 1974). Similarly, researchers investigating perceived quality have embraced evaluations of brand image to assess dimensions of perceived quality (Garvin 1984b; Zeithaml 1988).

Conceptually, perceived quality is not the same as brand image; however, there is not much difference between the two constructs at the operational level. A significant portion of their domains overlap. Because of this overlap, both constructs have similar meanings and predicted effects on judgements of brand extensions. In fact, it is impossible to conceive that a product with low perceived quality can be regarded as a product with good brand image, and vice versa. Good perceived quality, like good brand image, is a key determinant of consumer decision making in the brand extension context.

Product Category Similarity (PCS)

Along with perceived quality, product category similarity (or fit) has been considered one of the most important factors determining the success of a brand extension (Aaker and Keller 1990; Boush 1988; Boush and Loken 1991; Tauber 1981, 1988; Thompson 1988; Thompson, Nelson, and Duncan 1987). However, similarity is not a simple construct to understand or to operationalize

(Chakravarti, MacInnis, and Nakamoto 1990; Murphy and Medin 1985). To understand product category similarity more clearly, various concepts and related measures of product category similarity are discussed, along with their theoretical underpinnings.

Several concepts have been used to reflect product category similarity in brand extension contexts. They are extension typicality (Boush 1988; Boush and Loken 1991), product category similarity (Keller and Aaker 1992; University of Minnesota 1987), fit (Aaker and Keller 1990; Chakravarti, MacInnis, and Nakamoto 1990; Park, Milberg, and Lawson 1991; Tauber 1981, 1988), logical consistency (Thompson 1988), and category-to-category relatedness (Farquhar, Herr, and Fazio 1990). These concepts can be broadly categorized into two groups: typicality and fit. Extension typicality and product category similarity can be grouped under the concept of typicality. Fit, logical consistency, and category-to-category relatedness can be grouped under the concept of fit.

Typicality. As mentioned in the previous section, the concept of typicality originated from the graded structure of categories. The extension typicality concept used by Boush and Loken (1991) and product category similarity used by University of Minnesota (1987) have the same conceptual roots as typicality. The underlying logic and properties are exactly the same.

Table 3-1 summarizes the various methods that have been suggested to measure typicality. Examples of these methods are provided in the Appendix A. The first method is the family resemblance measure. This method, used by Rosch (1975) and Rosch and Mervis (1975), is to measure how much the exemplar possesses attributes of other category members and the frequency of those attributes among members of the category. Boush (1988) refers to this as the 'shared features' method. According to Rosch and Mervis (1975), family resemblance scores are highly correlated with typicality ratings. However, Ward and Loken (1988) reported mixed results about the relationship. According to Ward and Loken, a product category 'snack foods' had a high correlation (.87) between the family resemblance scores of the category members and their rated typicality; however, a product category 'shampoo' had a very low correlation (.03). Loken and Ward (1987) criticized the family resemblance measure on the grounds that many attributes describing a category member may not be salient for overall category membership, yet they may receive heavy weights in determining family resemblance scores, resulting in a low correlation between the family resemblance scores and the typicality ratings of category members.

The second measurement approach focuses on ideal attributes. Developed by Barsalou (1983, 1985), this method tries to measure the degrees to which ideal attributes are possessed by all category members. According to Barsalou (1985), if a goal is associated with a category (i.e., a goal-derived category), possession of an ideal attribute that serves the goal best determines a member's typicality for the category. For example, if 'things to eat on a diet' is a category being considered, an ideal attribute will be something that will maximize the goal of 'losing weight' (Barsalou 1985). In applying this measure, Barsalou personally picked a single attribute that exemplars should optimally possess with respect to the goal served by the respective category. The problem with this method is that a category can have more than one ideal attribute and have more important ideal attributes than the attribute assessed by the scale.

The third measure is the salient attributes method. Focusing on problems of both the family resemblance measure and the ideal attributes measure, Ward et al. (1986) and Loken and Ward (1987) developed and used a combined measure which taps the degree to which a member of a category possesses salient attributes related to the purchase decision. This method offsets problems of both previous measures. Salient attribute scores yield a stronger relationship with both typicality and attitudes than do family resemblance and ideal attribute scores.

Table 3-1
Concepts and Measures of Typicality

Concepts	
Extension Typicality	Boush 1988 Boush & Loken 1991
Product Category Similarity	Keller & Aaker 1991 U. of Minnesota 1987

Measures	
Family resemblance method: (How much the exemplar possesses attributes of other category members?)	Rosch & Mervis 1975 Rosch 1975
Ideal attribute method: (Degree of possessing ideal attributes in category members.)	Barsalou 1983, 1985
Salient attribute method: (Degree of possessing salient attributes in a purchase situation.)	Loken & Ward 1987 Ward et al. 1986
Free Recall Method: (Asking people to give examples of a category.)	Boush 1988
Representativeness method: (How good an example an item is of its category?)	Rosch 1973 Mervis & Rosch 1981

Free recall offers another approach for measuring typicality. In fact, Boush (1988) also suggests this as a possible measure of product category similarity. This method simply asks people to cite examples of a category. This procedure elicits category members in the order of their "typicality" in a person's memory. As a result, the most accessible members of a category are the most representative of the category.

Another simple method is the representativeness measure (Mervis and Rosch 1981; Rosch 1973). This method measures subjects' ratings of how good an example an item is of its category.

One common problem with these typicality measures is that they all focus on the product category's similarity from a limited viewpoint -- the number of shared features, the degree to which an ideal attribute is possessed, the degree to which a salient attributes is possessed, or 'goodness' of membership. In reality, product category similarity between parent and extension has diverse facets. For example, it can mean physical or technical similarity of the extended category, as well as logicalness or sensibleness of the extension itself. Measures of product category similarity need to reflect its multidimensional characteristics. Multidimensional aspects of product category similarity are well represented in various concepts of fit to be discussed next.

Fit. The concept of fit, as originally suggested by Tauber (1981), means consumers perceive the extension as 'consistent' with the parent. He later clarified the concept, stating that fit exists when consumers accept the extension as logical and would expect it from the brand (Tauber 1988). Table 3-2 summarizes various concepts and measures (or dimensions) associated with fit. Specific scales employed in various studies are summarized in the Appendix B.

Table 3-2
Concepts and Measures (or Dimensions) of Fit

Concepts	
Fit	Tauber 1981, 1988 Aaker & Keller 1990 Chakravarti et al. 1990 Park et al. 1991
Logical Consistency	Thompson 1988
Category-to-category relatedness	Farquhar et al. 1990
Measures (or Dimensions)	
Thompson's (1988) Measures	Relationship Making sense Similarity Reasonableness
Aaker and Keller's (1990) Measures and Dimensions	Complementarity Substitutability Transferability
Chakravarti et al.'s (1990) Dimensions	Shared features Shared benefits Complementarity Synergy
Park et al.'s (1991) Measures and Dimensions	Feature similarity Concept consistency
Faquhar et al.'s (1990) Dimensions	Complementarity Substitutability Similarity

Thompson (1988) adopted Tauber's (1981, 1988) concept in his study and operationalized it with eight Likert-type measures. His measures, called parent-extension logical consistency (P-ELC), focused on the degree of perceived relationship. Thompson intended P-ELC as a global measure of 'fit' that could be adapted to any parent-extension combination.

Aaker and Keller (1990) considered similarity and fit as the same. To capture the domain of fit more accurately, they suggested that fit possesses three dimensions: complementarity, substitutability, and transferability. Complementarity involves the extent to which consumers view two product categories as complements. Substitutability deals with the extent to which consumers view two product classes as substitutes. Transferability reflects consumers' perceptions on the ability of a firm operating in the first product category to make a product in the second product category.

Chakravarti, MacInnis, and Nakamoto (1990) used a somewhat different approach to the concept of fit. They emphasized four facets of fit: shared features, shared benefits, usage complementarity, and marketing and manufacturing synergy. Shared features involve physical similarities between parent and extension based on physical attributes. Shared benefits reflect the degree to which two product categories serve the same goal for consumers. Usage complementarity deals with the complementarity of the extended product to the parent product. It is the same as the complementarity dimension suggested by Aaker and Keller.

Marketing and manufacturing synergy reflect consumers' perceptions of the relatedness of skills between parent and extension.

Park, Milberg, and Lawson (1991) contended that 'goodness of fit' is a function of product feature similarity and brand concept consistency. Product feature similarity is reflected by evaluations on concrete attributes of the brand, and brand concept consistency is reflected by evaluations on abstract attributes of the brand.

Dimensions suggested by Faquhar, Herr, and Fazio's (1990) category-to-category relatedness are complementarity, substitutability, and similarity. Complementarity and substitutability are the same dimensions that are used by Aaker and Keller. Similarity is the same as product feature similarity suggested by Park, Milberg, and Lawson (1991).

To recapitulate, there are various conceptual and operational definitions for product category similarity. Generally, typicality measures are limited in their ability to reflect the diverse nature of product category similarity. The multidimensional characteristics of product category similarity are better captured by the concept of fit. Moreover, most measures of fit include one or two items which reflect typicality. For example, Thompson's (1988) and Faquhar et al.'s (1990) measures each include an item tapping similarity. Chakravarti et al.'s (1990) measures have items concerning shared features and shared benefits. Park et al.'s measures contain an item reflecting feature similarity. Consequently, product category similarity in this study is conceptually defined to be consistent with the concept of fit. Based on Park et al.'s (1991), Tauber's (1981, 1988), and Thompson's (1988) definitions, product category similarity in this study is defined as:

> consumer's perception of the degree of physical similarity, conceptual similarity, and/or perceptual consistency between the parent product category and an extension product category.

Brand Breadth (BB)

The concept of brand breadth, originally suggested by Boush and Loken (1991), is defined as "the variability among product types represented by a brand name (p. 17)." If a brand represents very dissimilar product categories, the brand's breadth is broad. If a brand represents very similar product categories, the brand's breadth is narrow. For example, a brand representing baby foods, soups, and sauces is narrower than a brand representing baby foods and lawn mowers (Boush and Loken 1991).

Although Boush and Loken did not specify, brand breadth can be viewed from two dimensions: the degree of similarity (cohesiveness) between parent product categories and the number of product categories represented by the parent. If two parent brands have the same number of product categories and if one brand represents more similar product categories than the other, then the former will be conceived as a narrower than the latter. Similarly, if one brand represents more product categories than are represented by the second brand, then the former will be considered as a broader brand.

Boush and Loken's (1991) definition of brand breadth is adopted for the current study. Consequently, brand breadth in the current study is defined as:

> "the variability among product types represented by a brand name (Boush and Loken 1991, p. 17)."

Hypotheses

Based on categorization and cognitive response theories, two sets of hypotheses are developed for each of the above constructs. Broadly, hypotheses based on categorization theory center on postulating a direct effect of perceived quality and moderating effects of both product category similarity and brand breadth on attitudes formed about brand extensions. Hypotheses based on cognitive response theory postulate that the three constructs (PQ, PCS, BB) will have independent direct effects on consumer attitudes toward brand extensions, and that these effects will be mediated by cognitive responses (CR). The next sections outline the hypotheses. Figures 3-1 and 3-2 summarize all proposed hypotheses.

Figure 3-1
Hypothesized Relationships between the Constructs PQ, PCS, and BB and Attitudes toward an Extension Based on Categorization Theory

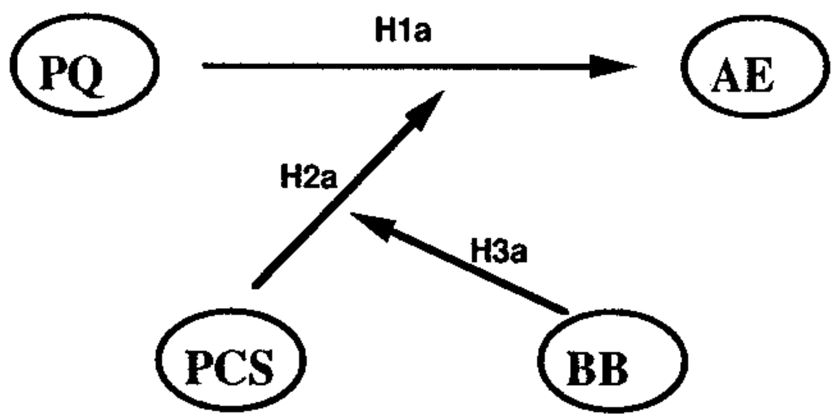
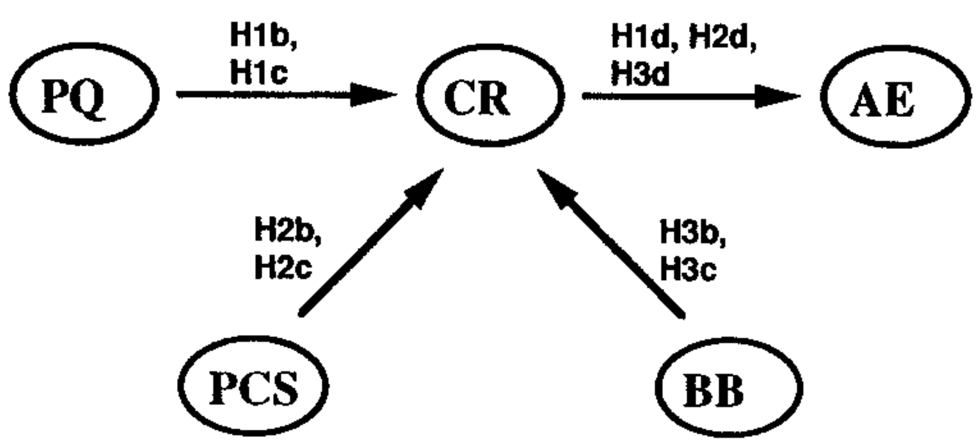


Figure 3-2
Hypothesized Relationships between the Constructs PQ, PCS, and BB and Attitudes toward an Extension Based on Cognitive Response Theory



Effect of Perceived Quality

In brand extensions, a good brand image and/or a high perceived quality association with the parent brand has been regarded as a prerequisite for successful extensions (Aaker 1990; Aaker and Keller 1990; Boush 1988; Tauber 1988; Thompson 1988). Companies which build a strong brand image in consumers' minds are more likely to launch successful extensions (Park, Jaworski, and MacInnis 1986).

Accordingly, researchers generally have postulated a positive direct effect of perceived quality on perceptions of brand extensions (Aaker 1990; Boush 1988; Tauber 1981, 1988; Thompson 1988; University of Minnesota 1987). Such effects have been confirmed by Thompson (1988) and University of Minnesota (1987). However, Aaker and Keller's (1990) study failed to identify a significant positive main effect of perceived quality on consumers' perception of brand extensions; perceived quality had only a moderating effect with product category similarity.

Following are theoretical perspectives on the role of perceived quality based on both categorization theory and cognitive response theory. Despite conflicting results reported in the above studies, both categorization and cognitive response theories support the existence of a positive main effect of perceived quality.

Categorization Theory Perspective. According to categorization theory, attitudes toward a stimulus are directly related to attitudes associated with the activated category. Upon categorization of a stimulus, attitudes associated with the generated category are immediately cued (Cohen and Basu 1987; Fiske 1982). If a stimulus activates a category that is evaluated positively, reactions to the stimulus should also be positive. If the category contains negative associations, responses to the stimulus are more likely to be negative.

Facing a new extension from a familiar brand name, the consumer should view the brand name as a referring category. Once the brand name is activated as a category, the consumer will immediately infer affective judgements associated with the brand name. Because perceived quality is highly attitudinal, consumers should form positive attitudes toward brands with good quality perceptions (Steenkamp 1990; Zeithaml 1988). As a result, an extension from a brand associated with high perceived quality should stimulate positive attitudes toward the extension. The opposite should be true for parent brands associated with relatively poor quality images. Based on the above reasoning;

H1a: Perceived parent brand quality (PQ) has a direct positive effect on attitudes toward brand extensions (AE).

Cognitive Response Theory Perspective. Perceived quality is directly related to consumers' expressed levels of satisfaction (Kotler 1984; Monroe and Krishnan 1985; Steenkamp 1990; Zeithaml 1988). If a brand is associated with high perceived quality, the consumer's memory rehearsal about the brand will center on pleasant thoughts and experiences in relation with her or his expected satisfaction. As one's perceptions of quality toward the brand increases, a consumer's trust of a brand as a 'satisfaction supplier' will also increase.

Upon facing an extension from a brand with high perceived quality, consumers should generate favorable cognitive responses related to the brand name. The generation of unfavorable responses should be minimal. In turn, the prevalence of positive cognitive responses should generate positive attitudes toward the extension.

However, if a brand is low in perceived quality, consumer responses will center on unpleasant experiences or thoughts associated with the brand. For example, consumers may think the manufacturer should focus on producing a higher quality product in the original category, rather than try to produce another low quality product in a different category. Consumers will generate more unfavorable responses because the brand does not provide, nor will be expected to provide, necessary satisfaction. The result is that favorable responses generated by an extension from a low perceived quality brand should be rare. The predominance of unfavorable responses should, in turn, lead to unfavorable attitudes toward the brand extension. Based on the above reasoning:

H1b: Perceived parent brand quality (PQ) has a direct positive effect on the number of favorable cognitive responses (CR) toward the brand extension.

H1c: Perceived parent brand quality (PQ) has a direct negative effect on the number of unfavorable cognitive responses (CR) toward the brand extension.

H1d: Cognitive responses (CR) generated by perceived parent brand quality (PQ) have a mediating effect on attitudes toward brand extensions (AE). Specifically, favorable cognitive responses (CR) lead to more favorable attitudes toward brand extensions (AE), and unfavorable cognitive responses (CR) lead to less positive or negative attitudes toward brand extensions (AE).

Effect of Product Category Similarity

Study results about the role of product category similarity on consumer attitudes toward brand extensions are inconclusive. Boush and Loken (1991) reported a direct positive effect of product category similarity on attitudes toward brand extensions. Moreover, they reported that extension typicality is positively related to consumers' evaluations of brand extensions. One limitation in their study is that the relationship is confined to brands with positive quality evaluations.

Aaker and Keller (1990) reported similar, but slightly different, findings from those of Boush and Loken (1991). According to Aaker and Keller (1990), fit as TRANSFER had a direct positive relationship and fit as COMPLEMENT and fit as SUBSTITUTE had only interaction (moderating) effects on consumers' perceptions toward extensions. Effects of product category similarity, as a whole, were unavailable.

According to Thompson (1988), product category similarity had a positive independent effect on attitudes toward extensions, as well as strong interactions with affect toward the parent brand.

In contrast, the study by the University of Minnesota (1987) showed only a moderating effect of product category similarity. No significant direct effect of similarity on attitudes toward extensions was observed.

To summarize, the effect of product category similarity on consumers' perceptions of brand extensions is still controversial. Moreover, perspectives provided by categorization and cognitive response theories on the effect of product category similarity are not the same. Following are the two theories' perspectives.

Categorization Theory Perspective. According to categorization theory, a stimulus shares the affect associated with a category to the degree the stimulus is perceived to resemble the category (Alba and Hutchinson 1987; Fiske 1982; Gilovich 1981; Kahneman and Tversky 1972, 1973; Read 1983; Sujan 1985). Fiske (1982) argues for a moderating effect of product category similarity on attitude formation. According to her, congruity (good fit) to a positive schema leads to more favorable attitudes and incongruity (poor fit) leads to less favorable attitudes.

In contrast, schema congruity to a negative schema causes more negative affect and incongruity results in less negative affect. Rosch's (1973) study also supported a moderating effect of category similarity. Her results demonstrated a negative relationship between typicality and preference when a negative category is cued. In a category called 'crime', more typical category members were rated less favorably, and less typical category members were rated more favorably.

If an extension is very similar to the parent brand, attitudes toward the extension will be more similar to attitudes associated with the parent brand -- i.e., affect (and/or belief) transfer from the parent to an extension will be quite strong if product category similarity is high. With a decrease of product category similarity to the parent brand, attitudes formed toward an extension will be less similar to those associated with the parent brand -- i.e., affect (and/or belief) transfer from the parent to an extension will be weak if product category similarity is low.

More specifically, for a similar extension from a brand associated with high perceived quality, consumers will form highly favorable attitudes toward the extension; for a dissimilar extension from the same brand, consumers will have less favorable attitudes. On the contrary, for a similar extension from a brand associated with low perceived quality, consumers should form highly unfavorable attitudes toward the extension; for a dissimilar extension from the same brand, consumers will develop less unfavorable attitudes toward the extension (Fiske 1982; Rosch 1973).

In short, under the perspective of categorization theory, effects of product category similarity on attitudes toward extensions are confined to moderating effects. An independent positive effect of product category similarity, regardless of associated perceived quality level, does not make sense in the context of the categorization theory. Based on the above reasoning:

H2a: Product category similarity of an extension to the parent (PCS) moderates perceived parent brand quality's (PQ) effect on attitudes toward brand extensions (AE).

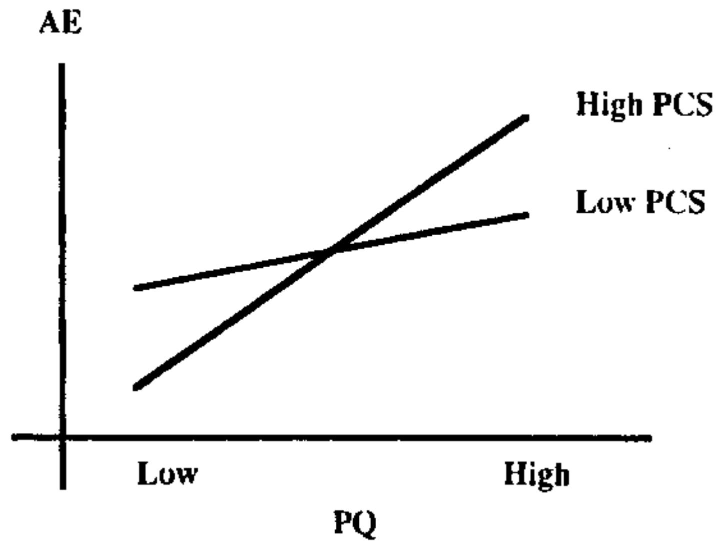
More specifically, the above hypothesis is divided into following two subhypotheses.

H2a.1: When perceived parent brand quality (PQ) is high (i.e., positive schema), extensions that are high in product category similarity (PCS) lead to more positive attitudes toward brand extensions (AE) than extensions that are low in product category similarity (PCS).

H2a.2: When perceived parent brand quality (PQ) is low (i.e., negative schema), extensions that are low in product category similarity (PCS) lead to more positive attitudes toward brand extensions (AE) than extensions that are high in product category similarity (PCS).

The hypothesized relationships between product category similarity and perceived quality are depicted in Figure 3-3.

Figure 3-3
Hypothesized Relationships Between Product Category Similarity and Perceived Quality Based on Categorization Theory



AE: Attitudes toward brand extensions
PQ: Perceived parent brand quality
PCS: Product category similarity of an extension to the parent

<u>Cognitive Response Theory Perspective.</u> While categorization theory suggests that product category similarity moderates the effect of perceived quality on attitudes toward the extension, cognitive response theory explains how and why product category similarity may have a direct effect on consumers' attitudes toward extensions. This direct effect occurs through the mediating role of cognitive responses.

Upon facing an extension, consumers' cognitive responses will focus on questions such as "Does the brand's manufacturer have the necessary skills, expertise, and technology to manufacture the new product?", "Can the company transfer their existing skills and technology relatively easily to new product manufacturing?", "Does the new product fit into the existing product categories?", and so on. A consumer's attitudes toward an extension will depend on answers to such questions, and product category similarity is directly related to these questions. A high degree of product category similarity will generate a larger number of positive responses in such areas, and these positive responses will develop into favorable attitudes toward the similar extension.

In contrast, with a decrease in perceived similarity, answers to the above questions will tend to be negative. Consequently, a decrease in product category similarity will yield less positive and more negative cognitive responses, and, thus, less favorable attitudes toward the extension. Based on the above reasoning:

H2b: Product category similarity of an extension to the parent (PCS) has a direct positive effect on the number of favorable cognitive responses (CR) toward the brand extension.

H2c: Product category similarity of an extension to the parent (PCS) has a direct negative effect on the number of unfavorable cognitive responses (CR) toward the brand extension.

H2d: Cognitive responses (CR) generated by product category similarity of an extension to the parent (PCS) have a mediating effect on attitudes toward brand extensions (AE). Specifically, favorable cognitive responses (CR) lead to more positive attitudes toward brand extensions (AE), and unfavorable cognitive responses (CR) lead to less positive or negative attitudes toward brand extensions (AE).

Effect of Brand Breadth

The first major study to focus on the effect of brand breadth was conducted by Boush and Loken (1991). They hypothesized a moderating role of brand breadth on the effect of product category similarity on consumers' attitudes toward brand extensions, and reported their hypotheses were supported. However, as mentioned earlier, their results probably are not credible, partly because their theoretical reasoning for the moderating role of brand breadth on attitude formation toward brand extensions is not convincing.

New perspectives from categorization and cognitive response theories about the roles of brand breadth are presented below. As in the case of product category similarity, these theories suggest differing interpretations on the role of brand breadth.

Categorization Theory Perspective. Consumers generally associate a specific product category with a narrow brand which focuses on one or a few very closely related product items. As a result, a brand extension from a narrow brand means that consumers will compare two basic-level categories, one associated with the extension and the other with the parent. In other words, the consumer's view of product category similarity is likely to center on the surface structures (i.e., close physical and conceptual similarity) of the two product categories when the exposed extension is from a narrow brand. Accordingly, consumers will interpret similarity in narrow terms for an extension from a narrow brand, and, thus, the effect of product category similarity on consumers' attitudes toward a narrow brand's extensions will be distinct. In other words, product category similarity will have a greater impact on consumers' perceptions of brand extensions when these extensions come from narrow brands.

In case of extensions from a broad brand, however, consumers will not focus their category matching processes on basic-level structures. For a broad brand's extension, the consumer's categorical comparison will occur at the superordinate level. Consumers essentially ascertain whether an exemplar from a basic category (an extension) can be subsumed by a superordinate category (the parent). The deep structure, or similarities based on abstract features between the parent brand and the extension, will be compared. Therefore, the categorization processes involved with extensions from a broad brand will be far more general and abstract than for extensions from a narrow brand. Upon facing an extension from a broad brand, consumers' categorization efforts will mainly center on more abstract and qualitative relationships between the two product categories. Naturally, the interpretation of similarity for a broad brand's extension becomes "looser"; and, thus, extensions from broad brands will demonstrate less distinctive and weaker effects of product category similarity on consumers' attitudes toward the extensions.

Supporting evidence for the weaker product category similarity effect from broad brands is found in the study by Park, Lawson, and Milberg (1989). According to them, the effect of product category similarity is weaker in brands which are associated with an abstract image than in brands associated more directly with physical functions and/or usage situations. The moderating role of brand breadth on product category similarity is summarized as follows:

> H3a: Brand breadth of the parent brand (BB) moderates the effect of product category similarity (PCS) on perceived parent brand quality's (PQ) effect on attitudes toward brand extensions (AE). Specifically, the broader is the parent brand (BB), the weaker becomes the moderating effect of product category similarity (PCS); the narrower is the parent brand (BB), the stronger becomes the moderating effect of product category similarity (PCS).

<u>Cognitive Response Theory Perspective.</u> While categorization theory suggests that brand breadth moderates the effect of product category similarity on attitudes toward brand extensions, cognitive response theory supports a direct effect of brand breadth on cognitive responses which, in turn, effect attitudes toward extensions. From the viewpoint of consumer perceptions, a consumer generally

will attach a 'specialist' image to a narrow brand. Such a limited image or view of the parent will prevent consumers from developing positive ideas, thoughts, and beliefs about the brand's relevant expertise, knowledge, experience, and skills for manufacturing products in other categories. As a result, consumers will generate more unfavorable responses and less favorable responses, and, thus, less favorable attitudes toward an extension from a narrow brand.

In contrast, consumers' images of broad brands which have histories of repeated extensions, will be much less restricted. Because a broad brand represents many products in different categories, consumers will perceive the brand as associated with diverse skills, expertise, experiences, technology, knowledge, and resources (Keller and Aaker 1992). In other words, consumers will believe that a broad brand is better positioned in a new product category than would be a narrow brand. Therefore, upon facing a new extension from a broad brand, consumers will develop more positive responses and less negative responses, and, subsequently, more favorable attitudes toward the extension.

Boush and Loken (1991) implied the possibility of an independent positive effect from brand breadth on cognitive responses and attitudes toward extensions. They said "apparently, extensions that are somewhat different from the current offerings are considered more acceptable if the company has already extended to different products (p. 25)."

Keller and Aaker (1992) also argued that successive previous extensions (i.e., broad brand) may have a positive effect on the credibility on the brand name as a dependable supplier.

Business practices also support the possibility of an independent positive effect of brand breadth on perceptions toward brand extensions. As mentioned, many companies such as Yamaha, Sony, GE, Panasonic, Sharp, Black and Decker, and Mitsubishi have extended their brand names into various categories and succeeded. If consumers do not like broad brands, these broad brands' market successes might not have been possible. Their success is an indication of the existence of an independent positive effect of brand breadth. Based on the above reasoning:

H3b: Brand breadth of the parent brand (BB) has a direct positive effect on the number of favorable cognitive responses (CR) toward the brand extension.

H3c: Brand breadth of the parent brand (BB) has a direct negative effect on the number of unfavorable cognitive responses (CR) toward the brand extension.

H3d: Cognitive responses (CR) generated by brand breadth of the parent brand (BB) have a mediating effect on attitudes toward brand extensions (AE). Specifically, favorable cognitive responses (CR) lead to more favorable attitudes toward brand extensions (AE), and unfavorable cognitive responses (CR) lead to less positive or negative attitudes toward brand extensions (AE).

CHAPTER REFERENCES

Aaker, David A. (1990), "Brand Extensions: The Good, the Bad, and the Ugly," Sloan Management Review, 31 (Summer), 47-56.

_____ and Kevin L. Keller (1990), "Consumer Evaluations of Brand Extensions," Journal of Marketing, 54 (January), 27-41.

Adelson, Beth (1984), "When Novices Surpass Experts: The Difficulty of a Task May Increase With Expertise," Journal of Experimental Psychology: Learning, Memory, and Cognition, 10 (3), 483-495.

Alba, Joseph W. and J. Wesley Hutchinson (1987), "Dimensions of Consumer Expertise," Journal of Consumer Research, 13 (March), 411-454.

Assael, Henry (1984), Consumer Behavior and Marketing Action, 2nd ed. Boston, MA: Kent Publishing Co.

Barsalou, Lawrence W. (1983), "Ad hoc Categories," Memory and Cognition, 11 (3), 211-227.

_____ (1985), "Ideals, Central Tendency, and Frequency of Instantiation as Determinants of Graded Structure in Categories," Journal of Experimental Psychology: Learning, Memory, and Cognition, 11 (4), 629-654.

Belch, George E. (1981), "An Examination of Comparative and Noncomparative Television Commercials: The Effects of Claim Variation and Repetition on Cognitive Response and Message Acceptance," Journal of Marketing Research, 18 (August), 333-349.

Bird, M., C. Channon, and A. Ehrenberg (1970), "Brand Image and Brand Usage," Journal of Marketing Research, 7 (August), 307-314.

Boush, David M. (1988), "A Categorization Model of Attitude Transfer and Its Application to Brand Extension," Unpublished Doctoral Dissertation, University of Minnesota, Minneapolis, MN.

_____ and Barbara Loken (1991), "A Process-Tracing Study of Brand Extension Evaluation," Journal of Marketing Research, 28 (February), 16-28.

Brock, Timothy C. and Sharon Shavitt (1983), "Cognitive-Response Analysis in Advertising," in Advertising and Consumer Psychology, Larry Percy and Arch Woodside eds., Lexington, MA: Lexington Books, 91-110.

Broh, R. A. (1982), Managing Quality for Higher Profits, New York, NY: McGraw-Hill, Ch.1.

Brucks, Merrie, Gary M. Armstrong, and Marvin E. Goldberg (1988), "Children's Use of Cognitive Defenses Against Television Advertising: A Cognitive Response Approach," Journal of Consumer Research, 14 (March), 471-482.

Bruner, J. S. (1957), "Going Beyond the Information Given," in Contemporary Approaches to Cognition, J. S. Bruner, H. Gruber, G. Terrell, and M. Wertheimer eds., Cambridge, MA: Harvard University Press, 151-156.

Cacioppo, John T., Stephen G. Harkins, and Richard E. Petty (1981), "The Nature of Attitudes and Cognitive Responses and Their Relationships to Behavior," in Cognitive Responses in Persuasion, Richard E. Petty, Thomas M. Ostrom, and Timothy C. Brock eds., Hillsdale, NJ: Lawrence Erlbaum, 31-54.

Cantor, Nancy and Walter Mischel (1979), "Prototypes in Person Perception," Advances in Experimental Social Psychology, 12, 3-52.

Chakravarti, Dipankar, Deborah J. MacInnis, and Kent Nakamoto (1990), "Product Category Perceptions, Elaborative Processing and Brand Name," Advances in Consumer Research, 17, 910-916.

Cialdini, Robert B., Richard E. Petty, and John T. Cacioppo (1981), Annual Review of Psychology, 32, 357-404.

Cohen, Joel B. and Kunal Basu (1987), "Alternative Models of Categorization: Toward a Contingent Processing Framework," Journal of Consumer Research, 13 (March), 455-472.

Dholakia, Ruby R. and Brian Sternthal (1977), "Highly Credible Sources: Persuasive Facilitators or Persuasive Liabilities," Journal of Consumer Research, 3 (March), 223-232.

Dobni, Dawn and George M. Zinkhan (1990), "In Search of Brand Image," Advances in Consumer Research, 17, 110-119.

Doyle, Peter and Ian Fenwick (1974), "How Store Image Affects Shopping Habits in Grocery Chains," Journal of Retailing, 50 (4), 39-52.

Farquhar, Peter H., Paul M. Herr, and Russell H. Fazio (1990), "A Relational Model for Category Extensions of Brands," Advances in Consumer Research, 17, 856-860.

Fishbein, Martin and Icek Ajzen (1975), Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research, Reading, MA: Addison-Wesley Publishing Co.

Fiske, Susan T. (1982), "Schema-triggered Affect: Applications to Social Perception," in Affect and Cognition: The 17th Annual Carnegie Symposium on Cognition, M. Clark and S. Fiske eds., Hillsdale, NJ: Erlbaum, 55-78

_____ and Mark A. Pavelchak (1986), "Category-Based versus Piecemeal-Based Affective Responses: Developments in Schema-Triggered Affect," in Handbook of Motivation and Cognition: Foundations of Social Behavior, Richard M. Sorrentino and E. Tory Higgins eds., New York: Guilford Press, 167-203.

Friedmann, Roberto (1986), "Psychological Meaning of Products: Identification and Marketing Applications," Psychology and Marketing, 3 (Spring), 1-15.

_____ and V. Parker Lessig (1987), "Psychological Meaning of Products and Product Positioning," Journal of Product Innovation Management, 4 (December), 265-273.

Fry, Joseph N. (1967), "Family Branding and Consumer Brand Choice," Journal of Marketing Research, 4 (August), 237-247.

Garvin, David A. (1984b), "What Does 'Product Quality' Really Mean?" Sloan Management Review, 26 (Fall), 25-43.

Gensch, Dennis H. (1978), "Image-Measurement Segmentation," Journal of Marketing Research, 15 (August), 384-394.

Gilovich, Thomas (1981), "Seeing the Past in the Present: The Effect of Associations to Familiar Events on

Judgments and Decisions," Journal of Personality and Social Psychology, 40 (5), 797-808.

Gorn, Gerald J. and Charles B. Weinberg (1984), "The Impact of Comparative Advertising on Perception and Attitude: Some Positive Findings," Journal of Consumer Research, 11 (September), 719-727.

Greenwald, Anthony G. (1968), "Cognitive Learning, Cognitive Response to Persuasion, and Attitude Change," in Psychological Foundations of Attitudes, Anthony Greenwald, Timothy Brock, and Thomas Ostrom eds., New York: Academic Press, 147-170.

Harnad, Stevan (1987), "Category Induction and Representation," in Categorical Perception: The Groundwork of Cognition, Stevan Harnad ed., New York: Cambridge University Press, 535-565.

Hastak, Manoj and Jerry C. Olson (1989), "Assessing the Role of Brand-Related Cognitive Responses as Mediators of Communication Effects on Cognitive Structure," Journal of Consumer Research, 15 (March), 444-456.

Hirschman, Elizabeth C., Barnett Greenberg, and Dan H. Robertson (1978), "The Intermarket Reliability of Retail Image Research: An Empirical Examination," Journal of Retailing, 54 (1), 3-12.

Jain, Arun K. and Michael Etgar (1976), "Measuring Store Image Through Multidimensional Scaling of Free Response Data," Journal of Retailing, 52 (4), 61-70.

Kahneman, Daniel and Amos Tversky (1972), "Subjective Probability: A Judgment of Representativeness," Cognitive Psychology, 3 (July), 430-454.

_____ and _____ (1973), "On the Psychology of Prediction," Psychological Review, 80 (4), 237-251.

Keller, Kevin L. and David A.Aaker (1992), "The Effects of Sequential Introduction of Brand Extensions," Journal of Marketing Research, 29 (February), 35-50.

Kerby, Joe Kent (1967), "Semantic Generalization in the Formation of Consumer Attitudes," Journal of Marketing Research, 4 (August), 314-317.

_____ (1969), "Borrowing From the Behavioral Sciences," Journal of Business, 42 (April), 152-161.

Kotler, Philip (1984), Marketing Management: Analysis, Planning, and Control, 5th ed., Englewood Cliffs, NJ: Prentice-Hall.

Lindquist, Jay D. (1974), "Meaning of Image," Journal of Retailing, 50 (4), 29-37.

Loken, Barbara and James Ward (1987), "Measures of the Attribute Structure Underlying Product Typicality," Adv ances in Consumer Research, 14, 22-26.

Love, Robert E. and Anthony G. Greenwald (1978), "Cognitive Responses to Persuasion as Mediators of Opinion Change," Journal of Social Psychology, 104 (2), 231-240.

Lutz, Richard J. and Scott B. MacKenzie (1982), "Construction of A Diagnostic Cognitive Response Model for Use in Commercial Pretesting," in Straight Talk about Attitude Research, Joseph Chasin ed., AMA Proceedings series, Chicago, IL: American Marketing Association, 145-156.

MacKenzie, Scott B. (1986), "The Role of Attention in Mediating the Effect of Advertising on Attribute Importance", Journal of Consumer Research, 13 (September), 174-195.

_____ and Richard A. Spreng (1992), "How Does Motivation Moderate the Impact of Central and Peripheral Processing on Brand Attitudes and Intentions?", Journal of Consumer Research, 18 (March), 519-529.

Marks, Ronald B. (1976), "Operationalizing the Concept of Store Image," Journal of Retailing, 52 (3), 37-46.

Martineau, Pierre (1957), Motivation in Advertising: Motives that make people buy, New York, NY: McGraw-Hill.

Maynes, E. Scott (1976), Decision-Making for Consumers, New York, NY: MacMillan Publishing Co.

Mazanec, Josef A. and Gunter C. Schweiger (1981), "Improved Marketing Efficiency Through Multi-product Brand Names?" European Research, 7 (January), 32-44.

Medin, Douglas L. and Lawrence W. Barsalou (1987), "Categorization Processes and Categorical Perception," in Categorical Perception: The Groundwork of Cognition, Stevan Harnad ed., New York: Cambridge University Press, 455-490.

Mervis, Carolyn B. and Eleanor Rosch (1981), "Categorization of Natural Objects," Annual Review of Psychology, 32, 89-115.

Mitchell, Walter G. (1967), "Systematic Synthesis of Advertising Research Verbatims," Journal of Advertising Research, 18 (August), 318-332.

Monroe, Kent B. and R. Krishnan (1985), "The Effect of Price on Subjective Product Evaluations," in Perceived Quality, J. Jocoby and J. Olson, eds., Lexington, MA: Lexington Books, 209-232.

Morgan, Leonard A. (1985), "The Importance of Quality," in Perceived Quality, J. Jacoby and J. Olson, eds., Lexington, MA:Lexington Books, 61-64.

Murphy, Gregory L. and Douglas L. Medin (1985), "The Role of Theories in Conceptual Coherence," Psychological Review, 92 (July), 289-316.

_____ and Edward E. Smith (1982), "Basic-Level Superiority in Picture Categorization," Journal of Verbal Learning and Verbal Behavior, 21 (February), 1-20.

_____ and Jack C. Wright (1984), "Changes in Conceptual Structure With Expertise: Differences Between Real-World Experts and Novices," Journal of Experimental Psychology: Learning, Memory, and Cognition, 10 (1), 144-155.

Neuhaus, Colin F. and James R. Taylor (1972), "Variables Affecting Sales of Family-Branded Products," Journal of Marketing Research, 9 (November), 419-422.

Olshavski, Richard W. (1985), "Perceived Quality in Consumer Decision Making: An Integrated Theoretical Perspective," in Perceived Quality, J. Jacoby and J. Olson, eds., Lexington, MA: Lexington Books, 3-29.

Olson, Jerry C., Daniel R. Toy, and Philip A. Dover (1982), "Do Cognitive Responses Mediate the Effects of Advertising Content on Cognitive Structure?" Journal of Consumer Research, 9 (December), 245-262.

Oxenfeldt, Alfred R. (1974), "Developing a Favorable Price-Quality Image," Journal of Retailing, 50 (4), 8-14.

Ozanne, Julie L., Merrie Brucks, and Dhruv Grewal (1992), "A Study of Information Search Behavior during the

Categorization of New Products.", Journal of Consumer Research, 18 (March), 452-463.

Parasuraman, A., Valarie A. Zeithaml, and Leonard L. Berry (1985), "A Conceptual Model of Service Quality and Its Implications for Future Research," Journal of Marketing, 49 (Fall), 41-50.

_____, _____, and _____ (1988), "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality," Journal of Retailing, 64 (1), 12-40.

Park, C. Whan, Bernard J. Jaworski, and Deborah J. MacInnis (1986), "Strategic Brand Concept-Image Management," Journal of Marketing, 50 (October), 135-145.

_____, Robert Lawson, and Sandra Milberg (1989), "Memory Structure of Brand Names," Advances in Consumer Research, 16, 726-731.

_____, Sandra Milberg, and Robert Lawson (1991), "Evaluation of Brand Extensions: The Role of Product Feature Similarity and Brand Concept Consistency," Journal of Consumer Research, 18 (September), 185-193.

Petty, Richard E. and John T. Cacioppo (1983), "Central and Peripheral Routes to Persuasion: Application to Advertising," in Advertising and Consumer Psychology, Larry Percy and Arch Woodside eds., Lexington, MA: Lexington Books, 3-23.

_____, _____, and David Schumann (1983), "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement," Journal of Consumer Research, 10 (September), 135-146.

Read, Stephen J. (1983), "Once is Enough: Causal Reasoning From a Single Instance," Journal of Personality and Social Psychology, 45 (2), 323-334.

Reynolds, Thomas J. and Jonathan Gutman (1984), "Advertising Is Image Management," Journal of Advertising Research, 24 (February-March), 27-37.

Roberts, Donald F. and Nathan MacCoby (1973), "Information Processing and Persuasion: Counterarguing Behavior," in New Models for Mass Communication Research, Peter Clarke, ed., Beverly Hills, CA: Sage Publications, 269-307.

Roman, Hope S. (1969), "Semantic Generalization in Formation of Consumer Attitudes," Journal of Marketing Research, 6 (August), 369-373.

Rosch, Eleanor H. (1973), "On the Internal Structure of Perceptual and Semantic Categorization," in Cognitive Development and the Acquisition of Language, Timothy E. Moore ed., New York, NY: Academic Press, 111-144.

_____ (1975), "Cognitive Representations of Semantic Categories," Journal of Experimental Psychology: General, 104 (3), 192-233.

_____ and Carolyn B. Mervis (1975), "Family Resemblances: Studies in the Internal Structure of Categories," Cognitive Psychology, 7 (October), 573-605.

_____, _____, W. D. Gray, D. M. Johnson, and P. Boyes-Braem (1976), "Basic Objects in Natural Categories," Cognitive Psychology, 8 (July), 382-439.

Schoenfeld, Alan H. and Douglas J. Herrmann (1982), "Problem Perception and Knowledge Structure in Expert and Novice Mathematical Problem Solvers, Journal of Experimental Psychology: Learning, Memory, and Cognition, 8 (5) 484-494.

Smith, Edward E. and Douglas L. Medin (1981), Categories and Concepts, Cambridge, MA: Harvard University Press.

Steenkamp, Jan-Benedict E. M. (1990), "Conceptual Model of the Quality Perception Process," Journal of Business Research, 21 (December), 309-333.

Sternthal, Brian, Ruby Dholakia, and Clark Leavitt (1978), "The Persuasive Effect of Source Credibility: Tests of Cognitive Response," Journal of Consumer Research, 4 (March), 252-260.

Sujan, Mita (1985), "Consumer Knowledge: Effects on Evaluation Strategies Mediating Consumer Judgments," Journal of Consumer Research, 12 (June), 31-46.

_____ and Christine Dekleva (1987), "Product Categorization and Inference Making: Some Implications for Comparative Advertising," Journal of Consumer Research, 14 (December), 372-378

Tauber, Edward M. (1981), "Brand Franchise Extension: New Product Benefits From Existing Brand Names," Business Horizons, 24 (March/April), 36-41.

_____ (1988), "Brand Leverage: Strategy for Growth in a Cost-Control World," Journal of Advertising Research, 28 (Aug-Sep), 26-30.

Thompson, Kenneth Neil (1988), "An Exploratory Model of Consumer Brand Extension Behavior," Unpublished Doctoral Dissertation, University of Colorado, Boulder, CO.

_____, James E. Nelson, and Calvin P. Duncan (1987), "A Moderator Variables Model of Brand Extension Behavior," in 1987 AMA Winter Educator's Conference Proceedings, Russell W. Belk et al. eds., Chicago, IL: American Marketing Association, 45-49

Toy, Daniel R. (1982), "Monitoring Communication Effects: A Cognitive Structure/Cognitive Response Approach," Journal of Consumer Research, 9 (June), 66-76.

Tversky, Barbara and Kathleen Hemenway (1984), "Objects, Parts, and Categories," Journal of Experimental Psychology: General, 113, No.2, 169-191.

University of Minnesota Consumer Behavior Seminar (1987), "Affect Generalization to Similar and Dissimilar Brand Extensions," Psychology and Marketing, 4 (3), 225-237.

Ward, James and Barbara Loken (1988), "The Generality of Typicality Effects on Preference and Comparison: An Exploratory Test," Advances in Consumer Research, 15, 55-61.

_____, _____, Ivan Ross, and Tedi Hasapopoulos (1986), "The Influence of Physical Similarity on Generalization of Affect and Attribute Perceptions from National Brands to Private Label Brands," in 1986 AMA Educators' Proceedings, Terence A. Schimp et al. eds., Chicago, IL:American Marketing Association, 51-56.

Wilkie, William L. and Edgar A. Pessemier (1973), "Issues in Marketing's Use of Multi-Attribute Attitude Models," Journal of Marketing Research, 10 (November), 428-441.

Wright, Peter (1973), "The Cognitive Processes Mediating Acceptance of Advertising," Journal of Marketing Research, 10 (February), 53-62.

_____ (1974), "On the Direct Monitoring of Cognitive Response to Advertising," in Buyer/Consumer Information Processing, G. David Hughes and Michael L. Ray eds., Chapel Hill, NC: University of North Carolina Press, 220-248.

Wyer, Robert S. and Thomas K. Srull (1980), "The Processing of Social Stimulus Information: A Conceptual Integration," in Person Memory: The Cognitive Basis of Social Perception, Reid Hastie, Thomas M. Ostrom, Ebbe B. Ebbesen, Robert S. Wyer, David L. Hamilton, and Donal E. Carlston eds., Hillsdale, NJ: Erlbaum, 227-300.

Zeithaml, Valarie A. (1988), "Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence," Journal of Marketing, 52 (July), 2-22.

CHAPTER IV

METHODOLOGY

In this chapter, all the issues relevant to testing hypotheses developed in Chapter III are explained. Specific topics include; (1) variables and their measurement, (2) experimental design, (3) sample size determination, (4) data collection procedures, and (5) data analysis.

Variables and Their Measurement

As depicted in Figures 3-1 and 3-2, a total of five variables -- perceived quality toward the parent brand (PQ), product category similarity between the extension and the parent (PCS), brand breadth of the parent (BB), cognitive responses (CR), and attitudes toward extensions (AE) -- are involved in the hypothesized relationships. Among them, PQ, PCS, and BB are independent variables, and AE is a dependent variable. CR is a dependent as well as an independent variable, depending on the specific hypothesis.

This section discusses measures for these constructs. Measures for PCS, CR, and AE were basically borrowed from previous studies. Measures for PQ and BB were developed specifically for this study. Except for the CR measure, which was an open ended question, all measures were validated using procedures suggested by Churchill (1979). The steps in Churchill's (1979) procedure are summarized in Table 4-1.

Table 4-1
Churchill's (1979) Procedure for Developing Better Measures

	Steps	Contents
1.	Specify domain of the construct	Perform literature search to correctly delineate what is included in the definition and what is excluded.
2.	Generate sample of items	Find items capturing the domain as specified. Techniques include exploratory research, literature searches, experience surveys, insight-stimulating examples, critical incidents, and focus group.
3.	Purify the measure	Check coefficient alpha. If coefficient alpha is low, check item-to-total correlations. Items with low item-to-total correlations are removed. Perform factor analysis to confirm whether the number of dimensions conceptualized can be verified empirically.
4.	Assess reliability	Check coefficient alpha or perform split-half reliability.
5.	Assess construct validity	Generate multitrate-multimethod matrix to check convergent validity and discriminant validity. Check criterion validity if the measure behaves as expected in relation to other constructs.
6.	Developing norms	Provide meaning to a specific score of the measure by comparing it with total distribution of scores.

Two pretests were performed for the measures of PQ, PCS[1], and BB. A pilot test of the main experiment was utilized to check CR and AE measures. The first pretest was performed in June 1993. The second pretest and the pilot experiment were conducted in August 1993. All pretests were conducted using students at the University of North Texas.

Measurement of Perceived Quality (PQ)

Recent developments in the concept of perceived quality strongly suggest a multidimensional approach to the measurement of perceived quality (Berry, Zeithaml, and Parasuraman 1990; Brucks and Zeithaml 1991; Garvin 1984a, 1984b, 1987; Hjorth-Anderson 1984; Parasuraman, Zeithaml, and Berry 1985, 1988; Zeithaml 1988). Agreement exists that the two traditional approaches, an objective ratings method from published sources such as Consumer Reports (Archibald, Haulman, and Moody 1983) and the unidimensional self-report method of perceived quality (Jacoby, Olson, and Haddock 1971; Peterson 1970; Szybillo and Jacoby 1974), should be avoided in measuring the construct of quality. The so-called objective measure of quality does not fully represent consumers' perceptions of product quality. A perceived

[1]Due to small sample size (n=23), results of the first pretest for PCS measure were poor and not reliable. Instead, results from the second pretest and pilot test are reported for PCS measure.

quality gap between objective ratings and consumer's subjective ratings is inevitable (Morgan 1985). The unidimensional self-report method does not reflect the complex nature of quality. Moreover, the unidimensional approach lacks a clear conceptual definition for quality (Parasuraman, Zeithaml, and Berry 1985) and, thus, validity (Hjorth-Anderson 1984).

To get a clear perspective on the role of perceived quality in brand extension research, studies are required to incorporate multidimensional conceptual and operational definitions of perceived quality. With respect to consumer durables, Brucks and Zeithaml (1991) identified six dimensions of perceived quality[2]. This study utilizes Brucks and Zeithaml's (1991) dimensions for the development of perceived quality measures. These dimensions, summarized in Table 4-2, were identified based on data generated from two focus group interviews (10 females for one and 10 males for the other) employing ten consumer durable products (automobiles, cameras, lawnmowers, furniture, hairdryers,

---

[2]Researchers identified various dimensions of quality for various product categories. For example, Parasuraman et al. (1988) and Berry et al. (1990) suggested five dimensions for service: reliability, responsiveness, assurance, empathy, and tangibles. Garvin (1984b, 1987) suggested eight quality dimensions, probably for durable goods: performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality. Bonner and Nelson (1985) found five dimensions for food products: natural taste, appetizing look, rich/full flavor, freshness, and good aroma.

camcorders, microwave ovens, power tools, blenders, and computers) and interviews with managers of marketing research from each of three durable goods manufacturing companies (cameras, appliances, and automobiles).

Table 4-2
Quality Dimensions of Consumer Durables
by Brucks and Zeithaml (1991)

Dimensions	Examples
Ease of use	The brand has clear instructions on how it should be used. The brand is easy to start and operate.
Functionality	The brand has unique functions which cannot be found in other brands. The brand has more "bells and whistles" than other brands.
Serviceability	Parts for the brand are easily obtainable. Service warranty of the brand is well honored. There are lots of service centers for this brand.
Durability	The brand has a longer product life than most other brands. The brand requires less service. The brand can endure various adverse conditions.
Performance	The brand does the basic job very consistently. The brand does the basic job at a low cost.
Prestige	The brand reflects a high degree of social status. Consumers are proud to own the brand.

Ease of use involves the ability to start and operate the product, as well as the clarity of instrumentation and instruction. Functionality involves the number and complexity of characteristics that distinguish the model or brand from a stripped-down model. This dimension is similar to the 'features' dimension in Garvin's (1984a, 1984b) classification. Serviceability involves ease of obtaining servicing, responsiveness in servicing, and reliability of servicing. Durability implies length of time the product lasts and works properly, and how well the product holds up under adverse conditions. Performance equates to how well the product does what it is supposed to do, and how consistently the product works. The essence of 'reliability' and 'dependability' are included in the performance dimension. Prestige means how well the product communicates superiority to relevant social groups important to the purchaser. It includes appearance and image.

The First Pretest. Based on Brucks and Zeithaml's (1991) definition, a total of 59 perceived quality measure items was generated. Each dimension contained between nine and eleven items. The test was performed with a total of 113 students in three Principles of Marketing classes. Four versions of the questionnaire were developed; one for each of four product categories: TVs, food processors, cameras, and hi-fi stereos. Each version of the questionnaire had exactly the same content and order of question items. Because quality perceptions require familiarity with the brand in a product category, students were first asked if they were familiar with that product category. Only those who were familiar received a corresponding questionnaire. All versions were treated as the same and responses were merged in the data analysis stage. A total of 66 usable questionnaires were obtained.

Because the perceived quality measure was developed based on six dimensions, reliability was assessed for each dimension. Resulting values of coefficient alpha ranged between .7802 and .9095. At this point, fifteen items showing low item-to-total correlations were deleted.

Coefficient alpha was again assessed for the remaining 44 items. Alpha values ranged between .8777 and .9149. Factor analysis was then performed on these 44 items. A principal components extraction in conjunction with various orthogonal rotation techniques - varimax, quartimax, and equimax - failed to produce a clear factor pattern.

An oblique rotation is the recommended technique when a measure is believed to have several intercorrelated dimensions (Churchill 1979; Parasuraman et al. 1988). The oblique rotation also failed to produce a clear factor pattern. Some items loaded high on a different factor from that expected; some items had high loadings on more than one dimension. A total of 16 items had such problems. The factor analysis was repeated with all 16 problem items removed. A principal component factor analysis using a varimax rotation generated six dimensions with clear factor patterns. All the items for the same dimension loaded high on the respective factor and low on all other factors (see Table C-1 in Appendix C). Coefficient alpha values with the remaining 28 items were satisfactory, ranging between .8750 and .9252 (see Table 4-3).

Table 4-3
Coefficient Alpha Values of Six Quality Dimensions from the 28 Item Perceived Quality Measure

Ease of Use	.8750
Functionality	.9041
Serviceability	.9036
Durability	.9252
Performance	.9202
Prestige	.9008

The Second Pretest. The 28 items remaining from the first pretest were subject to a second data collection with a few changes. First, 10 items were negatively transformed from the originally positive statements. The reason for the negative transformation of items was to determine if the validity and reliability of the scale would stand the change of wording (Churchill and Peter 1984). Second, minor wording changes were made to some items to eliminate ambiguities. Finally, a new item (Q29) which measured overall quality perceptions was added. The item was used to check predictive validity by correlating average scores of all the perceived quality measure items with scores for the item assessing overall quality (Parasuraman et al. 1988).

A total of 114 students participated in the second pretest of the perceived quality measure. Seven product categories were employed. The seven products used for the measurement of perceived quality were CD players, VCRs, hand calculators, snow ski sets, personal computers, camcorders, and microwave ovens.

Reliability of each dimension was first checked. Values of coefficient alpha ranged between .7017 and .8716. These values were lower than those from the first pretest, which ranged between .8750 and .9252. The relatively poor results were partly due to the transformation of positive statements into negative statements for several items. Inconsistencies and low correlations were commonly observed among those negatively transformed scale items.

Several iterative calculations of coefficient alpha and use of factor analysis were employed, dropping poor items with each iteration. The final iteration yielded 16 items. Coefficient alpha values for the remaining 16 items ranged between .6540 and .8145 (see Table 4-4). A principal component factor analysis using an oblique rotation generated six distinctive dimensions. Items from the same dimension loaded high on one factor and low on all other factors (see Table 4-5).

Following the approach adopted by Parasuraman et al. (1988), a oneway ANOVA (analysis of variance) was performed with ratings of the overall quality measure (Q29) as the independent variable and the average values of the 16-item PQ scale as the dependent variable. The purpose of this analysis was to check convergent validity of the final scale. Based on ratings on item 29 (Q29), four groups were identified (see Table 4-6). Scheffe tests employing a .05 significance level revealed significant differences between groups, confirming that the measure distinguished between different levels of perceived quality. Reliability of the linear combination of the 16 items was also satisfactory (r_{yy}=.8731; Nunnally 1978)[3]. Table 4-7 shows the final 16 measure items in the perceived quality scale.

Table 4-4
Reliability Test Results with the Final 16 Items in the Perceived Quality Measure

Dimension (alpha)	Items	Corrected Item-total Correlation	Alpha If item Deleted
Ease of Use	Q2	.4842	.5464
(.6540)	Q4	.3882	.6521
	Q5	.5467	.4559
Functionality	Q7	.5745	n/a
(.7216)	Q10	.5745	n/a
Serviceability	Q11	.4501	.7788
(.7400)	Q12	.6646	.5279
	Q14	.5919	.6226
Durability	Q15	.6871	n/a
(.8145)	Q18	.6871	n/a
Performance	Q20	.5828	.5757
(.7157)	Q21	.5449	.6264
	Q23	.5018	.6658
Prestige	Q25	.6067	.3709
(.7566)	Q27	.6124	.3827
	Q28	.5663	.3215

[3]Reliability of the linear combination was calculated with the following formula:

$$r_{yy} = 1 - \frac{(\sum\sigma_i^2 - \sum r_{ii}\ \sigma_i^2)}{\sigma_y^2}$$

where, r_{yy} is the scale's reliability, σ_y^2 is the variance for all the elements in the covariance matrix, $\sum\sigma_i^2$ is sum of variances for each variable, and $\sum r_{ii}$ is sum of the reliabilities for each variable.

Table 4-5
Principal Component Factor Analysis Results Using Oblique Rotation for the Final 16 Perceived Quality Measure Items

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
Q2	.10458	.07030	.11755	.73150	-.16271	-.14151
Q4	-.03711	-.00373	.18605	.69129	.38521	.22036
Q5	.00805	.01510	-.26943	.84176	-.13711	.03491
Q7	-.01171	-.90283	-.07225	-.00299	-.03503	.11096
Q10	.12100	-.77472	.10929	-.08007	-.08552	-.17294
Q11	.15231	-.04939	.66756	.02808	-.00719	-.06201
Q12	-.09515	.05157	.87003	-.04810	-.04937	.06091
Q14	-.05049	-.02291	.82269	-.04042	-.01993	.04927
Q15	.03926	-.04104	.10806	.03806	-.80799	.09544
Q18	-.03901	-.09773	.01307	.05275	-.85002	.11715
Q20	-.12368	-.21805	.15411	.16771	-.08370	.70515
Q21	.22106	-.13275	.16535	.17464	-.11172	.55251
Q23	.19199	.20977	-.03009	-.11122	-.13218	.76192
Q25	.70973	.09474	.12501	.05626	-.04722	.30700
Q27	.82927	-.20313	-.11974	-.09603	.11511	.15923
Q28	.76512	-.00658	.08196	.17380	-.16701	-.25621

Table 4-6
Mean Value of Perceived Quality Based on Ratings of Item Q29

Group	Ratings of Q29	Mean Value of PQ scale with the 16 items	n	Differences[1] G1	G2	G3	G4
Grp 1	4	3.8423	5				
Grp 2	5	4.3797	32				
Grp 3	6	4.8273	45	*	*		
Grp 4	7	5.4601	29	*	*	*	
Total			111				

[1] Asterisks (*) represent groups that differed significantly. Except for group 1 and group 2, all other pairs of group means were different from each other. A meaningful difference was not observed between group 1 and group 2 because group 1 had too few observations.

Table 4-7
Final 16 Items in the Perceived Quality Scale

	Strongly agree						Strongly disagree
I will have difficulty in understanding all of a Toshiba TV's functions.	7	6	5	4	3	2	1
Toshiba TVs will be easy to operate.	7	6	5	4	3	2	1
Toshiba TVs' functions will be difficult to understand.	7	6	5	4	3	2	1
Toshiba TVs will have unique functions which cannot be found in other brands.	7	6	5	4	3	2	1
Toshiba TVs will have more functions than other brands.	7	6	5	4	3	2	1
You will get quick response when you contact a Toshiba TV's service facility.	7	6	5	4	3	2	1
Toshiba TV's service people will not be willing to help with problems.	7	6	5	4	3	2	1
Toshiba TV's service personnel will not be very sympathetic to your problems.	7	6	5	4	3	2	1
Toshiba TVs will have a longer product life than other brands.	7	6	5	4	3	2	1
In normal conditions, Toshiba TVs will outlive other brands.	7	6	5	4	3	2	1
A Toshiba TV will not do its basic job very consistently.	7	6	5	4	3	2	1
You will get good results from using a Toshiba TV.	7	6	5	4	3	2	1
A Toshiba TV will be a poor performer in doing its job.	7	6	5	4	3	2	1
I will be impressed by Toshiba TV's image.	7	6	5	4	3	2	1
Owning a Toshiba TV will make other people envious.	7	6	5	4	3	2	1
If I buy a Toshiba TV, it will improve my social status.	7	6	5	4	3	2	1

Measurement of Product Category Similarity (PCS)

The definition of product category similarity, as discussed in the previous chapter, is primarily based on the concept of fit. Most items identified to assess fit were adopted from Thompson (1988). Thompson's measures focus on the degree of perceived similarity or relationship between the parent and the extension at both the brand and product category levels (see Table 4-8). Thompson validated these measures in two pretests and again in his main experiment. In the first pretest, in which 84 subjects were employed, the value of coefficient alpha for all items was .924. Intercorrelations between measures ranged between .466 and .804. Coefficient alpha dropped to .886 in the second pretest because a smaller sample (n=52) and different extension products were used. Intercorrelations between measures also dropped, ranging between .219 and .757. The main test, however, produced an intermediate coefficient alpha of .888, with intercorrelations between measures ranging between .311 and .723 (Thompson 1988).

Among his scale items, items measuring fit at the brand level were not appropriate for the current study. The domain measured by fit at the brand level could be confounded with those represented by brand image or brand breadth. Consequently, the current study utlized only the four items measuring similarity and relatedness at the

Table 4-8
Thompson's Measure for Product Category Similarity

Brand Level

1. What are your overall feelings about how much (Timex) watches and (Timex) VCRs are related?

Very Related	7	6	5	4	3	2	1	Very Unrelated

2. As a consumer, I think that it makes good sense for (Timex) to make VCRs.

Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree

3. Overall, I think that (Timex) watches and (Timex) VCRs are very similar.

Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree

4. In my opinion, it seems reasonable that the VCR described here should have the (Timex) brand name.

Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree

Product Category Level

5. What are your overall feelings about how much the product categories of watches and VCRs are related?

Very Related	7	6	5	4	3	2	1	Very Unrelated

6. How much sense does it make to you as a consumer that a company which makes watches would also make VCRs?

A lot of Sense	7	6	5	4	3	2	1	Very little Sense

7. In general, I think that the product categories of watches and VCRs are very dissimilar.

Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree

8. In general, it is logical that a company that markets watches would also market VCRs.

Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree

product category level. Among these, items 5, 6, and 8 from Table 4-8 were directly borrowed. One remaining item (item 7), which measured similarity, was expanded into four items: technical similarity, feature similarity, functional similarity, and usage situation similarity. By using four items instead of one, various facets of similarity could be better assessed. An item to reflect conceptual consistency was also included. A total of eight items intended to tap the fit construct were carried into the pretesting stage.

As footnoted earlier in the chapter, results of the first pretest of the product category similarity measure were poor and unreliable due to a small sample size (n=23). As a result, validation of the product category similarity measure was conducted during the second pretest and, again, in the pilot experiment. Results of the first pretest for PCS measure are reported in Table C-2 in Appendix C.

The Second Pretest. Six pairs of products were employed for the second pretest of the product category similarity measure. They were coffee makers and CD players, bicycles and sail boats, TVs and binoculars, TVs and pianos, bicycles and TVs, and cameras and TVs. In four product pairs (coffee makers and CD players, bicycles and sail boats, TVs and binoculars, and TVs and pianos), two possible ways of ordering the product pairs were used (ex: coffee makers and CD players vs. CD players and coffee makers).

A total of 114 students participated in the study. Each student rated the product category similarity of two product pairs. Product pairs were randomly distributed among students. Each of two product category similarity measures in the questionnaire was treated as an independent case, resulting in a total of 221 observations (Laurent and Kapferer 1985).

A test of reliability generated a coefficient alpha value of .9028. The first item (S1) has a relatively low item-to-total correlation value of .4680. Factor analysis extracted one dimension as expected (see Table 4-9).

Table 4-9
Summary of Results from the Second Pretest of Product Category Similarity Measure Purification

Cronbach Alpha	Items	Factor Loadings on the Factor 1	Corrected Item-Total Correlation	Alpha If Item Deleted
.9028	S1	.55274	.4680	.9122
	S2	.74226	.6470	.8943
	S3	.78226	.7005	.8902
	S4	.79868	.7190	.8882
	S5	.83553	.7699	.8835
	S6	.76140	.6830	.8917
	S7	.82593	.7519	.8848
	S8	.90085	.8524	.8766

The Pilot Experiment (Third Pretest). A total of 97 students participated in the third pretest. Each student rated the product category similarity of one product pair. Forty five students rated product category similarity between TVs and camcorders, and fifty two students rated product category similarity between TVs and bicycles. Tests were performed with separate data sets as well as with a pooled data set.

Reliability was first checked. Coefficient alpha for the TV-camcorder pair was .8606 and .7745 for the TV-bicycle pair. When the combined data set was tested, the alpha value increased to .9349. As in the second pretest, the first item (P1) had a low item-to-total correlation.

Factor analysis extracted only one factor. In the data set for the TV-camcorder pair, all items had high factor loadings (above .61953) except for the first item (P1). Factor loadings for the TV-bicycle pairs also were high (above .52127). When data for all product pairs were pooled, factor loadings improved markedly (see Table 4-10).

Overall pretest results seemed to confirm the reliability and validity of the suggested measure. A major reason for the low item-to-total correlation and subsequent low factor loading of the first item was primarily due to its negative wording in the last pretest (ex: I think TVs and Bicycles are technically very **dissimilar**). Positive wording was used in the first pretest (ex: I think TVs and Bicycles are technically very **similar**). In the first pretest, despite a small sample size, the first item's item-to-total correlation was much higher across the four product pairs employed (see Table C-2 in Appendix C). Consequently, the same product category similarity measure used in the first pretest was adopted for the main experiment. Table 4-11 summarizes all the items for the product category similarity measure that were used in the main experiment.

Table 4-10
Summary of Results from the Pilot Test of Product Category Similarity Measure

Cronbach Alpha	Items	Loadings on Factor 1	Corrected Item-Total Correlation	Alpha If Item Deleted
TVs-camcorders (n=45)				
.8606	PI	.24283	.1850	.8975
	P2	.76952	.6928	.8353
	P3	.61953	.4986	.8554
	P4	.85016	.7753	.8253
	P5	.85747	.7800	.8256
	P6	.79864	.6951	.8329
	P7	.77550	.6460	.8391
	P8	.84164	.7420	.8291
TVs-bicycles (n=52)				
.7745	PI	.72540	.5847	.7296
	P2	.52918	.3780	.7680
	P3	.52351	.3891	.7652
	P4	.76128	.6384	.7229
	P5	.52127	.3758	.7659
	P6	.57534	.4181	.7595
	P7	.60941	.4491	.7546
	P8	.74754	.6017	.7313
Combined (n=97)				
.9349	P1	.66970	.5893	.9390
	P2	.82249	.7593	.9272
	P3	.73362	.6578	.9339
	P4	.86703	.8162	.9241
	P5	.88878	.8495	.9202
	P6	.87363	.8296	.9220
	P7	.87235	.8275	.9222
	P8	.90830	.8704	.9189

Table 4-11
Measure Items in the Product Category Similarity Scale

I think TVs and Bicycles are technically very similar.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
As a consumer, I think TVs and Bicycles are used in very similar situations.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
Overall, I think that TVs and Bicycles have very similar features.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
In my opinion, TVs and Bicycles have very similar functions.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
I think an extension into Bicycles by a manufacturer of TVs is a sensible move.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
In general, it is logical that a company that markets TVs would also market Bicycles.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
How much sense does it make to you as a consumer that a company which makes TVs would also make Bicycles?	A lot of Sense	7	6	5	4	3	2	1	Very little Sense
What are your overall feelings about how much TVs and Bicycles are related?	Very Related	7	6	5	4	3	2	1	Very Unrelated

Measurement of Brand Breadth (BB)

Boush and Loken's (1991) manipulation checks for brand breadth were done by asking subjects to recall product categories associated with each brand name. Their technique poses problems if brand breadth becomes very broad. Most subjects will not correctly recall product categories of a brand which represents more than 10 products. As discussed in Chapter II, Boush and Loken manipulated a narrow brand with one product category and a broad brand with three product categories. In contrast, this study developed specific measures of brand breadth to check the brand breadth manipulation.

Recall from Chapter III that brand breadth consists of two dimensions: number of different product categories associated with the brand and the degree of similarity (cohesiveness) among these product categories. Measurement items were developed for both dimensions. Ten items were generated and used in the first pretest.

The First Pretest. A convenience sample of 35 students from a marketing class was employed for the initial pretest of the brand breadth measure. Each student was given a questionnaire containing four brand names: GE, Yamaha, IBM, and Hyundai. For each brand, students were asked to respond to the ten brand breadth items.

Because brand breadth is hypothesized to possess two dimensions (number of categories and cohesiveness), reliability was separately checked for each dimension. Coefficient alpha values were satisfactory for both dimensions in all four brands. Values ranged between .8095 and .8992 for the number of categories dimension and between .8001 and .9564 for the cohesiveness dimension (see Table 4-12). As anticipated, factor analysis using a varimax rotation extracted two dimensions. For all four brands, all items belonging to each dimension loaded highly on the hypothesized factor (see Table 4-13).

Table 4-12
Reliability Coefficients of Brand Breadth Measure in Four Brands from the First Pretest

	Dimensions	
	Number	Cohesiveness
GE	.8632	.8001
Yamaha	.8992	.8982
IBM	.8095	.9026
Hyundai	.8534	.9564

Table 4-13
Principal Component Factor Analysis Results Using Varimax Rotation from the First Pretest of Brand Breadth Measure

GE			Yamaha	
	Factor 1	Factor 2	Factor 1	Factor 2
G1	.13752	.76760	.05910	.89330
G2	-.21684	.61619	-.01687	.77848
G3	.04662	.81884	-.55756	.69154
G4	-.15175	.83860	-.10879	.88783
G5	.04207	.95030	-.05324	.94578
G6	.60056	-.40840	.75449	-.16748
G7	.69711	-.15972	.88058	-.08935
G8	.74435	.18300	.83577	.11291
G9	.84760	-.16339	.91346	.02843
G10	.69767	.21127	.81459	-.14308

IBM			Hyundai	
	Factor 1	Factor 2	Factor 1	Factor 2
G1	-.11814	.49351	-.14598	.85529
G2	-.23429	.81934	-.35410	.72586
G3	-.11288	.85562	-.27815	.84191
G4	-.30351	.64894	.00015	.66317
G5	.06354	.86838	-.01665	.81932
G6	.83518	-.16958	.88288	-.19028
G7	.84185	-.37743	.93314	-.13002
G8	.83392	-.27231	.93753	-.02272
G9	.77128	.06178	.89414	-.22820
G10	.89518	-.13203	.92112	-.16051

The Second Pretest. Data were collected from a total of 114 students in the second pretest. Using the same approach as in the first pretest, each student rated BB for each of six brands. The six brands employed were Sony, Black and Decker, JVC, Zenith, Sylvania, and Daewoo.

Reliability was checked for both dimensions. Coefficient alpha value of the number of product categories dimension was .9394, and that of the cohesiveness dimension was .8064 (see Table 4-14).

Table 4-14
Reliability Coefficients of Brand Breadth Measure from the Second Pretest

Dimension	Cronbach Alpha	Items	Corrected Item-total Correlation	Alpha If item Deleted
Number of Categories	.9394	B1	.8184	.9296
		B2	.8567	.9225
		B3	.7849	.9353
		B4	.8572	.9221
		B5	.8827	.9166
Coherence	.8064	B6	.5902	.7695
		B7	.6292	.7572
		B8	.6580	.7477
		B9	.5625	.7791
		B10	.5282	.7884

A factor analysis employing varimax rotation again distinguished the same two dimensions as found in the first pretest (see Table 4-15). Based on results from both pretests, the 10-item brand breadth scale was carried into the main experiment. All the items are summarized in Table 4-16.

Table 4-15
Principal Component Factor Analysis Results Using Varimax Rotation from the Second Pretest of Brand Breadth Measure

	FACTOR 1	FACTOR 2
B1	.88616	-.00141
B2	.90898	-.04250
B3	.85863	-.01702
B4	.90994	-.06481
B5	.92303	-.08776
B6	-.04484	.74730
B7	.12444	.78611
B8	-.02702	.80763
B9	-.05502	.71349
B10	-.16598	.69246

Table 4-16
Items in the Brand Breadth Scale

	Strongly Agree					Strongly Disagree	
Toshiba makes lots of different kinds of products.	7	6	5	4	3	2	1
Toshiba means very limited product categories.	7	6	5	4	3	2	1
Toshiba represents diverse product categories.	7	6	5	4	3	2	1
There is only a small number of product categories Toshiba represents.	7	6	5	4	3	2	1
Toshiba seems to represent a wide range of product categories.	7	6	5	4	3	2	1
Product categories represented by Toshiba are highly interrelated to each other.	7	6	5	4	3	2	1
Product categories represented by Toshiba are conceptually similar to each other.	7	6	5	4	3	2	1
Technically similar product categories are represented by Toshiba.	7	6	5	4	3	2	1
Product categories represented by Toshiba complement one another.	7	6	5	4	3	2	1
Product categories represented by Toshiba share many features.	7	6	5	4	3	2	1

Measurement of Cognitive Responses (CR)

One open ended question was used to measure subjects' cognitive responses. The question was constructed based on a CR measure initially developed by Wright (1973). The specific content was adapted to reflect brand extension situations. The following is an example of the open-ended format used in both the pilot test and in the main experiment.

> Now, suppose (Toshiba) is considering developing and marketing bicycles under the (Toshiba) brand name. What are your thoughts about (Toshiba) bicycles? Please write down all the thoughts that come to your mind - whatever they are. Don't worry about grammar, spelling, or completing sentences.

A total of 54 subjects generated cognitive responses in the pilot test. In the main experiment, 257 subjects verbalized their thoughts. In both tests, each subject responded to a single brand. Following is an explanation about how cognitive responses were coded. The same coding method was applied in both the pilot test and main experiment.

Coding of CR. Subjects' cognitive responses were first divided into units of thought. The criteria of a unit of thought was a complete sentence, a main clause, or an incomplete sentence. If words or phrases were arrayed without forming a complete sentence, each word or phrase was treated as a unit of thought. Subordinate clauses were not treated as an independent thought unit but as a part of a main clause. A total of 104 units of thought were identified in the pilot experiment. The number of total units of thought counted in the main experiment was 944.

Classification of cognitive responses was based on the polarity of response (Belch 1981; Gorn and Weinberg 1984; Greenwald 1968; Hastak and Olson 1989; Love and Greenwald 1978; Mackenzie and Spreng 1992; Olson, Toy, and Dover 1982; Sternthal, Dholakia, and Leavitt 1978; Toy 1982; Wright 1973, 1974). Responses were categorized into three groups: favorable responses, neutral responses, and unfavorable responses. Favorable responses were all thoughts in favor of the extension, parent brand, parent product category, or new product category. Unfavorable responses were all thoughts and ideas against the extension, parent brand, parent product category, or new product category. Neutral responses were all other thoughts expressing neutrality or curiosity.

Three independent judges who were familiar with the current study evaluated each unit of thought. Following Wright's (1973) recommendation, judges were trained for the classification tasks prior to coding. The agreement rate among the three judges in the main experiment was 73.1%. Agreement in the pilot experiment was 79.8%. Although seeking unanimous agreement among judges is a common practice (Hastak and Olson 1989; Olson, Toy, and Dover 1982; Toy 1982), an average value for each category was calculated instead. The reason for not using unanimous agreement was to prevent one judge from dominating in the adjustment session.

To test hypotheses based on cognitive response theory, the number of cognitive responses for each respondent was determined by deducting the number of negative responses from the number of positive responses. This approach was used to prevent any biases which may be introduced in testing hypotheses with either number of positive responses or number of negative responses only.

Measurement of Attitudes Toward Brand Extensions (AE)

Following the unidimensional view of attitudes (Wilkie 1986), this study used attitude measures focusing on affect. Specific measurement items were developed based on concepts such as liking, favorableness, satisfaction, and happiness. Nine items for scaling attitudes toward brand extensions were pretested.

Responses were collected from a total of 97 students. Reliability was checked first. Cronbach alpha was .9474. All items had fairly high item-to-total correlation values (.7529 to .8949), with the exception of the third item (A3; r=.6762). Factor analysis was performed with all the nine items. Only one factor was extracted.

Because of its low item-to-total correlation, the third item (A3) was dropped. The seventh item (A7) was also dropped because it was almost identical to item six (A6). Reliability was assessed and a factor analysis was conducted again with the remaining seven items. A high coefficient alpha (.9432) and high factor loadings on one factor (above .81203) were reaffirmed (see Table 4-17). Consequently, the AE measure used in the main experiment contained only these remaining seven items. The seven items are summarized in Table 4-18.

Table 4-17
Summary of Results from the Pilot Test of Attitude Toward Brand Extension Measure Purification

Cronbach Alpha	Items	Loadings on the Factor 1	Corrected Item-Total Correlation	Alpha If Item Deleted
.9432	A1	.87731	.8287	.9327
	A2	.81203	.7500	.9404
	A4	.86079	.8046	.9349
	A5	.85513	.7958	.9359
	A6	.83947	.7816	.9374
	A8	.91877	.8798	.9288
	A9	.89989	.8579	.9301

Table 4-18
Items in the Attitude toward Brand Extension Scale

	Strongly Agree						Strongly Disagree
I like Toshiba's extension into the bicycle product category.	7	6	5	4	3	2	1
My impression toward the proposed Toshiba bicycle is unfavorable.	7	6	5	4	3	2	1
I think I would be satisfied with a Toshiba bicycle.	7	6	5	4	3	2	1
People will like Toshiba bicycles.	7	6	5	4	3	2	1
I don't think that I would be happy with a Toshiba bicycle.	7	6	5	4	3	2	1
Most people would view Toshiba bicycles favorably.	7	6	5	4	3	2	1
People will be dissatisfied with Toshiba bicycles.	7	6	5	4	3	2	1

Experimental Design

The basic design utilized in this study was a three way (2x2x2) between-subject posttest only factorial design (see Figure 4-1). This design was appropriate because it allowed testing of the main effects and potential interactions of the three independent variables (or factors) - PQ, PCS, and BB.

Figure 4-1
A 2x2x2 Factorial Design for the Current Study

PQ: High				PQ: Low		
		PCS: High	PCS: Low		PCS: High	PCS: Low
BB	High	Cell 1	Cell 3	High	Cell 5	Cell 7
BB	Low	Cell 2	Cell 4	Low	Cell 6	Cell 8

Major concerns in selecting an experimental design for the current study were issues of validity, especially internal validity. Generally, three designs, the pretest-posttest control group design, the Solomon four group design, and the posttest only with control group design, are considered true experimental designs (Campbell and Stanley 1966). Threats against internal validity, such as history, maturation, testing, instrumentation, regression, selection, mortality, and interaction of selection and maturation generally are well controlled in these designs (Campbell and Stanley 1966).

The current study employed the posttest only with control group design. The Solomon design was too complex and, therefore, impractical with three independent variables. The pretest-posttest control group design was a good alternative. However, the current study, which was concerned with attitude change, needed to avoid the potential pretest sensitization of subjects. The pretest-posttest control group design is generally weak in controlling this threat to internal validity[4]. Pretest sensitization results in an interaction of testing and treatment, and increases the possibility of demand artifacts in a study (Campbell and Stanley 1966). To assure the appropriateness of each treatment condition and to control for the pretest sensitization problem in the main experiment, half of the subjects responded to the measures of PQ, PCS, and BB prior to exposure to the dependent

---

[4]Disagreement exists on how pretest sensitization should be classified. Judd and Kenny (1981) consider pretest sensitization as a source of an internal or construct validity threat (p. 38). Campbell and Stanley (1966) and Cook and Campbell (1979) consider it as strictly a threat to external validity.

variable while the other half rated measures of the independent variables (i.e., PQ, PCS, and BB) afterwards.

The posttest only design for the current study is depicted in Figure 4-2. In the diagram, 'R' represents randomized assignment of subjects to treatment conditions. 'X_a', 'X_b', and 'X_c' represent the three independent variables, PQ, PCS, and BB, respectively. Figures attached to each variable indicate treatment levels of that variable. For example, 'X_{a1}' represents low perceived quality while 'X_{b2}' means high product category similarity. 'O' represents the observation or measurement of dependent variables.

Figure 4-2
Diagram of the Posttest Only Design for the Current Study

R	$X_{a1}*X_{b1}*X_{c1}$	O_1
R	$X_{a1}*X_{b1}*X_{c2}$	O_2
R	$X_{a1}*X_{b2}*X_{c1}$	O_3
R	$X_{a1}*X_{b2}*X_{c2}$	O_4
R	$X_{a2}*X_{b1}*X_{c1}$	O_5
R	$X_{a2}*X_{b1}*X_{c2}$	O_6
R	$X_{a2}*X_{b2}*X_{c1}$	O_7
R	$X_{a2}*X_{b2}*X_{c2}$	O_8

The posttest only control group design was implemented using a factorial format, which allows more than two independent variables to be examined together. Since this study investigated the effects of three independent variables and their potential interactions, a factorial design was essential. Incidentally, most designs employing a factorial format are posttest only with control group designs (Green, Tull, Albaum 1988). In common practice, the factorial design replaces the control group with one of the treatments.

Although selection of an experimental design is one of the most important concerns for most studies in order to avoid threats to internal validity, this study deals with two more potential error sources. One source is related to the order in which measures of the independent variables or manipulation checks were conducted; the other is related to the measurement of cognitive responses.

First, by measuring independent variables or administering manipulation checks prior to assessing the criterion, demand artifacts may affect the dependent variable (Perdue and Summers 1986). Second, although cognitive responses are commonly measured before measuring attitudes (Brock and Shavitt 1983; Greenwald 1968; Mackenzie and Spreng 1992; Olson, Toy, and Dover 1982; Toy 1982), prior measurement of cognitive responses can contaminate subsequent attitude measures (Hastak and Olson 1989).

To cope with these two potential problems, this study treated both error sources as additional independent factors, and incorporated them in the experimental design. This approach is believed to be the best solution, and is the recommended technique (Hastak and Olson 1989; Kidd 1976; Perdue and Summers 1986). Consequently, the experimental design actually employed in the current study was a five way (2x2x2x2x2) between subjects design[5]. The last two factors were order of manipulation checks and whether or not cognitive responses were assessed (see Table 4-19).

Selection of a Base Product and Extension Categories

Base Product. In order to correctly manipulate the experimental factors of PQ and BB, four types of brands were required: a broad brand with a high quality reputation; a broad brand with a low quality reputation; a narrow brand with a high quality reputation; and, a narrow brand with a low quality reputation. To determine the base product category and specific brands in that product category, a pretest measuring perceived quality levels of brands in various product categories was conducted. A total of 43 students participated in a test containing eight product categories. The categories were refrigerators, VCRs, food processors, microwave ovens, TVs, hi-fi stereos, coffee makers, and camcorders. Each student rated his or her perceptions of quality toward various brands in four of the eight product categories using a 9-point Likert type scale

---

[5]The major reason for incorporating the order of manipulation checks and measurement of cognitive responses into the experimental design as independent factors was to identify the main effects of these two error sources on the dependent measures. If they were found to have no significant effects on dependent measures, they were ignored in the subsequent data analysis.

Table 4-19
The Experimental Factors Employed in the Current Study

Factors				
PQ	PCS	BB	Measurement of Cognitive Responses	Manipulation Checks Order
High	High	Broad	With	Before DV
				After DV
			Without	Before DV
				After DV
		Narrow	With	Before DV
				After DV
			Without	Before DV
				After DV
	Low	Broad	With	Before DV
				After DV
			Without	Before DV
				After DV
		Narrow	With	Before DV
				After DV
			Without	Before DV
				After DV
Low	High	Broad	With	Before DV
				After DV
			Without	Before DV
				After DV
		Narrow	With	Before DV
				After DV
			Without	Before DV
				After DV
	Low	Broad	With	Before DV
				After DV
			Without	Before DV
				After DV
		Narrow	With	Before DV
				After DV
			Without	Before DV
				After DV

with 9 as 'very high quality' and 1 as 'very low quality.' Detailed results of this test are reported in Tables C-6 through C-12 in Appendix C.

Based on these results, TV was chosen as the parent product category. In the TV product category, a total of 25 brands were tested. Toshiba and Quasar[6] were identified having relatively high quality perceptions among subjects. Gold Star had relatively low quality perceptions (see Table 4-20). The number of product categories represented by each brand was then checked.

While Toshiba and Gold Star represented many product categories, the number of product categories represented by Quasar was relatively small. Consequently, Toshiba, Quasar, and Gold Star became good candidates for a broad brand with a high quality perception, a narrow brand with a high quality perception, and a broad brand with a low quality perception, respectively.

Funai, a narrow brand with possible low quality perceptions and not included in the test, was found in a local Target store. It was a relatively unknown brand name from a Chinese company which produces TVs and VCRs. Prices

---

[6]Although quality rating for Quasar was not very high in the test, it was still higher than Gold Star. According to Consumer Reports, Quasar, a Japanese brand, is a fairly good quality brand. A low rating on Quasar seemed due to subjects' unfamiliarity with the brand name. In the main experiment, Quasar's country of origin (Japan) was emphasized along with fictitious high ratings of the brand in TV product category.

for Funai TVs and VCRs were the lowest among those displayed. Consequently, Funai became a candidate for a narrow brand with a low quality perception.

Table 4-20
Quality Ratings of Brands in TV Product Category

Brands	Mean	Std Dev	Minimum	Maximum	N
Sony	8.24	.83	6.0	9.0	21
JVC	7.63	1.12	6.0	9.0	19
Mitsubishi	7.42	1.43	3.0	9.0	19
RCA	7.35	1.31	4.0	9.0	20
Toshiba	7.32	1.34	5.0	9.0	19
Zenith	7.05	1.66	2.0	9.0	21
Philips	6.93	1.49	5.0	9.0	15
Sharp	6.86	1.49	3.0	9.0	21
Magnovox	6.86	1.20	5.0	9.0	21
Sylvania	6.68	1.60	3.0	9.0	19
GE	6.65	1.63	4.0	9.0	20
Hitachi	6.61	1.20	5.0	9.0	18
Sanyo	6.20	1.77	2.0	9.0	20
Memorex	6.00	1.72	3.0	9.0	20
Samsung	5.95	2.01	2.0	9.0	19
Emerson	5.68	2.16	2.0	9.0	19
Proscan	5.40	2.10	1.0	9.0	15
Quasar	5.39	1.79	2.0	8.0	18
Bell & Howell	4.93	2.13	1.0	8.0	14
Sears	4.86	1.31	3.0	7.0	21
Signature	4.75	1.88	1.0	8.0	16
Proton	4.55	1.81	1.0	7.0	11
Gold Star	4.33	1.50	2.0	7.0	15
Craig	4.33	1.68	2.0	7.0	15
Admiral	3.67	1.44	1.0	5.0	12

Extension Categories. Based on results of the three pretests, camcorders and bicycles were selected as representing similar and dissimilar extension categories for TVs, respectively. From three studies using consumer durable goods (Corfman, Lehmann, and Narayanan 1991; Johnson 1988; Soutar, Bell, and Wallis 1990), a total of 51 durable goods were initially identified (see Table D-1 in Appendix D). Among these, 15 products were selected based on the researcher's perceptions of level of product category similarity with TVs. These products then were pretested using a convenience sample to ascertain consumers' perceptions of the degree of similarity between these categories and TVs (Table 4-21).

Table 4-21
15 Products Used in Product Category Similarity Measure

Refrigerator	Binoculars	Camcorder
Piano	Microwave oven	TV
Food processor	VCR	Bicycle
Lawn mower	Camera	Sail boat
Hi-fi stereo	CD player	Coffee Maker

A total of 35 students participated in this pretest. A 9-point Likert type scale with '1' representing extremely dissimilar and '9' representing extremely similar was employed. Each student rated the similarity of 105 product pairs based on 15 product categories. Twenty six subjects filled out the questionnaire completely.

Multidimensional scaling (MDS) was employed to determine the distances between these products in subjects' perceptual space. A nonmetric (ordinal) two dimensional procedure generated four distinctive groups (see Figure 4-3). Lawn mowers, bicycles, and sail boats comprised one group. The second group consisted of pianos and binoculars. Coffee makers, food processors, microwave ovens, and

Figure 4-3
MDS Derived Configuration of 15 Products

```
      Dimensions 1 (Horizontal)  vs.  Dimension 2 (Vertical)
      -+----+----+----+----+----+----+----+----+----+----+-
 2.1  -+                         :                         +
       :                        B:                         :
       :                  4      :                         :
       :                         :                         :
       :                         :                         :
       :         7               :                         :
 1.0  -+                         :          A              +
       :                         :                         :
       :                         :           6             :
       :                         :                         :
       :                         :                         :
       :                         :                         :
 0.0  -+---------------------------------------------------+
       :                         :        85               :
       :                         :                         :
       :                         :      D                  :
       :            CF           :      3 2                :
       :             E           :     1                   :
-1.0  -+                         :                         +
       :               9         :                         :
       :                         :                         :
       :                         :                         :
       :                         :                         :
       :                         :                         :
-2.1  -+                         :                         +
      -+----+----+----+----+----+----+----+----+----+----+-
     -2.5      -1.5      -0.5       0.5       1.5       2.5
```

Stimulus Number	Stimulus Name	Plot Symbol	Dimension 1	Dimension 2
1	TV	1	0.6264	-0.7879
2	VCR	2	0.8912	-0.6340
3	Camcorder	3	0.7224	-0.7353
4	Bicycle	4	-0.6894	1.7945
5	Camera	5	0.9622	-0.1927
6	Binoculars	6	1.2385	0.6098
7	Lawn Mower	7	-1.5975	1.1981
8	CD Player	8	0.9070	-0.2477
9	Refrigerator	9	-0.9622	-1.1692
10	Piano	A	1.1107	0.9851
11	Sail Boat	B	-0.1123	1.9095
12	Coffee Maker	C	-1.3053	-0.7340
13	Hifi Stereo	D	0.6839	-0.5502
14	Food Processor	E	-1.2331	-0.8077
15	Microwave Oven	F	-1.2423	-0.6385

refrigerators made the third group. Finally, the fourth group consisted of TVs, VCRs, hi-fi stereos, CD players, camcorders, and cameras.

Table 4-22
Mean Product Category Similarity Ratings of Product Pairs from the First and Second Pretests

Product Pairs	Mean Ratings	n
TV and VCR	5.61	22
Camera and TV	4.49	35
TV and Camera	4.19	23
CD player and VCR	3.83	23
TV and Binoculars	3.07	21
Binoculars and TV	3.02	15
Sail boat and Bicycle	2.94	15
Coffee maker and CD player	2.56	23
Bicycle and Sail boat	2.55	21
Piano and TV	2.38	17
Bicycle and TV	1.95	39
TV and Piano	1.71	18
CD player and Coffee maker	1.69	17
TV and Bicycle	1.33	23

Fourteen possible pairs taken from these 15 products were used in the first and second pretests of the product category similarity measure previously discussed. A comparison of Table 4-22 with the perceptual map in Figure 4-3 suggests that predictions from the product category similarity scale closely parallel those from the MDS procedure. Although, no direct measurement of product category similarity between TVs and camcorders were made in these pretests, the existence of a high degree of product category similarity between TVs and cameras served as a good indicator of a possible high degree of similarity between TVs and camcorders. The degree of similarity between TVs and camcorders was later confirmed in the pilot test and the main experiment.

Manipulation of Independent Variables

As explained, four TV brands were selected based on quality and brand breadth. They were Gold Star, Quasar, Toshiba, and Funai. Gold Star represented a low quality and broad brand. Quasar represented a high quality and narrow brand. Toshiba represented a high quality and broad brand. Finally, Funai represented a low quality and narrow brand.

Although real brands were employed, pretest results showed that subjects might not be familiar with the specific brands employed in the experiment. Among 227 responses in 11 product categories (TVs, food processors, cameras, hi-fi stereos, CD players, VCRs, hand calculators, snow ski sets, personal computers, camcorders, and microwave ovens) tested for perceptions of quality in the two pretests, only five subjects reported owning products represented by the four brands ultimately employed in the main experiment. Because of subjects' relative unfamiliarity with the four brands, descriptive information about each brand was employed as part of the perceived quality and brand breadth manipulations. Employing such information increased control in the experiment by increasing the likelihood of a uniform manipulation of quality and brand breadth across subjects. Specific manipulations are discussed next.

Manipulation of Perceived Quality. Perceived quality was manipulated by providing subjects with Consumer Reports-type of formatted information. Two pages of information relevant to perceived quality of the parent brand were attached to each questionnaire. Subjects were told that the first page was taken from Consumer Reports, and that the second was an excerpt from a major consumer electronics magazine.

Information from the consumer electronics magazine was exactly the same across all the questionnaires. A total of 19 TV brands were presented. These 19 brands were rated with failure rate, service requirement rate, number of service stations, and so on (see Appendix K for the questionnaire used in the main experiment). Quasar, a high quality brand for the study, was rated the second highest among 19 brands. Toshiba, also a high quality brand for the study, was the third highest. Gold Star and Funai, the low quality brands for the study, were positioned as the second lowest and lowest, respectively.

Information presented in Consumer Reports format had some variations. For high quality brands (Quasar and Toshiba), quality ratings of 17 brands in the 27 inch TV set category were used. For low quality brands (Gold Star and Funai), ratings in two categories (20 inch and 13 inch) were employed. While 15 brands were compared in the 20 inch category, ratings of nine brands were employed in the 13 inch category. One reason for using ratings of different sizes of TVs between high and low quality brands was to bolster the quality image toward each brand. Most high quality TV manufacturers (or brands) produce big screen TVs, but low quality TV brands generally focus on small screen TVs. In each version of the questionnaires, the corresponding brand was rated as either the highest in quality if the brand is supposed to be high in quality (i.e., Quasar and Toshiba) or the lowest among the competing brands if the brand was supposed to be low in quality (i.e., Gold Star and Funai).

Manipulation of Product Category Similarity. As discussed earlier, bicycles were chosen as the dissimilar extension product category and camcorders were chosen as the similar extension product category. No specific information about the extension category was given. Subjects were simply asked to respond to the following question:

> "Now, suppose (Gold Star) is considering developing and marketing (bicycles) under the (Gold Star) brand name. What do you think about ---."

Manipulation of Brand Breadth. Narrow brands (Quasar and Funai) were manipulated with two product categories and broad brands (Gold Star and Toshiba) were manipulated with 11 product categories, which included the two product categories represented by the narrow brands. TVs and VCRs were the two product categories represented by each narrow brand. Product categories represented by the two broad brands were: (1) Toshiba - TVs, VCRs, printers, copiers, lap-top computers, satellite dishes, fax-phones, cellular phones, microwave ovens, CD players, and CD-ROM devices; (2) Gold star - TVs, VCRs, personal computers, stereo systems, refrigerators, tape recorders, microwave ovens, cordless phones, portable stereos, CD players, and clock-radios.

To enhance each subject's memory about the product categories represented by each brand, manipulations were accompanied with pictures of the product (see the questionnaires in Appendix K). Under each product picture, various models of the product which each company was supposed to produce were also mentioned.

Manipulation Checks

The purpose of manipulation checks was to ensure that experimental factors (PQ, PCS, and BB) were manipulated as intended. Measures for manipulation checks, as described in the previous section, also served as independent variables during data analysis.

Sample Size Determination

The required sample size was determined by a power analysis (Cohen 1977; Cohen and Cohen 1983). Four factors - desired significance level, degrees of freedom, effect size, and desired power - are essential to determine the required sample size. Among these four factors, expected or anticipated effect size is generally unknown. To determine effect size, researchers generally conduct a pilot test, refer to previous studies, or rely on a subjective intuition (Cohen 1977). For the latter case, Cohen (1977) developed useful guidelines for various statistical tests. Table 4-23 shows Cohen's (1977) suggested effect size values based on three categories: small, medium, and large.

Although Cohen's (1977) suggestions on the effect size are quite informative, the appropriate anticipated effect size of each research factor for the current study is still unclear because most brand extension studies never reported effect sizes. However, some guidance can be gained from Aaker and Keller's (1990) and Thompson's (1988) studies. Aaker and Keller (1990) reported an overall adjusted R^2 of .26 for their model but never mentioned r^2 (squared correlation coefficient) or sr^2 (squared semipartial correlation coefficient) values for individual variables. To determine the effect size (f^2) of individual variables from the Aaker and Keller's (1990) study[7], one could use a reasonable guess; for example, the smallest sr^2 is greater than .05 and the largest sr^2 is less than .10. In this

---

[7]Effect Size (f^2) = sr_i^2 / (1 - R^2), where sr_i^2 is squared semipartial correlation coefficient for an independent variable *i* and R^2 means total variance explained by the model (Cohen and Cohen 1983).

case, effect sizes (f^2) for each independent variable probably range between .068 and .135.

Table 4-23
Cohen's Effect Size (1977)

Test Type	Effect Size Index	Small	Medium	Large
t-test for means	$d = \|m_1 - m_2\| / \sigma$	.2	.5	.8
Significance of correlation	r	.1	.3	.5
Differences between correlation coefficients	$Z = 1/2 \ln \left(\frac{1+r}{1-r} \right)$ $q = \|Z_1 - Z_2\|$	.1	.3	.5
Differences between proportions	$\phi_i = 2 \arcsin \sqrt{P_i}$ $h = \|\phi_1 - \phi_2\|$	.2	.5	.8
Chi-square tests for goodness of fit	$C = [\chi^2 / (\chi^2 + N)]^{1/2}$ $\omega = [C^2 / (1 - C^2)]^{1/2}$	.1	.3	.5
ANOVA F-tests (tests of means)	$f = \sigma_{mi} / \sigma$ $\eta^2 = \sigma_{mi}^2 / (\sigma^2 + \sigma_{mi}^2)$	.1	.25	.4
F-tests in multiple regression (tests of variance proportions)	$f^2 = sr_i^2 / (1 - R^2)$	.02	.15	.35

Thompson's (1988) results are more informative than are Aaker and Keller's (1990). For product condition I (high involvement and high inter-brand differentiation), Thompson (1988) reported sr^2 values of .168 and .289 for PBA and P-ELC respectively. For product condition II (low involvement and low inter-brand differentiation), he reported an sr^2 of .053 for PBA and .023 for P-ELC. In terms of effect size f^2, Thompson's results suggest that P-ELC's f^2 value is .364 in the high involvement situation and .036 in the low involvement situation. PBA's f^2 value is .166 in the high involvement condition and .069 in the low involvement condition[8].

The above studies show a wide variation in the likely effect size (f^2). Because durable goods are generally considered to be high involvement, however, adoption of Thompson's (1988) results in the high involvement condition is not unreasonable for the current study[9]. In this case, the effect sizes (f^2) for the two factors (.364 for P-ELC and .166 for PBA) become higher than the medium effect size (.15) Cohen (1977) suggested. Following a more conservative

---

[8]Specifics on how to calculate effect sizes (f^2) from Thompson's (1988) result are provided in the Appendix E.

[9]Products employed in Aaker and Keller's (1990) study can be mostly considered as low involvement products: photo processing, wine, perfume, popcorn, gum, theme park, wallets, sun lotion, cheese, shaving creme, french fries, sportswear, skin cream, skis, watches.

position, one can conclude that Thompson's (1988) results suggest usage of a medium effect size for the determination of sample size. Although informative, the guidance from the past studies was not enough. To get more accurate information, a pilot test was conducted in an attempt to estimate anticipated variance associated with the criterion.

Pilot Test

A pilot test of the main experiment was performed with 97 student subjects in August 1993. The experimental format employed in the pilot test was quite similar to the main experiment. However, there were some notable differences between the pilot test and the main experiment. First, the pilot test employed a three way (2x2x2) between subject design. Instead of treating them as independent factors, the effects of CR measurement and order of manipulation checks were controlled with a counter-balancing approach (Perdue and Summers 1986). Second, the pilot test employed a fictitious brand name, GPT, which was identified as having the most neutral preferences among 11 fictitious brands (see Table C-5 in Appendix C). Third, scenarios were developed for each experimental condition. Finally, measures of the three constructs (PQ, PCS, and BB) employed in the pilot test were the same measures used in the second pretest.

Data analysis in the pilot test focused on determining the squared semipartial correlation coefficient (sr^2) values associated with hypothesized effects of these constructs on the criterion. Effect size, which is an essential element in determining the required sample size for an experiment (Cohen 1977), cannot be determined without knowing the squared semipartial correlation coefficient. Squared semipartial correlation coefficients of variables for each hypotheses are summarized in Table 4-24. Other details involved in the pilot test are reported in Tables C-13 through C-17 in Appendix C.

Table 4-24
Values of sr^2 for Hypothesized Variables in the Pilot Test

	sr^2 on AE	p	sr^2 on CR	p
PQ	.6012	.0000	.2441	.0012
PCS	.1106	.0000	.1861	.0055
BB	.0061	.1596	.0088	.5639
PQ*PCS	.0762	.0000	n/a	n/a
PQ*PCS*BB	.0018	.3613	n/a	n/a

Sample Size for the Main Experiment

If all other things are equal, a smaller effect size requires a larger sample size to attain the same level of power. Therefore, the required sample size for the main experiment should be determined by variables with smaller effect sizes, and, thus smaller sr^2 value.

Among the hypothesized effects, the main effect of brand breadth and the three way interaction effect among perceived quality, product category similarity, and brand breadth were small and insignificant (see Table 4-24). Thus, the required sample size can be determined by calculating effect sizes associated with these two variables. Because the current study (main experiment) focuses on three main effects as well as interaction effects (PQ*PCS and PQ*PCS*BB), effect size should be determined within the context of a full model which includes all possible effects in a three way factorial design.

<u>Effect Size of Brand Breadth</u> ($f^2_{(BB/CR)}$). As shown in Table 4-24, brand breadth has two sr^2 values: one from its relationship with AE and the other from its relationship with CR. While the overall sample size can be determined directly by sr^2 from its relationship with AE, the sample size determined by sr^2 from its relationship with CR should be doubled because only half of the subjects were to generate cognitive responses in the main experiment. Because the sr^2 value from the relationship with CR is less than double of the sr^2 value from the relationship with AE, a larger final sample size is determined by using sr^2 value from the relationship with CR. Consequently, the effect size of brand breadth is calculated using sr^2 from its relationship with CR.

$$f^2_{(BB/CR)} = \frac{sr^2}{1 - R^2_{(full)}}$$

$$= \frac{.0088}{1 - .81060}$$

$$= \frac{.0088}{.1894} = .0465$$

<u>Effect Size of Three Way Interaction</u> ($f^2_{(PQ*PCS*BB/AE)}$):

$$f^2_{(PQ*PCS*BB/AE)} = \frac{sr^2}{1 - R^2_{(full)}}$$

$$= \frac{.0018}{1 - .81060}$$

$$= \frac{.0018}{.1894} = .0010$$

As indicated, the effect size of the three way interaction was very small. According to Cohen's (1977) guidelines, the meaningful small effect size is around .02. A small effect size is often difficult to be distinguished from a noise (Cohen 1977). If effect size is too small, detecting the effect becomes, in most cases, not very practical. In the present study, the size of the three way interaction effect is too small. Therefore, the sample size for the main study was determined using the computed effect size for brand breadth. Given the effect size of brand breadth, the sample size is calculated as follows:

$$N = \frac{L}{f^2} + k + 1$$

(where, L = a constant in L-table,
f^2 = effect size,
k = number of independent variables)

If $\alpha=.05$, power=.80, and u=1, then L becomes 7.85 (Cohen 1977). Therefore,

$$N = \frac{7.85}{.0465} + 7 + 1$$

$$= 177$$

Because the number should be doubled, the required sample size becomes 354. In short, the main experiment required a sample size greater than or equal to 354 to yield an 80% of chance of rejecting the null hypotheses concerning the effects of brand breadth on both CR and AE at the significance level $\alpha=.05$.

Data Collection Procedures

A student sample was used in the study. Student samples are often criticized as inappropriate because they may not be representative of the general population (Alpert 1967; Cunningham, Anderson, and Murphy 1974; Khera and Benson 1970; Soley and Reid 1983). However, some authors disagree on this issue (Enis, Cox, and Stafford 1972; Schuptrine 1975). In fact, a student sample, with its homogeneous characteristics, is often advocated because its use can increase internal validity (Calder, Phillips, and

Tybout 1981) and statistical conclusion validity (Judd and Kenny 1981) through a reduction in error variance. Because the primary focus of this study was a theory test and not effects generalization, considerations of internal validity were paramount and a student sample was appropriate (Calder, Phillips, and Tybout 1982; Cook and Campbell 1979).

Data were collected from seven principles of marketing classes, a sales management class, and a retailing class held at the University of North Texas during the fall semester in 1993. Participation in the study was voluntary. A pen with a retail value of about one dollar and fifty cents was given to each participant as an incentive.

Subjects were first instructed to read the brand information provided in the first few pages very carefully (MacKenzie and Spreng 1992; Olson, Toy, and Dover 1982). This was intended to aid the subject in forming a specific image about the manipulated brand. Subjects were allowed to look back upon the provided information while they filled out questionnaires.

All questionnaires contained measures of perceived quality, product category similarity, brand breadth, attitudes toward brand extensions, and demographics. Cognitive response measures were included in half of questionnaires. When cognitive responses were measured, subjects were allowed only three minutes to complete the open ended CR question (Hastak and Olson 1989; MacKenzie and

Spreng 1992; Wright 1974). Most subjects spent between 15 and 20 minutes filling out the entire questionnaire.

The specific opening statements used in each experimental session were:

> "Hi, my name is Dongdae Lee. I am a doctoral student majoring in Marketing. I am currently conducting a brand-related study for my dissertation.
>
> As you may understand, your participation in this study is strictly voluntary. There will be no undue disadvantage for those who do not want to participate. However, I wish I could get information from all of you. For those who participate in this study, I will give a nice pen worth current retail value more than one dollar as a token of gratitude.
>
> (Interval)
>
> Once you receive a questionnaire, please read first few pages very carefully. After you get a general idea about the given brand, please begin answering the questions. Also, you can look back the pages containing brand information anytime you want. Thank you very much."

For those questionnaires containing CR measures, the following statement was added.

> "There is only one open-ended question. You can spend up to three minutes for the question."

An equal number of subjects was randomly assigned to each of the 32 experimental cell. Based on results of the pilot test, the overall required sample size was 480, 15 subjects in each experimental cell. As a precaution, 18 subjects were assigned in each cell. A total of 526 responses were collected. Each cell contained between 15 and 18 responses.

Characteristics of subjects are summarized in Table 4-25. Briefly, the male-female ratio is about equal (males = 51.5% vs. females = 48.5%). More than 90% of subjects were either juniors or seniors. Almost 90% of subjects were in their 20's. The ratio of business majors to non-business majors was close to 3 to 1. Table 4-26 summarizes the distribution of subjects in each experimental cell.

Table 4-25
Characteristics of Subjects in the Main Experiment

Category	Subcategory	N	%	Valid %
Sex	Male	265	50.4	51.5
	Female	250	47.5	48.5
	Missing	11	2.1	
	Total	526	100.0	100.0
Status	Freshman	0	0.0	0.0
	Sophomore	16	3.0	3.1
	Junior	285	54.2	55.3
	Senior	201	38.2	39.0
	Graduate	13	2.5	2.5
	Missing	11	2.1	
	Total	526	100.0	100.0
Age	Less than 20	10	1.9	2.0
	20 to 29	460	87.5	90.0
	30 to 39	31	5.9	6.1
	40 or more	10	1.9	2.0
	Missing	15	2.9	
	Total	526	100.0	100.0
Major	Business	388	73.8	75.3
	Non-business	127	24.1	24.7
	Missing	11	2.1	
	Total	526	100.0	100.0

Table 4-26
Distribution of Subjects in Each Experimental Cell

Brand Name	Extension Type	CR Manipulation	MC Order Manipulation	n
Gold Star	Bicycle	With	Before DV	18
		Without	Before DV	17
		With	After DV	18
		Without	After DV	17
	Camcorder	With	Before DV	17
		Without	Before DV	17
		With	After DV	16
		Without	After DV	16
Quasar	Bicycle	With	Before DV	15
		Without	Before DV	17
		With	After DV	15
		Without	After DV	16
	Camcorder	With	Before DV	15
		Without	Before Dv	16
		With	After DV	17
		Without	After DV	17
Toshiba	Bicycle	With	Before DV	15
		Without	Before DV	18
		With	After DV	16
		Without	After DV	17
	Camcorder	With	Before DV	16
		Without	Before DV	16
		With	After DV	16
		Without	After DV	17
Funai	Bicycle	With	Before DV	16
		Without	Before DV	16
		With	After DV	17
		Without	After DV	18
	Camcorder	With	Before DV	15
		Without	Before DV	18
		With	After DV	15
		Without	After DV	16
			Total	526

Data Analysis

Several data analysis methods were required to test the proposed hypotheses. Specific tools included hierarchical regression, ANOVA, non-hierarchical regression, and *t*-tests. Among these, hierarchical regression was the primary data analysis technique. ANOVA, non-hierarchical regression, and t-tests were utilized to supplement results of hierarchical regression as required.

Hierarchical regression fundamentally is a multiple regression in which a series of nested or hierarchical models are compared. Regression results are more robust than standard ANOVA, especially when cell sizes are unequal (Anderson 1986; Applebaum and Cramer 1974; Cohen 1977; Cohen and Cohen 1983; Herr and Gaebelein 1978; Judd and Kenny 1981; Perreault and Darden 1975). It allows one to determine the significance of a single predictor variable or groups of variables by comparing two nested models, one of which includes the predictor variable(s) and the other does not.

For example, to test the significance of an interaction term in a two factor model, hierarchical regression analysis requires the comparison of two models: the full model which contains all the main effects and the interaction term and the reduced or nested model which omits the interaction term from the full model. Specifically, the full model is given by:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_1X_2 + e$$

The reduced model is:

$$Y = a + b_1X_1 + b_2X_2 + e$$

Significance of the interaction term (X_1X_2) can be tested by either the F statistic or the t statistic. The F value is calculated as:

$$F_i = \frac{sr_i^2/1}{(1-R^2_{(Full)})/(n-k-1)} = \frac{sr_i^2(n-k-1)}{1-R^2_{(Full)}}$$

(Degree of freedom: numerator = 1, denominator = n-k-1)

The value of t statistics is:

$$t_i = \frac{sr_i}{[(1-R^2_{(Full)})/(n-k-1)]^{1/2}}$$

(Degree of freedom: n-k-1)

where, sr_i is the semipartial correlation coefficient.

$$sr_i^2 = R^2(\text{full}) - R^2(\text{reduced})$$

Results of these two statistics are exactly the same because, when the numerator degrees of freedom equal one in the F test, the t value is the square root of F.

There are two ways to compare models in hierarchical regression. The first is a top-down approach (Applebaum and Cramer 1976; Judd and Kenny 1981). With this approach, one starts with a model which contains all possible interaction terms and main effects. If one is able to reject the null hypothesis for the highest interaction term, the usual procedure would be to stop at this point and to interpret the model which contains the highest interaction term. If not, one drops it from the equation and proceeds to test remaining effects (Applebaum and Cramer 1976; Judd and Kenny 1981). In this manner, one effect is removed from the previous model each time, and the significance of the removed effect is checked by comparing the reduced model with the previous model.

The second approach is a bottom-up approach (Cohen and Cohen 1983). In this approach, independent variables are entered cumulatively in the sequence of causal priority and the R^2 and partial coefficients are determined as each independent variable joins the others (Cohen and Cohen 1983). Model comparison procedure in this approach is exactly the opposite of the top-down approach. With each step, one more effect is added to the previous model, and the new expanded model is compared with the previous model. A major advantage of this approach is that a unique partitioning of the total variance accounted by each independent variable is made without causal linkages among independent variables being confounded (Cohen and Cohen 1983).

This study adopted the latter approach. Most hypotheses in the current study required the unique partitioning of variance provided by the bottom-up approach. Cohen and Cohen's (1983) approach is a better analysis tool in this respect.

In testing hypotheses, the current study employed two sets of data. As explained, half of the subjects were asked to verbalize their cognitive responses and the other half were not. Because tests of cognitive response theory-related hypotheses required measuring cognitive responses, relevant hypotheses were tested only with the data set containing such cognitive responses. In contrast, categorization theory hypotheses were tested with the whole or combined data set. The existence (or non-existence) of cognitive responses was irrelevant to the testing of categorization theory based hypotheses.

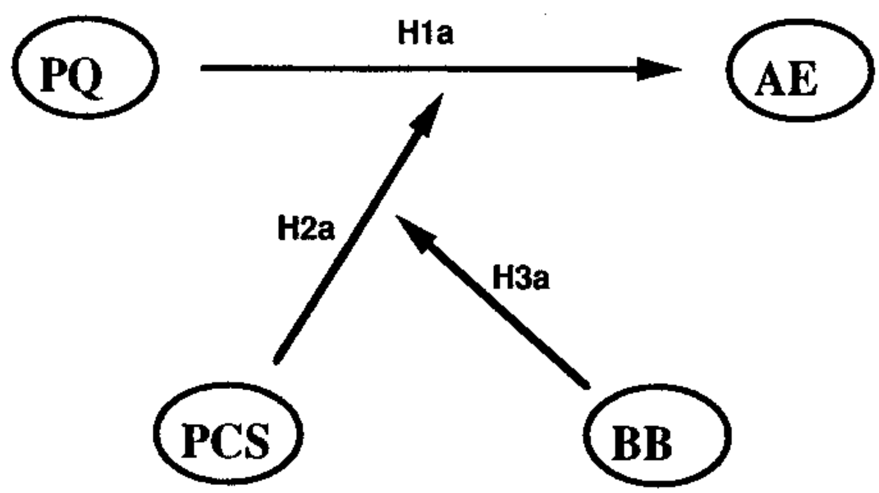
Tests for Categorization Theory Hypotheses

The model depicting hypotheses based on categorization theory is repeated in the Figure 4-4. H1a tests the direct effects of PQ on AE, H2a tests the moderating effects of PCS on the effects of PQ on AE, and H3a deals with the three way interaction between PQ, PCS, and BB.

All hypotheses testing predictions from categorization theory (H1a, H2a, and H3a) were tested by hierarchical regression. The causal order of the variables involved with the hypotheses were: PQ, PCS, and BB. PQ was the first in the causal priority because AE is directly related to PQ.

PCS was next in causal order because it moderates the PQ-AE relationship. BB, which in turn moderates PCS, was entered last. The causal order of the interaction terms was determined in the same manner: PQ*PCS, PQ*BB, PCS*BB, and PQ*PCS*BB. A test of the three way interaction term came after all two way interaction terms have been added.

Figure 4-4
Hypothesized Relationships between Three Constructs and Attitudes toward an Extension by Categorization Theory



Specifically, tests of hypotheses (H1a, H2a, and H3a) were performed by comparing the following models.

(1) $AE = a + e$

(2) $AE = a + b_1(PQ) + e$

(3) $AE = a + b_1(PQ) + b_2(PCS) + e$

$$(4) \quad AE = a + b_1(PQ) + b_2(PCS) + b_3(BB) + e$$

$$(5) \quad AE = a + b_1(PQ) + b_2(PCS) + b_3(BB) + b_4(PQ*PCS) + e$$

$$(6) \quad AE = a + b_1(PQ) + b_2(PCS) + b_3(BB) + b_4(PQ*PCS) + b_5(PQ*BB) + e$$

$$(7) \quad AE = a + b_1(PQ) + b_2(PCS) + b_3(BB) + b_4(PQ*PCS) + b_5(PQ*BB) + b_6(PCS*BB) + e$$

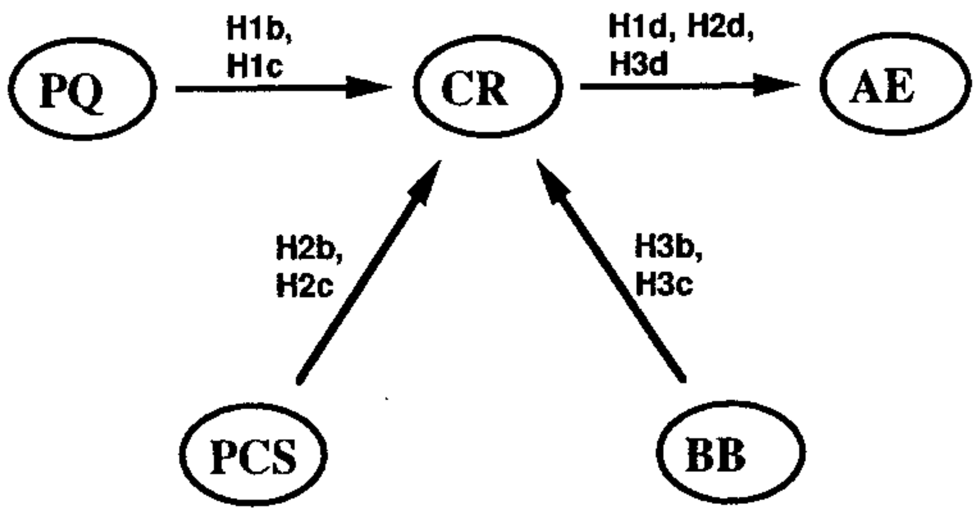
$$(8) \quad AE = a + b_1(PQ) + b_2(PCS) + b_3(BB) + b_4(PQ*PCS) + b_5(PQ*BB) + b_6(PCS*BB) + b_7(PQ*PCS*BB) + e$$

The test of H1a was done by comparing (1) and (2). Models (4) and (5) were compared to test H2a (i.e., PQ*PCS). The hypothesis involved with the three way interaction (i.e., H3a) was tested by comparing models (7) and (8).

Tests for Cognitive Response Theory Hypotheses

The model depicting hypotheses based on cognitive response theory is repeated in the Figure 4-5. Tests of hypotheses for cognitive response theory required a different analytic approach. As discussed, hypotheses based on cognitive response theory centered on assessing the mediating effects of cognitive responses. Past studies have employed correlational analysis to test the existence of mediating effects (Insko, Turnbull, and Yandell 1974; Love and Greenwald 1978; Lutz and MacKenzie 1982; Olson, Toy, and Dover 1982; Toy 1982; Wright 1973), and mediational analysis is really a correlational analysis (Judd and Kenny 1981).

Figure 4-5
Hypothesized Relationships between Three Constructs and Attitudes toward an Extension by Cognitive Response Theory



To claim a mediating effect more convincingly, however, three conditions must be established (Baron and Kenny 1986; Judd and Kenny 1981). First, the treatment should be related to the potential mediator. Second, the treatment should cause the outcome. Finally, the potential mediator must cause the outcome[10]. Perfect mediation exists if the treatment has no effect on the outcome when the mediator is controlled.

In the current study, the first condition tests hypotheses 1b, 1c, 2b, 2c, 3b, and 3c. H1b and H1c

[10]The first and second conditions together are called parallel treatment effects. Without evidence of parallel treatment effects, mediation cannot be established (Hastak and Olson 1989; Wright 1980).

hypothesized relationships between PQ and number of cognitive responses (CR), H2b and H2c posited relationships between PCS and number of CRs, and H3b and H3c dealt with relationships between BB and number of CRs. To test the first condition, a series of regression models with CR as a dependent variable and PQ, PCS, and BB as independent variables, respectively, were employed. A multiple regression model in which all three independent variables were included at the same time was also examined. Specific models required to test hypotheses H1b, H1c, H2b, H2c, H3b, and H3c were:

(9) $CR = a + e$

(10) $CR = a + b_1(PQ) + e$

(11) $CR = a + b_1(PCS) + e$

(12) $CR = a + b_1(BB) + e$

(13) $CR = a + b_1(PQ) + b_2(PCS) + b_3(BB) + e$

H1b and H1c (PQ's effect) were tested by comparing models (9) and (10). Likewise, tests of H2b and H2c (PCS's effect) were done by comparing models (9) and (11). H3b and H3c (BB's effect) were tested by comparison of models (9) and (12).

Another method to test the first condition was to utilize fully partialed coefficients instead of checking individual correlation coefficients. This method enabled partitioning of the unique effect of each variable in the presence of other variables. Model (12) provides fully partialed coefficients for each independent variable. In the current study, both methods were employed.

The second condition for establishing mediation was related to Hypotheses 1d, 2d, and 3d. H1d dealt with the mediating role of CRs generated by PQ, H2d dealt with the mediating role of CRs generated by PCS, and H3d dealt with mediating role of CRs generated by BB. Because the second condition dealt with relationships between treatments (PQ, PCS, and BB) and outcome (AE), estimation of this condition was similar to tests for the main effects of PQ, PCS, and BB in the categorization theory case. The following models were employed to test the second condition of hypotheses H1d, H2d, and H3d.

(14) $AE = a + e$

(15) $AE = a + b_1(PQ) + e$

(16) $AE = a + b_1(PCS) + e$

(17) $AE = a + b_1(BB) + e$

(18) $AE = a + b_1(PQ) + b_2(PCS) + b_3(BB) + e$

Test procedures for the second condition of H1d, H2d, and H3d were similar to those for H1b, H1c, H2b, H2c, H3b, and H3c. For example, H1d (PQ's effect) was tested by comparing models (14) and (15). H2d (PCS's effect) was tested by comparing (14) and (16). Test of H3d (BB's effect) was done by comparing (14) and (17). Tests of the second condition of H1d, H2d, and H3d also was done by using fully partialed coefficients. Model (18) provided the necessary coefficients for each variable in this case.

The third condition was also related to the tests of hypotheses 1d, 2d, and 3d. To test the third condition for establishing mediation, the dependent variable (AE) was regressed on both treatments (PQ, PCS, and BB) and on the mediator (CR). If a mediating effect exists, the effects of the independent variables (treatments) on the dependent variable (outcome) should be less in the third condition than for those in the second. In the ideal situation, any effects of the treatment will be entirely eliminated when CR is controlled (Hastak and Olson 1989; Insko, Turnbull, and Yandell 1974; Judd and Kenny 1981; Olson, Toy and Dover 1982). To deal with the third condition more effectively, a hierarchical regression was employed in which CR was treated as a covariate. Tests of hypotheses (H1d, H2d, and H3d) for the third condition employed the following models.

(19) $AE = a + b_1(CR) + e$

(20) $AE = a + b_1(CR) + b_2(PQ) + e$

(21) $AE = a + b_1(CR) + b_2(PCS) + e$

(22) $AE = a + b_1(CR) + b_2(BB) + e$

(23) $AE = a + b_1(CR) + b_2(PQ) + b_3(PCS) + b_4(BB) + e$

When focusing on individual regression coefficients, a test of the third condition of H1d was done by comparing models (19) and (20). The third condition of H2d was tested by comparing models (19) and (21), and that of H3d by comparing models (19) and (22). Tests of the third condition of hypotheses (H1d, H2d, and H3d) were also done by comparing models (19) and (23).

CHAPTER REFERENCES

Aaker, David A. and Kevin L. Keller (1990), "Consumer Evaluations of Brand Extensions," Journal of Marketing, 54 (January), 27-41.

Alpert, Bernard (1967), "Non-businessmen as Surrogates for Businessmen in Behavioral Experiments," Journal of Business, 40 (April), 203-207.

Anderson, Carol H. (1986), "Hierarchical Moderated Regression Analysis: A Useful Tool for Retail Management Decisions," Journal of Retailing, 62 (2), 186-203.

Applebaum, Mark I. and Elliot M. Cramer (1974), "Some Problems in the Nonorthogonal Analysis of Variance," Psychological Bulletin, 81 (6), 335-343.

Archibald, Robert B., Clyde A. Haulman, Carlisle E. Moody, Jr. (1983), "Quality, Price, Advertising, and Published Quality Ratings," Journal of Consumer Research, 9 (March), 347-356.

Baron, Reuben M. and David A. Kenny (1986), "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," Journal of Personality and Social Psychology, 51 (6), 1173-1182.

Belch, George E. (1981), "An Examination of Comparative and Noncomparative Television Commercials: The Effects of Claim Variation and Repetition on Cognitive Response and Message Acceptance," Journal of Marketing Research, 18 (August), 333-349.

Berry, Leonard L., Valarie A. Zeithaml, and A. Parasuraman (1990), "Five Imperatives for Improving Service Quality," Sloan Management Review, 31 (Summer), 29-38.

Bonner, P. Greg and Richard Nelson (1985), "Product Attributes and Perceived Quality: Foods," in Perceived Quality, J. Jacoby and J. Olson eds., Lexington, MA: Lexington Books, 65-79.

Boush, David M. and Barbara Loken (1991), "A Process-Tracing Study of Brand Extension Evaluation," Journal of Marketing Research, 28 (February), 16-28.

Brock, Timothy C. and Sharon Shavitt (1983), "Cognitive-Response Analysis in Advertising,' in Advertising and Consumer Psychology, Larry Percy and Arch Woodside eds., Lexington, MA: Lexington Books, 91-110.

Brucks, Merrie and Valarie A. Zeithaml (1991), "Price and Brand Name as Indicators of Quality Dimensions," unpublished working paper, Duke University, Durham, NC.

Calder, Bobby J., Lynn W. Phillips, and Alice M. Tybout (1981), "Designing Research for Application," Journal of Consumer Research, 8 (September), 197-207.

_____, _____, _____ (1982), "The Concept of External Validity," Journal of Consumer Research, 9 (December), 240-244.

Campbell, Donald T. and Julian C. Stanley (1966), Experimental and Quasi-Experimental Designs for Research, Chicago, IL: Rand McNally.

Churchill, Gilbert A. (1979), "A Paradigm for Developing Better Measures of Marketing Constructs," Journal of Marketing Research, 16 (February), 64-73.

_____ and J. Paul Peter (1984), "Research Design Effects on the Reliability of Rating Scales: A Meta Analysis," Journal of Marketing Research, 21 (November), 360-375.

Cohen, Jacob (1977), Statistical Power Analysis for the Behavioral Sciences, Revised ed., New York, NY: Academic Press.

_____ and Patricia Cohen (1983), Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences, 2nd ed., Hillsdale, NJ: Lawrence Erlbaum.

Cook, Thomas D. and Donald D. Campbell (1979), Quasi-Experimentation: Design and Analysis Issues for Field Settings, Boston, MA: Houghton Mifflin Co.

Corfman, Kim P., Donald R. Lehmann, and Sunder Narayanan (1991), "Values, Utility, and Ownership: Modeling the Relationships for Consumer Durables," Journal of Retailing, 67 (2), 184-204.

Cunningham, William H., W. Thomas Anderson Jr. and John H. Murphy (1974), "Are Students Real People?" Journal of Business, 47 (July), 399-409

Enis, Ben M., Keith K. Cox, and James E. Stafford (1972), "Students as Subjects in Consumer Behavior Experiments," Journal of Marketing Research, 9 (February), 72-74.

Garvin, David A. (1984a), "Product Quality: An Important Strategic Weapon," Business Horizons, 27 (May-June), 40-43.

______ (1984b), "What Does 'Product Quality' Really Mean?" Sloan Management Review, 26 (Fall), 25-43.

______ (1987), "Competing on the Eight Dimensions of Quality," Harvard Business Review, 65 (Nov-Dec), 101-109.

Gorn, Gerald J. and Charles B. Weinberg (1984), "The Impact of Comparative Advertising on Perception and Attitude: Some Positive Findings," Journal of Consumer Research, 11 (September), 719-727.

Green, Paul E., Donald S. Tull, and Gerald Albaum (1988), Research for Marketing Decisions, 5th ed., Englewood Cliffs, NJ: Prentice Hall.

Greenwald, Anthony G. (1968), "Cognitive Learning, Cognitive Response to Persuasion, and Attitude Change," in Psychological Foundations of Attitudes, Anthony Greenwald, Timothy Brock, and Thomas Ostrom eds., New York: Academic Press, 147-170.

Hastak, Manoj and Jerry C. Olson (1989), "Assessing the Role of Brand-Related Cognitive Responses as Mediators of Communication Effects on Cognitive Structure," Journal of Consumer Research, 15 (March), 444-456.

Herr, David G. and Jacquelyn Gaebelein (1978), "Nonorthogonal Two-Way Analysis of Variance," Psychological Bulletin, 85 (1), 207-216.

Hjorth-Anderson, Chr. (1984), "The Concept of Quality and the Efficiency of Markets for Consumer Products," Journal of Consumer Research, 11 (September), 708-718.

Insko, Chester A., William Turnbull, and Ben Yandell (1974), "Facilitative and Inhibiting Effects of Distraction on Attitude Change," Sociometry, 37 (4), 508-528.

Jacoby, Jacob, Jerry C. Olson, and Rafael A. Haddock (1971), "Price, Brand Name, and Product Composition Characteristics as Determinants of Perceived Quality," Journal of Applied Psychology, 55 (6), 570-579.

Johnson, Michael D. (1988), "Comparability and Hierarchical Processing in Multialternative Choice," Journal of Consumer Research, 15 (December), 303-314.

Judd, Charles M. and David A. Kenny (1981), Estimating the Effects of Social Interventions, New York, NY: Cambridge University Press.

Khera, Inder P. and James D. Benson (1970), "Are Students Really Poor Substitutes for Businessmen in Behavioral Research?" Journal of Marketing Research, 7 (November), 529-532.

Kidd, Robert F. (1976), "Manipulation Checks: Advantage or Disadvantage," Representative Research in Social Psychology, 7 (2), 160-165.

Laurent, Gilles and Jean-Noel Kapferer (1985), "Measuring Consumer Involvement Profiles," Journal of Marketing Research, 12 (February), 41-53.

Love, Robert E. and Anthony G. Greenwald (1978), "Cognitive Responses to Persuasion as Mediators of Opinion Change," Journal of Social Psychology, 104 (April), 231-240.

Lutz, Richard J. and Scott B. MacKenzie (1982), "Construction of a Diagnostic Cognitive Response Model for Use in Commercial Pretesting," in Straight Talk about Attitude Research, Joseph Chasin ed., Chicago, IL: AMA, 145-156.

Mackenzie, Scott B. and Richard A. Spreng (1992), "How Does Motivation Moderate the Impact of Central and Peripheral Processing on Brand Attitudes and Intentions?", Journal of Consumer Research, 18 (March), 519-529.

Morgan, Leonard A. (1985), "The Importance of Quality," in Perceived Quality, J. Jacoby and J. Olson, eds., Lexington, MA:Lexington Books, 61-64.

Nunnally, Jum C. (1978), Psychometric Theory, 2nd ed., New York, NY: McGraw-Hill Book Co.

Olson, Jerry C., Daniel R. Toy, and Philip A. Dover (1982), "Do Cognitive Responses Mediate the Effects of Advertising Content on Cognitive Structure?" Journal of Consumer Research, 9 (December), 245-262.

Parasuraman, A., Valarie A. Zeithaml, and Leonard L. Berry (1985), "A Conceptual Model of Service Quality and Its Implications for Future Research," Journal of Marketing, 49 (Fall), 41-50.

_____, _____, and _____ (1988), "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality," Journal of Retailing, 64 (1), 12-40.

Perdue, Barbara C. and John O. Summers (1986), "Checking the Success of Manipulations in Marketing Experiments," Journal of Marketing Research, 23 (November), 317-326.

Perreault, William D. and William R. Darden (1975), "Unequal Cell Sizes in Marketing Experiments: Use of the General Linear Hypothesis," Journal of Marketing Research, 12 (August), 333-342.

Peterson, Robert A. (1970), "The Price - Perceived Quality Relationship: Experimental Evidence," Journal of Marketing Research, 7 (November), 525-528.

Schuptrine, F. Kelly (1975), "On the Validity of Using Students as Subjects in Consumer Behavior Investigations," Journal of Business, 48 (July), 383-390.

Soley, Lawrence C. and Leonard N. Reid (1983), "On the Validity of Students as Subjects in Advertising Experiments," Journal of Advertising Research, 23 (4), 57-59.

Soutar, Geoffrey N., Richard C. Bell, and Yvonne M. Wallis (1990), "Consumer Acquisition Patterns for Durable Goods: A Rasch Analysis," European Journal of Marketing, 24 (8), 31-39.

Sternthal, Brian, Ruby Dholakia, and Clark Leavitt (1978), "The Persuasive Effect of Source Credibility: Tests of Cognitive Response," Journal of Consumer Research, 4 (March), 252-260.

Szybillo, George J. and Jacob Jacoby (1974), "Intrinsic versus Extrinsic Cues as Determinants of Perceived Product Quality," Journal of Applied Psychology, 59 (1), 74-78.

Thompson, Kenneth Neil (1988), "An Exploratory Model of Consumer Brand Extension Behavior," Unpublished Doctoral Dissertation, University of Colorado, Boulder, CO.

Toy, Daniel R. (1982), "Monitoring Communication Effects: A Cognitive Structure/Cognitive Response Approach," Journal of Consumer Research, 9 (June), 66-76.

Wilkie, William L. (1986), Consumer Behavior, New York, NY: John Wiley & Sons.

Wright, Peter (1973), "The Cognitive Processes Mediating Acceptance of Advertising," Journal of Marketing Research, 10 (February), 53-62.

______ (1974), "On the Direct Monitoring of Cognitive Response to Advertising," in Buyer/Consumer Information Processing, G. David Hughes and Michael L. Ray eds., Chapel Hill, NC: University of North Carolina Press, 220-248.

______ (1980), "Message-Evoked Thoughts: Persuasion Research Using Thought Verbalizations," Journal of Consumer Research, 7 (September), 151-175.

Zeithaml, Valarie A. (1988), "Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence," Journal of Marketing, 52 (July), 2-22.

CHAPTER V

RESULTS

This chapter presents results of the main experiment. Details of the methodology involved in the experiment were explained in the previous chapter. Results are divided into three sections: manipulation checks, effects of cognitive response measurement and manipulation checks order, and hypothesis tests. The hypothesis tests section is further divided into two parts: categorization theory hypotheses and cognitive response theory hypotheses.

Manipulation Checks

Manipulation results of perceived quality were checked by examining the mean values of the 16 items used for the scale. The mean perceived quality of the high perceived quality group (Quasar and Toshiba) was 4.8692. The mean value of the low perceived quality group (Gold Star and Funai) was 3.0522 (see Table 5-1). T-test results showed a significant difference between the two groups ($t=30.07$, $p=.000$). The squared eta value (η^2) for the t-test was .63.

Product category similarity levels were checked by examining mean values of the eight items in the product category similarity scale. The mean rating in high product category similarity group (extensions into the camcorder product category) was 4.6279. The mean for the low product category similarity group (extensions into the bicycle category) was 1.5865. The difference between the two groups was significant (t=43.58, p=.000, η^2=.78).

The appropriateness of the manipulation for brand breadth was checked by multiplying together the values for its two dimensions: number of categories and cohesiveness[1]. The broad brands' brand breadth value was 15.0111 and narrow brands' breadth value was 7.0781 (see Table 5-2). Again, the difference was significant (t=18.57, p=.000, η^2=.40). Overall, the manipulation seems to have worked as intended, although there was overlap between treatments[2].

---

[1]As discussed in Chapter III, the definition of brand breadth presumes that the two dimensions have a joint effect on brand breath. One dimension's effect on brand breadth can be affected by the other dimension. For example, even if a brand represents many product categories (i.e., high on the number dimension), if the product categories are highly interrelated (i.e., high on the cohesiveness dimension), the overall brand breadth may be narrow. On the contrary, if a brand represents only a few product categories (i.e., low on the number dimension), and if the product categories are not related to each other (i.e., low on the cohesiveness dimension), the overall brand breadth may be broad (Boush and Loken 1991). This example suggests that an index derived by multiplying the values of the two dimensions may better reflect the true brand breadth level.

[2]As Table 5-2 shows the cohesiveness dimension did not discriminate between narrow brand and broad brand. Very similar mean ratings in the cohesiveness dimension between both levels of brand breadth manipulation were observed. Consequently, the brand breadth manipulation level may

Table 5-1
Overall Manipulation Results of Experimental Factors

Factors	Types	n	Mean Ratings	S.D.	t	p	η^2
PQ	High	257	4.8692	.634	30.07	.000	.63
	Low	261	3.0522	.739			
PCS	High	257	4.6279	.900	43.58	.000	.78
	Low	263	1.5865	.673			
BB	Broad	266	15.0111	5.680	18.57	.000	.40
	Narrow	259	7.0781	3.982			

Table 5-2
Manipulation Results of Brand Breadth

Types	n	Ratings in Number Dimension	Ratings in Cohesiveness Dimension	Overall Ratings of Brand Breadth	
				Avg.[1]	Multpl.[2]
Broad[3]	266	5.1962	2.9075	4.0519	15.0111
Narrow[4]	259	2.4317	2.8903	2.6610	7.0781

[1] Average of two dimensions.
[2] Multiplication of two dimensions.
[3] Broad brands were Toshiba and Gold Star.
[4] Narrow brands were Quasar and Funai.

The appropriateness of the manipulation was also checked at the individual brand level. As mentioned in the previous chapter, treatments among brands were not identical. The manipulation of perceived quality was not exactly the same between Quasar and Toshiba (high quality

---

actually reflect only the number of categories. Although the definition of brand breadth dictates the use of a multiplicative index, regression analysis results employing mean ratings for the number of categories dimension as a measure of overall brand breadth are reported in the Appendix F for the purpose of comparison. Regression results employing an average of the means of both dimensions to scale brand breadth are also reported in the Appendix G.

manipulation) and between Gold Star and Funai (low quality manipulation). Moreover, the manipulation of brand breadth between Gold Star and Toshiba was somewhat different, even though each brand represented 11 product categories.

To determine if these slight differences had any effects on the manipulation of perceived quality, brand breadth, and product category similarity, a series of oneway ANOVAs employing Scheffe's test at the significance level of .05 were performed. Mean ratings on the scales used as manipulation checks for each factor were treated as dependent variables. The four brands were treated as the independent variable (see Table 5-3). Results showed that all but one treatment were appropriately manipulated. In general, significant differences were observed between brands associated with different levels of each treatment; no significant differences were observed between brands representing the same level of the treatment.

The only exception was for the manipulation of low brand breadth (i.e., Quasar and Funai). Quasar was rated as significantly broader than Funai. However, because the ratings for both Quasar and Funai (low brand breadth manipulation) were much lower than the ratings for Gold Star and Toshiba (high brand breadth manipulation), the difference between the former brands was not considered to be substantive.

Table 5-3
Manipulation Results of Each Brands

Factors	Brands	n	Mean Ratings	S.D.
PQ	Gold Star	132	3.1572	.8138
	Funai	129	2.9448	.6380
	Quasar	127	4.8282	.6078
	Toshiba	130	4.9091	.6576
BB	Gold Star	136	14.4138	5.7849
	Toshiba	130	15.6360	5.5209
	Funai	131	6.1902[1]	3.4721
	Quasar	128	7.9869[1]	4.2698
PCS (Low)	Gold Star	68	1.4118	.6348
	Quasar	63	1.6964	.7711
	Toshiba	66	1.6288	.6147
	Funai	66	1.6193	.6465
PCS (high)	Gold Star	65	4.6115	.8415
	Quasar	64	4.7500	.8706
	Toshiba	64	4.7949	.9345
	Funai	64	4.3555	.9056

[1] For the BB manipulation, a significant difference was observed between Quasar and Funai, both of which were intended as low BB manipulations.

Effects of CR Measurement and MC Order

To check the possible confounding effects that may result from obtaining cognitive responses from subjects and obtaining manipulation checks on subjects' ratings of dependent measures (i.e., attitudes toward brand extensions), a 5-way 2x2x2x2x2 ANOVA examining main effects only was performed. Results showed no significant main effect from these two error sources (see Tables 5-4).

Table 5-4
Effects of CR Measurement and MC Order in a
5-Way ANOVA: Main Effects Only

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Main Effects	535.714	5	107.143	75.584	.000
PQ	360.362	1	360.362	254.217	.000
PCS	156.770	1	156.770	110.593	.000
BB	1.378	1	1.378	.972	.325
CR[1]	3.650	1	3.650	2.575	.109
MC[2]	4.635	1	4.635	3.270	.071
Explained	535.714	5	107.143	75.584	.000
Residual	724.362	511	1.418		
Total	1260.076	516	2.442		

[1] Whether or not cognitive responses were obtained.
[2] Order of manipulation checks.

The effects of cognitive response measurement and order of manipulation checks also were examined at the individual brand level. T-tests were conducted to ascertain the effect of cognitive response measurement on attitudes toward brand extensions. No significant effects were identified. Effects of the order of manipulation checks were also examined with t-tests. Among 16 cases, only the case of Funai's extension into the bicycle category had a significant difference (p=.018; see Table 5-5). In the other 15 cases, effects of the order of manipulation checks on attitudes toward brand extensions were not significant. Based on the above results, subsequent data analysis was performed without considering these two potential error sources.

Table 5-5
Effects of MC order on AE in Funai bicycle Case

MC order	n	mean ratings on AE	t	*p*
Before DV	35	3.0980	2.43	.018
After DV	32	2.4821		

Hypothesis Tests

As mentioned in Chapter IV, two different sets of data were employed for the tests of hypotheses based on the different theoretical perspectives. Categorization theory hypotheses were tested with the combined (i.e., pooled) data set, which included responses with and without cognitive responses. Cognitive response theory hypotheses were tested using the data set which only contained responses with cognitive responses.

Categorization Theory Hypotheses

<u>Direct Effect of Perceived Quality</u>. Hypothesis 1a (H1a) predicted that perceived quality would have a direct positive effect on consumers' attitudes toward brand extensions. Equations (1) and (2) in Table 5-6 were compared to determine the size and significance of the

effect of perceived quality. The value of the squared semipartial correlation coefficient (sr^2) for perceived quality was .3903 (t=17.962, p=.0000; see Tables 5-7 and 5-8).

Hypothesis 1a was strongly supported. The higher the quality perceptions consumers had about the parent brand, the more favorable were their attitudes about the brand's extension into another category.

Table 5-6
Regression Models Employed in Testing Categorization Theory Hypotheses

Hypotheses	Regression Models
H1a	(1) $AE = a_0 + e$ (2) $AE = a_0 + b_1(PQ) + e$
H2a	(3) $AE = a_0 + b_1(PQ) + b_2(PCS) + b_3(BB) + e$ (4) $AE = a_0 + b_1(PQ) + b_2(PCS) + b_3(BB) + b_4(PQ*PCS) + e$
H3a	(5) $AE = a_0 + b_1(PQ) + b_2(PCS) + b_3(BB) + b_4(PQ*PCS) + b_5(PQ*BB) + b_6(PCS*BB) + e$ (6) $AE = a_0 + b_1(PQ) + b_2(PCS) + b_3(BB) + b_4(PQ*PCS) + b_5(PQ*BB) + b_6(PCS*BB) + b_7(PQ*PCS*BB) + e$

Table 5-7
Effect Sizes and Significance Levels for Variables in Categorization Theory Hypotheses

Models	Effects	sr^2	st. b	t	p
(1)&(2)	PQ	.3903	.6247	17.962	.0000
(3)&(4)	PQ*PCS	.0634	1.0106	8.688	.0000
(5)&(6)	PQ*PCS*BB	.0000	-.0093	-.029	.9765

Table 5-8
Summary of Hierarchical Regression Analysis for Categorization Theory Hypotheses

Variables	Sum of Squares	DF	F	t	sr^2	St. b	p	Adj. R^2
PQ	480.70	1	322.64	17.962	.3903	.6247	.0000	.3891
PCS	151.63	1	127.26	11.281	.1231	.3538	.0000	.5115
BB	3.32	1	2.80	1.673	.0027	.0524	.0950	.5161
PQ*PCS	78.04	1	75.48	8.688	.0634	1.0106	.0000	.5761
PQ*BB	7.64	1	7.48	2.735	.0062	.3252	.0065	.5815
PCS*BB	2.24	1	2.21	-1.487	.0018	-.1190	.1378	.5825
PQ*PCS*BB	.01	1	.00	-.029	.0000	-.0093	.9765	.5817
Explained	723.58	7	101.32					
Residual	508.04	498						
Total	1231.62	505						

Moderating Effect of Product Category Similarity. Hypothesis 2a (H2a) predicted that product category similarity moderates perceived quality's direct positive effect on consumers' attitudes toward brand extensions. Comparison of equations (3) and (4) in Table 5-6 determined the effect size of the interaction between perceived quality and product category similarity. The squared semipartial correlation coefficient (sr^2) for the interaction term was .0634 (t=8.688, p=.0000). The moderating effect of product category was supported.

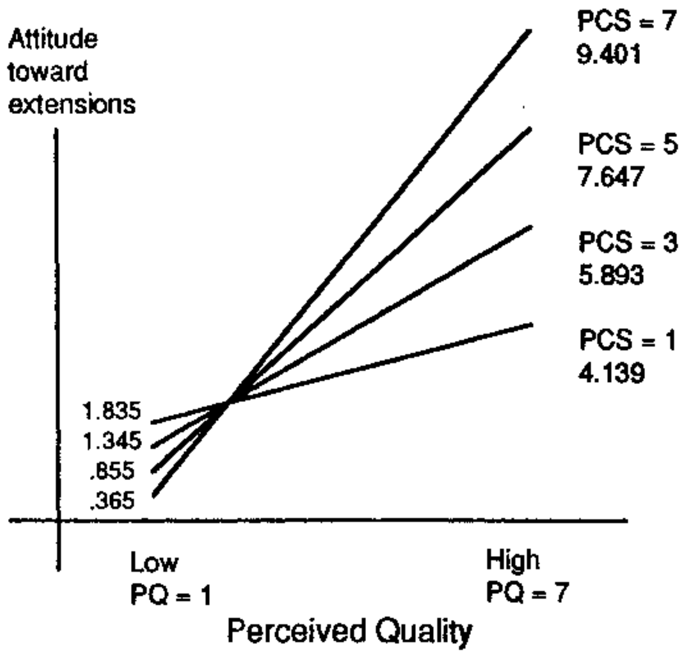
As discussed in Chapter III, hypothesis 2a was further divided into two sub-hypotheses. Hypothesis 2a1 predicted that if perceived quality is high, extensions that are high in product category similarity lead to more positive attitudes toward brand extensions than extensions that are low in product category similarity. Hypothesis 2a2 predicted that, if perceived quality is low, extensions that are low in product category similarity lead to more positive attitudes toward brand extensions than extensions that are high in product category similarity.

An examination of these two subhypotheses required viewing the patterns that emerged when the regression lines for the interactions were plotted. Figure 5-1 clearly demonstrated the existence of an interaction between perceived quality and product category similarity. While consumers showed much more positive attitudes toward similar brand extensions than dissimilar ones in brands associated with high perceived quality, they preferred dissimilar brand extensions to similar extensions in brands associated with low perceived quality.

Nonetheless, the regression lines in Figure 5-1 had different patterns from those hypothesized. While the difference in preferences between similar extensions and dissimilar extensions was clear in the high perceived quality situation, this was not the case in brands associated with low quality. In fact, consumer preferences between similar and dissimilar extensions were not much different among low perceived quality brands. In other words, although the overall moderating effect proposed by

H2a1 was supported, results did not support the interaction patterns proposed by hypothesis 2a2.

Figure 5-1
Regression Lines Showing Interaction Relationships Between PQ and PCS



[1] The employed regression model was: AE = 1.729 + .197(PQ) - .432(PCS) + .014(BB) + .187(PQPCS)
[2] BB was held at the mean value of 11 for the above graphs.

Overall, these results demonstrate that product category similarity clearly moderates perceived quality's effect on attitudes toward brand extensions. Note also from Table 5-8 that product category similarity has a significant main effect on attitudes toward extensions. The main effect was not postulated under categorization theory. Given that it seems to have a main effect, product category similarity becomes a quasi moderator, not a pure moderator (Sharma, Durand, and Gur-Arie, 1981).

Moderating Effect of Brand Breadth. Hypothesis 3a (H3a) predicted that brand breadth moderates the interaction between product category similarity and perceived quality on extension attitudes. In other words, H3a proposed a three way interaction between perceived quality, product category similarity, and brand breadth. This hypothesis was not supported. Comparison of regression equations (5) and (6) produced an sr^2 of .0000 (p=.9765) for the interaction term. Brand breadth did not appear to moderate the interaction between perceived quality and product category similarity on attitudes toward brand extensions.

Cognitive Response Theory Hypotheses

Effect of Perceived Quality. Hypotheses 1b and 1c (H1b and H1c) predicted that perceived quality has a positive effect on the number of favorable cognitive responses and a negative effect on the number of unfavorable cognitive responses, respectively. Regression results based on equations (11) and (12) in Table 5-9 showed that perceived quality has direct effects on number of cognitive responses as postulated (see Table 5-10). Squared semipartial correlation coefficient (sr^2) for perceived quality was .3168 (b=.5628, t=10.701, p=.0000). Therefore, hypotheses

1b and 1c were supported. Subjects generated more positive thoughts than negative thoughts when extensions were associated with a high quality brand, and produced more negative thoughts than positive thoughts when extensions were associated with a lower quality brand (see Table 5-11).

Hypothesis 1d (H1d) predicted that cognitive responses generated by perceived quality have a mediating effect on subjects' attitudes toward brand extensions. As discussed in Chapter IV, H1d was tested by examining the second and third conditions required to establish a mediating effect. The second condition was first checked. Regression results from comparing equations (7) and (8) showed that attitudes toward brand extensions were clearly affected by perceived quality (sr^2=.4182, b=.6466, t=13.323, p=.0000).

The third condition was also met. Hierarchical regression results with equations (15) and (16) showed that cognitive responses had a significant effect on attitudes toward brand extensions (sr^2=.5757, b=.7587, t=18.306, p=.0000). Also, the beta coefficient for perceived quality in equation (16) was smaller and less significant (b=.3214, t=7.007, p=.0000) than the beta coefficient for perceived quality (b=.6466, t=13.323, p=.0000) in equation (8).

Fulfillment of the second and the third conditions supported the existence of a mediating effect of cognitive responses on attitudes toward brand extension. Therefore, H1d was supported. In equation (16), however, perceived quality still had a significant effect (t=7.007, p=.0000), even after cognitive responses were partialed out. This means that the mediating effect of cognitive responses generated by perceived quality was not perfect. A strong possibility of the existence of direct effects from perceived quality on attitudes toward brand extensions remained.

Table 5-9
Regression Models Employed in Testing Cognitive Response Theory Hypotheses

Hypotheses	Regression Models
H1d	(7) $AE = a_0 + e$ (8) $AE = a_0 + b_1(PQ) + e$
H2d	(7) $AE = a_0 + e$ (9) $AE = a_0 + b_1(PCS) + e$
H3d	(7) $AE = a_0 + e$ (10) $AE = a_0 + b_1(BB) + e$
H1b, H1c	(11) $CR = a_0 + e$ (12) $CR = a_0 + b_1(PQ) + e$
H2b, H2c	(11) $CR = a_0 + e$ (13) $CR = a_0 + b_1(PCS) + e$
H3b, H3c	(11) $CR = a_0 + e$ (14) $CR = a_0 + b_1(BB) + e$
H1d	(15) $AE = a_0 + b_1(CR) + e$ (16) $AE = a_0 + b_1(CR) + b_2(PQ) + e$
H2d	(15) $AE = a_0 + b_1(CR) + e$ (17) $AE = a_0 + b_1(CR) + b_2(PCS) + e$
H3d	(15) $AE = a_0 + b_1(CR) + e$ (18) $AE = a_0 + b_1(CR) + b_2(BB) + e$

Table 5-10
Hierarchical Regression Analysis Results of Cognitive Response Theory Hypotheses

Models	Effects	sr^2	st. b[1]	t	*p*
(7),(8)	PQ	.4182	.6466	13.323	.0000
(7),(9)	PCS	.2395	.4894	8.820	.0000
(7),(10)	BB	.0636	.2521	4.095	.0001
(11),(12)	PQ	.3168	.5628	10.701	.0000
(11),(13)	PCS	.1367	.3697	6.254	.0000
(11),(14)	BB	.0529	.2301	3.716	.0003
(15),(16)	CR	.5757	.7587	18.306	.0000
	PQ	.0706	.3214	7.007	.0000
(15),(17)	CR	.5757	.7587	18.306	.0000
	PCS	.0505	.2420	5.767	.0000
(15),(18)	CR	.5757	.7587	18.306	.0000
	BB	.0063	.0819	1.933	.0543

[1] Standardized beta coefficient.

Table 5-11
Average Number of Positive, Negative, and Neutral Cognitive Responses for High and Low Perceived Quality Brands

CR types	Low PQ[1] (n=132)	High PQ[2] (n=125)
Positive	.30	1.50
Negative	2.44	1.03
Neutral	.93	1.14

[1] Low quality brands are Gold Star and Funai.
[2] High quality brands are Toshiba and Quasar.

Effect of Product Category Similarity. Hypotheses 2b and 2c (H2b and H2c) predicted that product category similarity has a direct positive effect on the number of favorable cognitive responses and a negative effect on number of unfavorable cognitive responses. Regression analyses based on equations (11) and (13) supported both hypotheses (see Table 5-10). The squared semipartial correlation coefficient for product category similarity was .1367 (b=.3697, t=6.254, *p*=.0000). Consumers appeared to generate more favorable thoughts and less unfavorable ones when the extension category was similar to the parent product category. In contrast, when the extension category was not very similar to the parent product category, consumers generated more unfavorable and less favorable thoughts (see Table 5-12).

Table 5-12
Average Number of Positive, Negative, and Neutral Cognitive Responses for High and Low Product Category Similarity

CR types	Low PCS[1] (n=130)	High PCS[2] (n=127)
Positive	.61	1.17
Negative	2.23	1.27
Neutral	1.00	1.07

[1] Product category with low similarity is bicycle.
[2] Product category with high similarity is camcorder.

Hypothesis 2d (H2d) predicted that the cognitive responses generated by product category similarity have a mediating effect on attitudes toward brand extensions. Hierarchical regression results with equations (7), (9), (15), and (17) showed that both the second and the third conditions testing a mediating effect were met (see Table 5-10). Comparison of equations (7) and (9) resulted in an sr^2 of .2395 (b=.4894, t=8.820, p=.0000). Therefore, the second condition was confirmed - i.e., attitudes toward brand extensions were directly affected by product category similarity.

The third condition was tested via comparison of regression equations (15) and (17). The squared semipartial correlation coefficient associated with product category similarity was .0505 (b=.2420, t=5.767, p=.0000; see Table 5-10).

These results revealed that, when cognitive responses were partialed from product category similarity, the beta coefficient for product category similarity became smaller and less significant. In other words, cognitive responses generated by product category similarity showed a mediating effect, supporting H2d. However, as in the case of perceived quality, the mediating effect was not perfect. A direct effect of product category similarity on attitudes toward brand extension remained.

Effect of Brand Breadth. Hypotheses 3b and 3c (H3b and H3c) predicted that brand breadth has a positive effect on the number of positive cognitive responses generated and a negative effect on the number of negative cognitive responses. The hierarchical comparison of equations (11) and (14) yielded a squared semipartial correlation coefficient of .0529 (b=.2301, t= 3.716, *p*=.0003). Hypotheses 3b and 3c were supported. Subjects generated more positive thoughts and less negative thoughts toward extensions from broad brands, and produced more negative thoughts and less positive thoughts toward extensions from narrow brands (see Table 5-13).

Hypothesis 3d (H3d) proposed a mediating effect of cognitive responses generated by brand breadth on attitudes toward brand extensions. First, equations (7) and (10) were compared to check the relationship between attitudes toward brand extensions and perceived quality. As expected, brand breadth had a significant direct effect on attitudes toward brand extensions. The squared semipartial correlation coefficient from this regression was .0636 (b=.2521, t=4.095, *p*=.0001).

Table 5-13
Average Number of Positive, Negative, and Neutral Cognitive Responses for Narrow and Broad Brands

CR types	Narrow BB[1] (n=125)	Broad BB[2] (n=132)
Positive	.84	.93
Negative	1.76	1.74
Neutral	.85	1.20

[1] Narrow brands are Quasar and Funai.
[2] Broad brands are Toshiba and Gold Star.

When cognitive responses were partialed from brand breadth in equation (18), the beta coefficient for brand breadth became smaller and less significant than the beta coefficient in equation (10). The beta coefficient dropped from .2521 (t=4.095, *p*=.0001) to .0819 (t=1.933, *p*=.0543). Hypothesis 3d appears to be supported. Unlike the other two factors (PQ and PCS), however, when CR was partialed from BB, no significant direct effect of brand breadth remained.

The overall cognitive response theory hypotheses were checked again with fully partialed regression models (see Table 5-14). Results were very similar to the hierarchical model. All three independent factors had a direct effect on the number of positive/negative cognitive responses (see Table 5-15).

Specifically, all three factors had significant effects on the number of positive/negative cognitive responses (sr^2=.2266, b=.4911, t=9.615, *p*=.0000 for perceived quality; sr^2=.0627, b=.2565, t=5.057, *p*=.0000 for product category similarity; sr^2=.0147, b=.1234, t=2.452, *p*=.0149 for brand breadth). Thus, H1b, H1c, H2b, H2c, H3b, and H3c were all supported.

Table 5-14
Fully Partialed Regression Models Employed in Testing Cognitive Response Theory Hypotheses

(19) $AE = a_0 + b_1(PQ) + b_2(PCS) + b_3(BB) + e$
(20) $CR = a_0 + b_1(PQ) + b_2(PCS) + b_3(BB) + e$
(21) $AE = a_0 + b_1(CR) + b_2(PQ) + b_3(PCS) + b_4(BB) + e$

Table 5-15
Regression Analysis Results with Fully Partialed Models for Cognitive Response Theory Hypotheses

Models	R^2	D.V.	Effects	sr^2	st. b	t	p
(19)	.5668	AE	PQ	.2875	.5531	12.750	.0000
			PCS	.1259	.3635	8.438	.0000
			BB	.0148	.1237	2.894	.0041
(20)	.3996	CR	PQ	.2266	.4911	9.615	.0000
			PCS	.0627	.2565	5.057	.0000
			BB	.0147	.1234	2.452	.0149
(21)	.7016	AE	CR	.1349	.4740	10.503	.0000
			PQ	.0700	.3204	7.567	.0000
			PCS	.0505	.2420	6.427	.0000
			BB	.0040	.0652	1.813	.0710

The mediating effects of cognitive responses generated by each of the three factors were also supported. In equation (19), attitudes toward brand extensions were significantly affected by all three factors (sr^2=.2875, b=.5531, t=12.750, p=.0000 for perceived quality; sr^2=.1259, b=.3635, t=8.438, p=.0000 for product category similarity; and sr^2=.0148, b=.1237, t=2.894, p=.0041 for brand breadth). After cognitive responses were treated as a covariate in equation (21), each of the three independent effects on attitudes toward brand extensions became smaller and less significant (sr^2=.0700, b=.3204, t=7.567, p=.0000 for perceived quality; sr^2=.0505, b=.2420, t=6.427, p=.0000 for product category similarity; sr^2=.0040, b=.0625, t=1.813, p=.0710 for brand breadth). H1d, H2d, and H3d were again supported in a fully partialed model (see Table 5-15).

CHAPTER REFERENCES

Boush, David M. and Barbara Loken (1991), "A Process-Tracing Study of Brand Extension Evaluation," Journal of Marketing Research, 28 (February), 16-28.

Sharma, Subhash, Richard M. Durand, and Oded Gur-Arie (1981), "Identification and Analysis of Moderator Variables," Journal of Marketing Research, 18 (August), 291-300.

CHAPTER VI

DISCUSSION AND CONCLUSIONS

This dissertation started with two major research questions in the area of brand extension. This chapter discusses study results and limitations surrounding these two research questions. The research questions raised at the beginning were:

> Q1: What are the exact roles of perceived quality, product category similarity, and brand breadth in brand extension?
>
> > Q1a: Does each variable have an independent effect on consumers' perceptions toward brand extension?
> >
> > Q1b: Does each variable moderate other variables' effects?
>
> Q2: What theoretical perspective is more potent in explaining the three constructs' roles in brand extension?
>
> > Q2a: Is categorization theory adequate for explaining consumer responses to brand extensions?
> >
> > Q2b: Is an alternative theoretical perspective required?
> >
> > Q2c: Can consumer responses to brand extensions adequately be explained by a single theoretical perspective? Or, should multiple theories be adopted?

Roles of the Three Constructs

The roles of the three constructs (PQ, PCS, and BB) were hypothesized to operate differently in each of the two competing models. Each construct's role is discussed from the viewpoint of each model. In some cases, however, the constructs demonstrated effects not hypothesized by either model. This chapter also addresses these latter effects. The discussion in this chapter draws heavily on Table 6-1, which summarizes the results for each hypothesis test and effects not hypothesized.

Role of Perceived Quality

Perceived quality was hypothesized to have a direct positive effect on attitudes toward brand extensions in the categorization theory model (H1a). Hierarchical regression analysis results clearly demonstrated the existence of a direct main effect from perceived quality. Thirty nine percent of variance in attitudes toward brand extensions was explained by perceived quality.

A direct positive effect of perceived quality was also tested in the cognitive response theory model. Although perceived quality's direct effect on attitudes toward brand extensions was not directly hypothesized in the cognitive response theory model, testing of a mediating effect of

Table 6-1
Summary of Test Results

Categorization Theory Hypotheses	Analysis Technique	Results
H1a: PQ has a direct positive effect on AE. (PQ -> AE)	H. Regression	Supported (p=.0000)
H2a: PCS moderates PQ's effect on AE. (PQ*PCS -> AE)	H. Regression	Supported (p=.0000)
H2a1: When PQ is high, extensions in high PCS lead to more positive AE than extensions in low PCS. (PQ*PCS -> AE)	H. Regression	Supported
H2a2: When PQ is low, extensions in low PCS lead to more positive AE than extensions in high PCS. (PQ*PCS -> AE)	H. Regression	Not supported
H3a: BB moderates PCS's moderating effect on PQ's effect on AE. (PQ*PCS*BB -> AE)	H. Regression	Not supported (p=.9765)

Cognitive Response Theory Hypotheses		
H1b: PQ has a direct positive effect on number of favorable CR.	H. Regression	Supported (p=.0000)
(PQ -> CR)	Full Partial Regression	Supported (p=.0000)
H1c: PQ has a direct negative effect on number of unfavorable CR. (PQ -> CR)	Same as H1b	Same as H1b
H1d: CR generated by PQ have a mediating effect on AE.	H. Regression	Supported (p=.0000)
(PQ -> CR -> AE)	Full Partial Regression	Supported (p=.0000)

Table 6-1 (Continued)

H2b: PCS has a direct positive effect on number of favorable CR.	H. Regression	Supported (p=.0000)
	Full Partial Regression	Supported (p=.0000)
H2c: PCS has a direct negative effect on number of unfavorable CR. (PCS -> CR)	Same as H2b	Same as H2b
H2d: CR generated by PCS have a mediating effect on AE.	H. Regression	Supported (p=.0000)
(PCS -> CR -> AE)	Full Partial Regression	Supported (p=.0000)
H3b: BB has a direct positive effect on number of favorable CR.	H. Regression	Supported (p=.0003)
(BB -> CR)	Full Partial Regression	Supported (p=.0149)
H3c: BB has a direct negative effect on number of unfavorable CR. (BB -> CR)	Same as H3b	Same as H3b
H3d: CR generated by BB have a mediating effect on AE.	H. Regression	Supported (p=.0001)
(BB -> CR -> AE)	Full Partial Regression	Supported (p=.0041)

Effects Not Hypothesized		
PCS's direct effect on AE (PCS -> AE)	Full Partial Regression	Supported (p=.0000)
BB's direct effect on AE (BB -> AE)	Full Partial Regression	Supported (p=.0387)
BB's moderating effect on PQ (PQ*BB -> AE)	Full Partial Regression	Supported (p=.0033)
BB's moderating effect on PCS (PCS*BB -> AE)	Full Partial Regression	Not supported (p=.1378)

cognitive responses generated by perceived quality included testing of perceived quality's direct effect on attitudes toward brand extensions.

The existence of direct effects from perceived quality was again demonstrated by hierarchical regression analysis (p=.000). Perceived quality explained 41.8% of the variance in attitudes toward brand extensions. A fully partialed regression model which included all three constructs' main effects also produced a significant positive main effect of perceived quality on attitudes toward brand extensions (sr^2=.2875, p=.000).

To summarize, perceived quality has a strong positive main effect on attitudes toward brand extensions. Consumers show more favorable attitudes toward extensions associated with high quality than extensions associated with low quality. While results of the current study agree with most previous brand extension studies (Aaker 1990; Boush 1988; Tauber 1981,1988; Thompson 1988; University of Minnesota 1987), they also present good contrasting evidence against Aaker and Keller's (1990) study which reported that perceived quality has no significant main effect.

Role of Product Category Similarity

Moderating Effect of Product Category Similarity. Product category similarity was hypothesized to have only a moderating effect on perceived quality's effect on attitudes toward brand extensions in the categorization theory model (H2a). More specifically, among high quality brands, consumers were supposed to have more positive attitudes for extensions into similar product categories (H2a1). Among low quality brands, consumers were supposed to have more positive attitudes for extensions into dissimilar product categories (H2a2). A direct main effect of product category similarity was not considered, and, thus, product category similarity's hypothesized role in categorization theory was confined to that of a pure moderator variable (Sharma, Durand, and Gur-Arie, 1981).

Test results showed that the moderating role of product category similarity was strongly supported (sr^2=.0634, p=.0000). However, product category similarity's role was not limited to a pure moderator role. The pattern of the moderator effect also was different from the hypothesized pattern. Specifically, when brands were associated with high quality, consumers showed much more favorable attitudes toward similar extensions than dissimilar extensions. Among low perceived quality brands, however, consumers' attitudes were practically indifferent between these two types of extensions although consumers seemed to prefer dissimilar ones. To summarize, while hypothesis 2a1 was supported, hypothesis 2a2 was not.

The existence of a probable moderating effect of product category similarity on perceived quality has, in fact, been well documented. Studies by Thompson (1988), Aaker and Keller (1990), and University of Minnesota (1987) all reported significant interaction effects between perceived quality and product category similarity.

Direct Effect of Product Category Similarity. Contrary to the categorization theory model, product category similarity was hypothesized to have a positive main effect on attitudes toward brand extensions in the cognitive response theory model (H2b, H2c, and H2d). As in the case of perceived quality, product category similarity was hypothesized to affect cognitive responses first, and the cognitive responses generated by product category similarity subsequently to have a direct effect on attitudes toward brand extensions.

Hierarchical regression analysis showed that product category similarity has a positive main effect on attitudes toward brand extensions. Results were significant (sr^2=.2395, b=.4894, t=8.820, p=.0000). Regression results employing fully partialed models also supported a positive main effect (sr^2=.1259, b=.3635, t=8.438, p=.0000).

Because product category similarity's direct effect in the cognitive response theory model was checked with the CR only data set, product category similarity's main effect was checked again with the combined (i.e., pooled) data set. A fully partialed regression model which includes all main and two way interaction effects was employed (see Table 6-2). The same pattern of results was identified (sr^2=.1092, b=.3345, t=11.495, p=.0000; see Tables 6-1 and 6-2). Product category similarity had a strong positive main effect. Consumers preferred similar extensions over dissimilar extensions.

Table 6-2
Summary Results of Fully Partialed Regression Model for Effects not Hypothesized[1]

Multiple R	.76648
R Square	.58750
Adjusted R Square	.58254
Standard Error	1.00902

	DF	Sum of Squares	Mean Square
Regression	6	723.57481	120.59580
Residual	499	508.04574	1.01813

F = 118.44860 Signif F = .0000

------------- Variables in the Equation -----------------

Variable	B	SE B	Beta	sr^2	T	Sig T
PQ	.785015	.040131	.574116	.3163	19.561	.0000
PCS	.304022	.026449	.334524	.1092	11.495	.0000
BB	.014950	.007212	.060204	.0036	2.073	.0387
PQPCS	.186318	.021345	.251810	.0630	8.729	.0000
PQBB	.018848	.006382	.086751	.0072	2.953	.0033
PCSBB	-.006340	.004265	-.043491	.0018	-1.487	.1378
Constant	3.597770	.045541			79.001	.0000

[1]Due to the interaction terms involved, this regression model has multicollinearity problems. The beta coefficients are very unstable and, thus, difficult to interpret. A recommended technique is centering of data (Cohen and cohen 1983). Instead of original values, mean deviation values of each data point were employed for the analysis of this regression model.

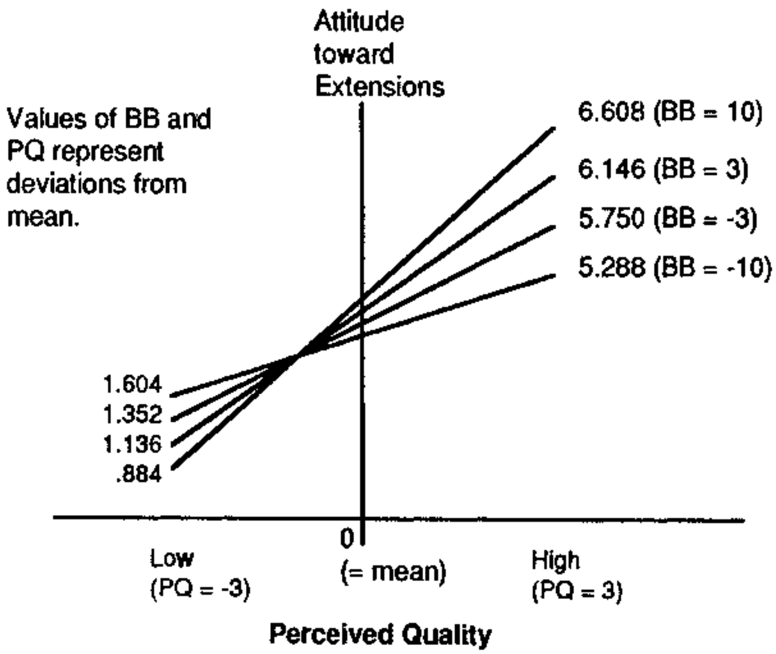
Evidence of product category similarity's direct effect is abundant. Various studies (Aaker and Keller 1990; Boush and Loken 1991; Thompson 1988) already confirmed product category similarity's direct effect on attitudes toward brand extensions. For example, Thompson (1988) reported that product category similarity accounted for 22.2% and 28.9% of explained variances of consumer attitudes toward brand extensions for brand extensions in the high involvement product category. The present study provided one more corroborating piece of evidence for product category similarity's direct effect on attitudes toward brand extensions.

Role of Brand Breadth

Moderating Effect of Brand Breadth. Under the perspective of categorization theory, brand breadth was supposed to moderate the interaction effect between product category similarity and perceived quality on attitudes toward brand extensions (H3a). However, hierarchical regression results showed no support for the three way interaction effect (sr^2=.0000, b=-.0093, t=-.029, p=.9765).

There was, however, a significant interaction between brand breadth and perceived quality. Brand breadth significantly moderated the relationship between perceived quality and attitudes toward brand extensions (sr^2=.0072, b=.0868, t=2.953, *p*=.0033; see Table 6-2). A plot of the regression lines showing the interactive relationship is contained in Figure 6-1. When brands were associated with high quality, consumers prefered extensions from broad brands over those from narrow brands. When brands were associated with low quality, however, consumer preference of extensions shifted from broad brands to narrow brands, although the differences in preference were smaller.

Figure 6-1
Regression Lines Showing Interaction Relationships Between PQ and BB



[1] The employed regression model was: AE = 3.596 + .784(PQ) + .306(PCS) + .015(BB) + .185(PQPCS) + .017(PQBB)
[2] PCS was held at the mean value of 0 for the above graphs.

The interaction between brand breadth and product category similarity was also checked. Brand breadth failed to produce a significant moderating effect on product category similarity (see Table 6-2). These results are counter to those found by Boush and Loken (1991). According to Boush and Loken (1991), brand breadth has a moderating effect on product category similarity. However, interaction effects between product category similarity and brand breadth were not supported (sr^2=.0018, *p*=.1378)[3].

Direct Effect of Brand Breadth. As mentioned earlier, the possible existence of a direct effect of brand breadth was suggested by Boush and Loken (1991) and Keller and Aaker (1992). However, neither study specifically examined this direct effect.

Under the perspective of cognitive response theory model, brand breadth was hypothesized to have an independent main effect on cognitive responses, and cognitive responses generated by brand breadth to have a direct effect on attitudes toward brand extensions (H3b, H3c, and H3d). Hierarchical regression analysis with the CR only data set confirmed the existence of brand breadth's direct effect (sr^2=.0636, b=.2521, t=4.095, *p*=.0001). Regression analysis with a fully partialed model also supported a direct main

[3]In their study, Boush and Loken (1991) employed only brands associated with high quality. To check if the interaction effect is significant among high quality brands, data was divided into two sets: low quality brands and high quality brands. Regression analyses with both data sets, however, failed to find any significant interaction effects between product category similarity and brand breadth.

effect of brand breadth (sr^2=.0148, b=.1237, t=2.894, p=.0041).

Brand breadth's direct effect was tested with the pooled data set. Analysis results of a fully partialed regression model again confirmed the significance of the main effect of brand breadth on attitudes toward brand extension (sr^2=.0036, b=.0602, t=.2073, p=.0387; see Table 6-2).

Overall, the existence of a direct positive effect for brand breadth seems to be quite evident. Consumers expressed more positive attitudes toward extensions from broad brands than those from narrow brands. As Keller and Aaker (1992) suggested, through their association with diverse skills, experiences, knowledge, and resources, broad brands are in a better position to be attractive to consumers than are narrow brands. Results of the current study showed that broad brands indeed have a competitive edge over narrow brands in a brand extension situation.

Theoretical Perspectives

Categorization theory was a popular choice for a theoretical background in many recent brand extensions studies. However, due to some questions related to the usage of categorization theory, this study pitted two different theoretical perspectives against one another to clarify the roles of the three constructs, PQ, PCS, and BB. A model based on cognitive response theory was developed and pitted against a model based on categorization theory. Each theoretical perspective is next examined, based on study results.

Perspective of Categorization Theory

Study results showed that categorization theory may not be adequate to explain the roles of the three constructs. Only perceived quality's role was confirmed as hypothesized based on categorization theory. The other two constructs did not perform as hypothesized. First, product category similarity was not confined to a moderating role; product category similarity had its own main effect on attitudes toward brand extensions. Although consumers seemed to favor dissimilar extensions among brands associated with low quality, the difference in preferences between similar extensions and dissimilar extensions was not significant.

Next, brand breadth did not work as suggested by categorization theory. Not only was the moderating effect of brand breadth on the interaction between perceived quality and product category similarity not significant, but also the existence of a positive main effect of brand breadth was quite evident. Moreover, a moderating effect of brand breadth on perceived quality, which was not predicted based on categorization theory, was also identified. Although categorization theory provides a strong theoretical framework for consumer attitude formation in brand extension, its explanatory power seems limited.

Perspective of Cognitive Response Theory

Study results generally supported hypotheses developed under the perspective of cognitive response theory. All three constructs had significant main effects on the number of cognitive responses generated by each construct, and cognitive responses had direct effects on attitudes toward brand extensions.

As mentioned, however, the key point in the cognitive response model is the mediating effect of cognitive responses. Although the existence of a mediating effect was confirmed, the effect was not perfect. After cognitive responses were controlled as a covariate, significant main effects from all three constructs remained, especially from perceived quality and product category similarity. For example, hierarchical regression results showed significant direct effects associated with perceived quality still remained (sr^2=.0706, b=.3214, t=7.007, p=.0000). Similar results were obtained in the analysis of product category similarity (sr^2=.0505, b=.2420, t=5.767, p=.0000). Only brand breadth's direct effects on attitudes toward brand extensions became insignificant (sr^2=.0063, b=.0819, t=1.933, p=.0543) when cognitive responses were treated as a covariate.

In addition to problems associated with direct effects of perceived quality and product category similarity on attitudes toward brand extensions, cognitive response theory does not provide a strong theoretical background to support an interaction effect among constructs. Thus, although cognitive response theory provides a good framework to explain consumer attitude formation toward brand extensions, it still needs help from some other theoretical perspective to provide a complete explanation.

Which Perspective Is Better?

Test results of both theories showed that neither theory is adequate for explaining how consumers form attitudes toward brand extensions. Consumers do not solely depend on a quick categorical approach to make their evaluative judgments about a brand extension. Although categorization is a fundamental cognitive activity of human beings, it does not necessarily mean consumers' evaluative judgments are determined only by the categorization process. By the same token, consumers do not develop their affective responses only with generated thoughts. Consumers use more than cognitive responses in forming their attitudes.

As discussed in Chapter III, consumers' cognitive responses are fundamentally end results of the categorization process. Perspectives of both theories are not independent, rather they are interrelated. Therefore, employing only one theory to explain consumer information processing in brand extension situations is not the correct approach. A better theoretical framework can be developed if both theories are combined.

In fact, the recent literature in attitude formation tries to combine a category based approach and a traditional piecemeal based approach (Cohen and Basu 1987; Fiske and Pavelchak 1986; Sujan 1985). This approach suggests that consumer attitudes toward a stimulus are formed through a two pronged process: a rapid response and a slow response. While a rapid affective (and/or cognitive) response forms through category-based processes, a slower and more deliberate affective (and/or cognitive) response forms through a piecemeal-based approach. In most cases, consumers' affective (and/or cognitive) responses toward a stimulus are through the combination of both approaches (Cohen and Basu 1987; Fiske and Pavelchak 1986).

Although cognitive response theory is not the same as the piecemeal-based approach which stems from the traditional multiattribute model (see Fishbein and Ajzen 1975), the mediating effect of cognitive responses - i.e., consumers' evoked thoughts and ideas - certainly implies a slower and more deliberate piecemeal type of approach (Carlston 1980, Fiske and Pavelchak 1986, Lingle and Ostrom 1979). For example, cognitive response theory assumes that, upon facing a brand extension, consumers will generate various preexisting thoughts and ideas associated with the evoked categories. Because evaluative judgements are believed to be attached to each generated thought and idea, attitudes toward extensions are formed through a combined score of all those positive and negative thoughts. From this viewpoint, attitude formation under the cognitive response theory approach is very similar to the slow and deliberate piecemeal approach[4] (Fiske and Pavelchak 1986).

To summarize, combining a categorization theory perspective and a cognitive response theory perspective may provide a more complete picture about how consumers form attitudes toward a brand extension. While a quick response can be represented by a categorization model, a slow and deliberate response is better represented by a cognitive response model. Moreover, if the two theoretical perspectives are combined, the new model can explain both the direct effects of product category similarity and brand

---

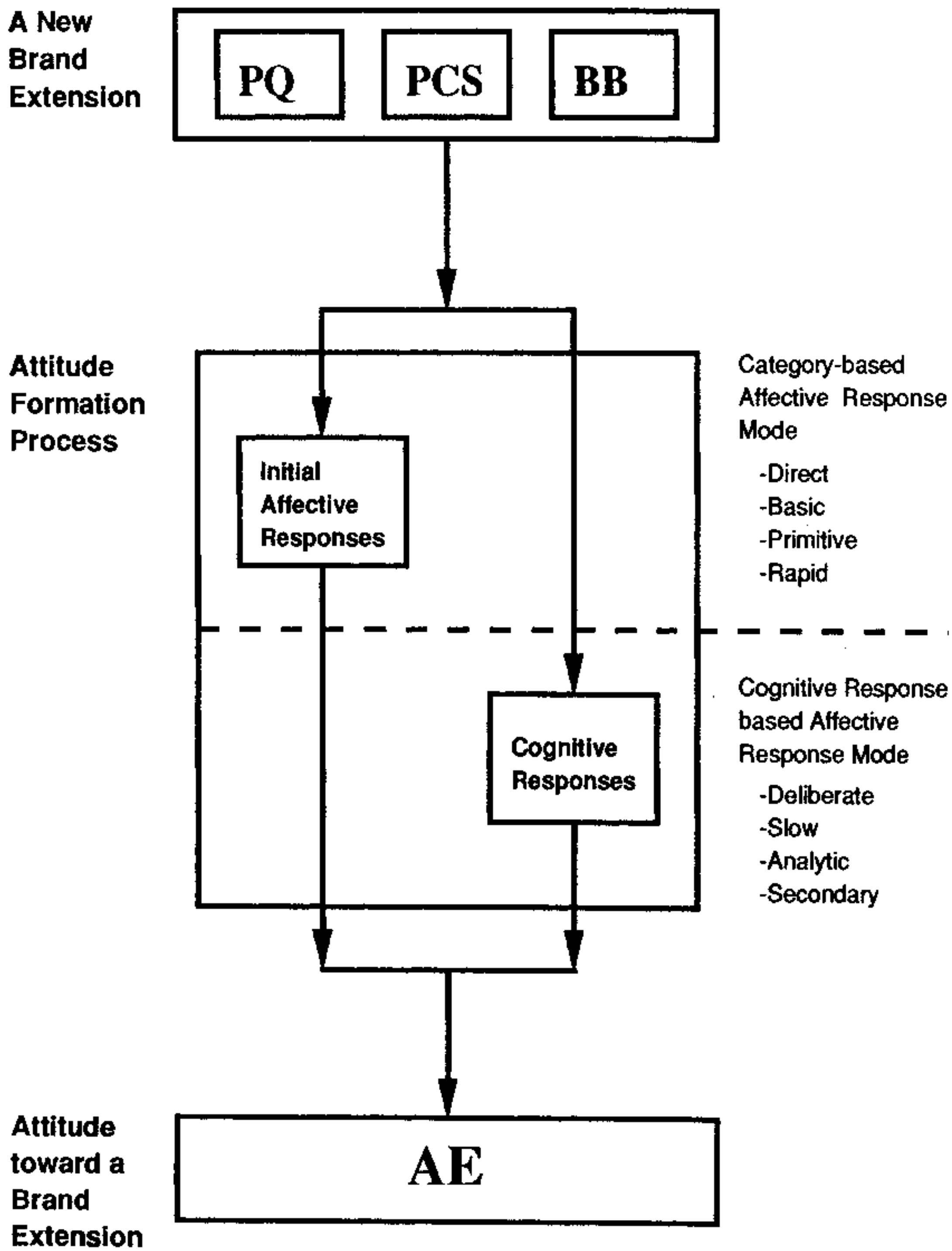
[4]The major difference between the cognitive response theory approach and the piecemeal based approach is in the factors on which consumers put their evaluative judgments. While cognitive response theory proposes that attitudes are formed by evoked thoughts upon facing a stimulus, the piecemeal based approach assumes attitudes are determined by attributes of the stimulus.

breadth (which categorization theory could not explain), provide a theoretical background for interactions among constructs (which cognitive response theory could not provide), and complement the imperfect mediating roles of cognitive responses generated by the three constructs.

The combined model is depicted in Figure 6-2. Briefly, a new brand extension posesses three dimensions which are important for determining consumers' attitudinal responses: perceived quality (PQ) of the parent brand, product category similarity (PCS) between the extension category and the parent product category, and brand breadth (BB) of the parent brand. Either independently or jointly, each of these three factors affects consumers' attitudes toward the brand extension via two independent, yet interrelated, processes: an initial category-based affective response mode and a cognitive response-based mode.

The category based affective response mode is an instantaneous and affect-laden process (Fiske and Pavelchak 1986). Affective responses developed through this route are instantaneous and primitive. Affect associated with the parent brand (PQ and BB) and similarity (PCS) are directly transferred to form attitudes toward the new brand extension. These attitudes toward the brand extension are developed very rapidly and are believed to precede cognitive and affective responses formed through cognitive response-

Figure 6-2
The Combined Model Explaining Consumer Attitude Formation Toward a Brand Extension



based processes. Because they are developed without deep thoughts, these affective responses are not stable.

The cognitive response mode is a slow and cognitions-oriented process (Carlston 1980, Fiske and Pavelchak 1986, Lingle and Ostrom 1979). Based on the three constructs, PQ, PCS, and BB, consumers generate various beliefs, images, and thoughts about the new brand extension. These cognitions then contribute to further attitude formation through an analytical process similar to the multiattribute-type attitude formation process (Fiske and Pavelchak 1986).

Consumers' final attitudes toward the brand extension will be formed after the early category-based affective responses are adjusted by later cognitive and affective responses generated through the cognitive response mode. In other words, consumers' attitudes toward a brand extension are determined by the combined responses to both processes.

Future Research

Several future research questions are pertinent to enhancing the knowledge base in the area of brand extension. First, how can the combined theoretical model be tested? The combined model is new in brand extension. It can provide new opportunities to test the nature of category-based and cognitive response-based information processing in consumer attitude formation toward new brand extensions and toward new products in general. Although the current study dealt with both theories, they were tested separately. Testing of the joint effects may shed new light on consumer attitude formation process.

Second, what other constructs can be incorporated in the combined framework? Although the three constructs are certainly very important elements in forming attitudes toward brand extensions, there may be some other constructs - for example, knowledge, involvement, and satisfaction (or dissatisfaction) - which may or may not have significant effects. If some constructs indeed have significant effects, will the two theories be able to explain these constructs' roles within the combined framework?

Third, can the combined model be applicable in the brand extension of services? Brand extension studies have yet to be done in a service context, and tests of a new combined model in the service area may improve the validity of the model.

Fourth, how do consumers form attitudes toward brand extensions when they have a conflict in the quality evaluation of a brand. For example, if a consumer has positive quality perception toward Gold Star microwave ovens but has a poor quality perception of Gold Star TVs, how will she or he develop attitudes toward a new Gold Star camcorder? Will the consumer use the TV experiences as an anchor point, or the microwave experiences? Conflicting experiences over one brand name may not be uncommon, but their effects on attitudes toward brand extensions need further research.

Finally, further investigation is required to develop a more sensitive scale for the cohesiveness dimension in brand breadth. Although certain limitations existed in the brand breadth manipulation for real brands, the measurement of the cohesiveness dimension was not sensitive enough to distinguish between narrow brands and broad brands.

CHAPTER REFERENCES

Aaker, David A. (1990), "Brand Extensions: The Good, the Bad, and the Ugly," Sloan Management Review, 31 (Summer), 47-56.

_____ and Kevin L. Keller (1990), "Consumer Evaluations of Brand Extensions," Journal of Marketing, 54 (January), 27-41.

Boush, David M. (1988), "A Categorization Model of Attitude Transfer and Its Application to Brand Extension," Unpublished Doctoral Dissertation, University of Minnesota, Minneapolis, MN.

_____ and Barbara Loken (1991), "A Process-Tracing Study of Brand Extension Evaluation," Journal of Marketing Research, 28 (February), 16-28.

Carlston, Donal E. (1980), "The Recall and Use of Traits and Events in Social Inference Processes," Journal of Experimental Social Psychology, 16, 303-328.

Cohen, Jacob and Patricia Cohen (1983), Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences, 2nd ed., Hillsdale, NJ: Lawrence Erlbaum.

Cohen, Joel B. and Kunal Basu (1987), "Alternative Models of Categorization: Toward a Contingent Processing Framework," Journal of Consumer Research, 13 (March), 455-472.

Fishbein, Martin and Icek Ajzen (1975), Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research, Reading, MA: Addison-Wesley Publishing Co.

Fiske, Susan T. and Mark A. Pavelchak (1986), "Category-Based versus Piecemeal-Based Affective Responses: Developments in Schema-Triggered Affect," in Handbook of Motivation and Cognition: Foundations of Social Behavior, Richard M. Sorrentino and E. Tory Higgins eds., New York: Guilford Press, 167-203.

Keller Kevin L. and David A. Aaker (1992), "The Effects of Sequential Introduction of Brand Extensions," Journal of Marketing Research, 29 (February), 35-50.

Lingle, John H. and Thomas M. Ostrom (1979), "Retrieval Selectivity in Memory-Based Impression Judgments," Journal of Personality and Social Psychology, 37 (2), 180-194

Sharma, Subhash, Richard M. Durand, and Oded Gur-Arie (1981), "Identification and Analysis of Moderator Variables," Journal of Marketing Research, 18 (August), 291-300.

Sujan, Mita (1985), "Consumer Knowledge: Effects on Evaluation Strategies Mediating Consumer Judgments," Journal of Consumer Research, 12 (June), 31-46.

Tauber, Edward M. (1981), "Brand Franchise Extension: New Product Benefits From Existing Brand Names," Business Horizons, 24 (March/April), 36-41.

_____ (1988), "Brand Leverage: Strategy for Growth in a Cost-Control World," Journal of Advertising Research, 28 (August-September), 26-30.

Thompson, Kenneth Neil (1988), "An Exploratory Model of Consumer Brand Extension Behavior," Unpublished Doctoral Dissertation, University of Colorado, Boulder, CO.

University of Minnesota Consumer Behavior Seminar (1987), "Affect Generalization to Similar and Dissimilar Brand Extensions," Psychology and Marketing, 4 (3), 225-237

APPENDIX A

MEASURES OF TYPICALITY

Family Resemblance Method (Rosch 1975; Rosch and Mervis 1975)

"This is a very simple experiment to find out the characteristics and attributes that people feel are common to and characteristic of different kinds of ordinary everyday objects. For example, for bicycles you might think of things they have in common like two wheels, pedals, handlebars, you ride on them, they don't use fuel, etc. For dogs you might think of things they have in common like having four legs, barking, having fur, etc.

There are six pages following this one. At the top of each is listed the name of one common object. For each page, you'll have a minute and a half to write down all of the attributes of that object that you can think of. But try not to just free associate -- for example, if bicycles just happen to remind you of your father, don't write down father.

Okay -- you'll have a minute and a half for each page. When I say turn to the next page, read the name of the object and write down the attributes or characteristics you think are characteristic of that object as fast as you can until you're told to turn the page again."

Ideal Attribute Method (Barsalou 1983, 1985)

The instruction sheet directed subjects to read both the vignette and the category label, to look through the six items that followed, and to circle those belonging to the category; there was no constraint on the number they could circle. Next, they were to rank all six items from the best example of the category to the worst, with no ties.

"Ways to Make Friends

Martin had moved from the midwest to the west coast over a year ago. He had encountered much trouble making friends since he had arrived in California and could not think of anyone he presently considered a good friend. He decided it was time to do something about it.

join a card playing club
get convicted for murder
don't take a bath more often than once a month
go back to school
have a garage sale
get convicted for burglary"

<u>Salient Attribute Method</u> (Ward, Loken, Ross, and Hasapopoulos 1986; Loken and Ward 1987)

Subjects were asked to list "the positive and negative attributes, qualities or characteristics of a shampoo that would increase (or decrease) your chances of purchasing it."

"Beliefs on nine attributes were measured on likelihood scales from 0 (extremely unlikely) to 10 (extremely likely)."

The (brand name) shampoo would
control my dandruff.
make my hair feel clean.
lather well.
make my hair smell nice.
be gentle and not drying to my hair.
give my hair body and manageability.
make my hair feel shiny.
be convenient to use.
be expensive to purchase.

<u>Free Recall Method</u> (Boush 1988)

The instruction should ask subjects to give examples of a category.

Ex: Please write down all the names of 'bird.'
Please write down all the names of 'mammal.'
Please write down all the names of 'fruit.'

<u>Representativeness Method</u> (Rosch 1973; Mervis and Rosch 1981)

" ---- On this form you are asked to judge how good an example of a category various instances of the category are. The first category is "fruit." On the left side of the page are six different kinds of fruit; the first is "apple." To the right of apple are seven blanks; the blank closest to apple is to be checked if an apple is a good example of your idea or image of what a fruit is; the blank to the extreme right is to be checked if apple fits very poorly with your idea or image of a fruit. The other blanks represent the range in between a very good and very poor fit -- for example, the middle blank represents a moderate fit. Mark one and only one blank for "apple," one and only one blank for "fig," one and only one for "strawberry," etc. ---- "

APPENDIX B

MEASURES AND/OR DIMENSIONS OF FIT

Aaker and Keller's (1990) Measures

Three seven-point scale items were used to measure fit. They were (1) TRANSFERABILITY: the usefulness of manufacturing skills and resources in the original product class for making the extension product (1 = not at all helpful, 7 = very helpful), (2) COMPLEMENTARITY: complementarity of the original and extension product classes in use (1 = low, 7 = high), and (3) SUBSTITUTABILITY: substitutability of the original and extension products in use (1 = low, 7 = high).

Park, Milberg, and Lawson's (1991) Measures

Three five-point scale items were used to measure fit. They were: (1) how similar the extension product is to a watch, (2) how important the characteristics "reliability" and "durability" are when people buy these products, and (3) how important the characteristics "luxury" and "status" would be in deciding to buy these products.

** Chakravarti, MacInnis, and Nakamoto (1990) and Farquhar, Herr, and Fazio (1990) suggested dimensions for fit, but specific measures of fit based on their dimensions have never been developed.

APPENDIX C

RESULTS OF PRETESTS

Table C-1
Principal Component Factor Analysis Results of the Final 28 Perceived Quality Measure Items in the Second Pretest Using Varimax Rotation

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Q2	.64549	-.09610	.11933	.01816	.22246	.21323
Q3	.76257	-.03348	.11760	-.08406	.20181	.19590
Q4	.71494	.02518	-.15884	-.18290	.18203	-.09107
Q5	.83677	.11147	-.05266	-.00428	.17508	.00501
Q7	.89336	-.05153	.07992	-.00787	.03610	.03670
Q8	.75872	-.07190	.22143	.09406	.04864	.16530
Q10	-.06824	.25319	.18770	.78825	.20382	.07639
Q11	-.10028	.32210	.22734	.70422	.18851	.14674
Q12	.01621	.17128	.11524	.85835	.14107	.19225
Q15	-.04020	.10431	.21900	.85506	.10455	.12774
Q23	.19166	.13259	.11054	.15851	.87935	.09622
Q24	.15292	.14530	.01066	.16169	.86054	.07793
Q26	.20905	.07981	.14539	.18562	.79490	-.07499
Q28	.25839	.10788	-.06869	.04421	.82037	.06155
Q30	-.12880	.71529	.08950	.22851	.31372	.22868
Q31	-.03636	.88140	.15502	.12672	.13906	.18851
Q33	-.13398	.82247	.25352	.11530	.04097	.20715
Q34	-.04779	.77064	.18327	.30309	.18551	.30807
Q38	.17484	.76621	.01992	.20139	.00243	.29120
Q41	.07805	.22937	.05826	.17570	.04448	.87147
Q43	.19741	.32310	.23204	.17117	.06930	.77422
Q46	.18081	.39749	.12701	.04992	.01372	.74457
Q49	.10016	.26709	.24984	.14340	.06057	.81562
Q54	.03875	.19352	.82154	-.01686	.15565	.13383
Q55	.12706	.12246	.74176	.08824	.12539	.21596
Q56	.05487	.08137	.89838	.18149	-.03982	.15222
Q57	.06777	.13518	.82095	.28092	-.01579	.18218
Q58	.02461	.09529	.71253	.43712	-.02806	-.12673

Table C-2
Results of the First Pretest of Product Category Similarity Measure

Coefficient Alpha	Items	Loading on Factor 1	Corrected Item-total Correlation	Alpha If Item Deleted
.9012	P1	.73095	.6343	.8943
	P2	.72456	.6313	.8936
	P3	.76930	.6859	.8891
	P4	.47484	.3934	.9128
	P5	.85919	.8035	.8774
	P6	.81170	.7426	.8837
	P7	.89825	.8482	.8740
	P8	.86815	.7940	.8793
.9305	P1	.82318	.7613	.9213
	P2	.82515	.7672	.9208
	P3	.78053	.7188	.9244
	P4	.75819	.6857	.9270
	P5	.86577	.8158	.9172
	P6	.87806	.8281	.9160
	P7	.76129	.6881	.9265
	P8	.86746	.8160	.9170
.7989	P1	.45245	.3769	.7978
	P2	.32039	.2058	.8129
	P3	.39861	.3314	.8016
	P4	.13246	.0968	.8305
	P5	.88783	.7561	.7298
	P6	.79960	.6496	.7521
	P7	.94185	.8624	.7126
	P8	.88949	.8227	.7135
.7941	P1	.46861	.4191	.7898
	P2	.81885	.6544	.7456
	P3	.26753	.2533	.8057
	P4	.72828	.5765	.7591
	P5	.77703	.5919	.7564
	P6	.75348	.5907	.7579
	P7	.56544	.4624	.7779
	P8	.71021	.5523	.7706

Table C-3
Mean Brand Breadth Scores for Various Brands Employed in the First Pretest

Brands	Number Dimension	Cohesiveness Dimension	Overall Mean	Multiplied Value	N
GE	5.83	3.11	4.47	18.21	35
Yamaha	4.05	3.57	3.81	14.73	35
IBM	4.11	2.33	3.22	10.00	35
Hyundai	2.97	3.19	3.08	10.14	35

Table C-4
Mean Brand Breadth Scores for Various Brands Employed in the Second Pretest

Brands	Number Dimension	Cohesiveness Dimension	Overall Mean	Multiplied Value	N
Sony	6.29	2.48	4.38	15.60	23
B & D	5.54	3.05	4.30	16.90	22
Sylvania	4.76	2.92	3.84	13.90	17
JVC	5.22	2.25	3.74	11.75	16
Zenith	3.84	2.89	3.37	11.10	15
Daewoo	n/a	n/a	n/a	n/a	0

Table C-5
Preference Level of Various Fictitious Brands

Brands	Mean	Std Dev	Minimum	Maximum	N
ALTREX	.97	1.12	-1.0	3.0	35
COTAL	-.29	1.13	-3.0	2.0	35
TECHOUS	-.63	1.21	-3.0	2.0	35
OLMEC	.31	1.41	-3.0	3.0	35
SILLA	-.89	1.39	-3.0	2.0	35
ARIRANG	-1.09	1.50	-3.0	2.0	35
EGAP	-.57	1.50	-3.0	2.0	35
VENUX	.14	1.33	-3.0	2.0	35
TEGRAL	.29	1.34	-3.0	2.0	35
GPT	.06	1.19	-3.0	2.0	35
TPT	-.09	1.25	-3.0	2.0	35

Table C-6
Quality Ratings of Brand Names of Refrigerators

Brands	Mean	Std Dev	Minimum	Maximum	N
GE	8.19	1.08	5.0	9.0	21
Kenmore	8.09	1.15	6.0	9.0	22
Maytag	7.95	1.21	5.0	9.0	22
Whirlpool	7.86	1.13	5.0	9.0	22
Frigidaire	7.41	1.76	2.0	9.0	22
KitchenAid	6.52	2.23	1.0	9.0	21
Westinghouse	6.29	2.10	2.0	9.0	21
Amana	6.10	1.61	3.0	9.0	21
Tappan	5.86	1.85	2.0	9.0	21
RCA	5.77	2.33	2.0	9.0	22
Hotpoint	5.62	1.94	1.0	9.0	21
Magic Chef	5.57	2.20	1.0	9.0	21
Jenn-Aire	5.29	2.17	1.0	9.0	21
Sanyo	5.24	2.00	2.0	9.0	21
Gibson	5.00	1.41	3.0	8.0	21
Sub-Zero	4.62	2.16	1.0	9.0	21
Admiral	4.57	1.60	1.0	9.0	21
Signature	4.52	1.50	1.0	7.0	21
Avanti	4.52	1.57	1.0	7.0	21
Gold Star	4.52	1.29	2.0	7.0	21
Kelvinator	4.48	1.69	1.0	7.0	21
Roper	4.24	1.84	1.0	9.0	21
Excellence	4.05	1.50	1.0	7.0	21
Welbilt	3.95	1.43	1.0	6.0	21

Table C-7
Quality Ratings of Brand Names of Coffee Makers

Brands	Mean	Std Dev	Minimum	Maximum	N
Braun	7.75	1.39	4.0	9.0	16
Mr. Coffee	7.45	1.43	5.0	9.0	20
Black & Decker	7.40	1.47	4.0	9.0	20
Krups	6.83	2.04	3.0	9.0	12
Procter-Silex	6.44	1.63	4.0	9.0	16
Bosch	6.21	1.12	4.0	8.0	14
Bunn	6.00	1.41	4.0	8.0	14
Regal	5.92	1.19	4.0	8.0	13
Westbend	5.64	1.57	3.0	9.0	11

Table C-8
Quality Ratings of Brand Names of Microwave Ovens

Brands	Mean	Std Dev	Minimum	Maximum	N
Kenmore	7.64	1.29	5.0	9.0	22
GE	7.50	1.57	4.0	9.0	22
Panasonic	7.18	1.62	4.0	9.0	22
Maytag	7.05	1.53	5.0	9.0	22
Whirlpool	6.95	1.33	4.0	9.0	22
Sharp	6.67	1.53	2.0	9.0	21
Tappan	6.62	1.53	3.0	9.0	21
Westinghouse	6.52	1.72	3.0	9.0	21
Emerson	6.43	1.80	2.0	9.0	21
Frigidaire	6.32	1.64	3.0	9.0	22
Sanyo	6.24	1.64	2.0	9.0	21
Samsung	6.18	1.82	2.0	9.0	22
Hotpoint	6.14	2.08	1.0	9.0	21
Amana	5.95	1.99	2.0	9.0	21
Jenn-Aire	5.81	1.94	1.0	9.0	21
Quasar	5.57	1.75	1.0	8.0	21
Magic Chef	5.57	2.20	2.0	9.0	21
Admiral	5.29	1.93	1.0	9.0	21
Gold Star	4.76	1.64	2.0	7.0	21
Signature	4.75	1.41	2.0	7.0	20
Modern Maid	4.67	1.80	1.0	7.0	21
Caloric	4.33	1.80	1.0	7.0	21

Table C-9
Quality Ratings of Brand Names of Food Processors

Brands	Mean	Std Dev	Minimum	Maximum	N
Black & Decker	7.64	1.59	4.0	9.0	22
Panasonic	7.05	1.60	5.0	9.0	21
Sunbeam	6.81	1.89	2.0	9.0	21
Hamilton Beach	6.71	2.33	2.0	9.0	21
Braun	6.67	2.24	1.0	9.0	21
Cuisinart	6.10	2.70	1.0	9.0	21
Westbend	6.00	2.05	2.0	9.0	21
Regal	6.00	1.70	2.0	9.0	21
Betty Crocker	5.90	1.73	3.0	9.0	21
Presto	5.86	1.74	2.0	8.0	21
Waring	5.10	2.05	1.0	9.0	21
Moulinex	4.86	1.90	1.0	9.0	21

Table C-10
Quality Ratings of Brand Names of Camcorders

Brands	Mean	Std Dev	Minimum	Maximum	N
Sony	8.10	.72	7.0	9.0	20
Canon	7.79	1.40	5.0	9.0	19
Panasonic	7.60	.99	6.0	9.0	20
JVC	7.40	.99	6.0	9.0	20
Minolta	7.28	1.27	5.0	9.0	18
RCA	7.26	1.10	6.0	9.0	19
Magnovox	7.10	1.12	5.0	9.0	20
Hitachi	6.94	1.34	5.0	9.0	17
Sharp	6.79	1.93	2.0	9.0	19
GE	6.63	1.61	4.0	9.0	19
Ricoh	6.54	1.39	4.0	9.0	13
Memorex	6.33	1.68	3.0	9.0	18
Sanyo	6.00	1.91	2.0	9.0	19
Quasar	5.71	1.83	2.0	9.0	17
Emerson	5.68	2.16	2.0	9.0	19
Samsung	5.38	1.82	2.0	8.0	16
Yachica	5.30	1.49	3.0	9.0	10
Fujix	5.27	1.19	3.0	7.0	11
Chinon	5.17	1.19	3.0	7.0	12
Signature	5.00	1.41	3.0	8.0	13
Bell & Howell	4.91	1.58	1.0	7.0	11
Gold Star	4.57	1.95	1.0	8.0	14

Table C-11
Quality Ratings of Brand Names of Hi-fi Stereos

Brands	Mean	Std Dev	Minimum	Maximum	N
Kenwood	8.15	1.04	6.0	9.0	20
Sony	8.00	1.17	4.0	9.0	20
Yamaha	7.74	1.45	4.0	9.0	19
Pioneer	7.70	1.34	5.0	9.0	20
JVC	7.53	.96	6.0	9.0	19
Fisher	7.11	2.05	1.0	9.0	18
Panasonic	7.05	1.28	4.0	9.0	20
Hitachi	6.72	1.36	4.0	9.0	18
Technics	6.71	1.49	4.0	9.0	17
Onkyo	6.33	2.02	4.0	9.0	12
Magnovox	6.32	1.60	4.0	9.0	19
Sharp	6.30	1.92	2.0	9.0	20
RCA	6.25	1.94	2.0	9.0	20
Sanyo	6.19	1.89	2.0	9.0	21
Aiwa	6.17	2.12	2.0	9.0	12
Teac	5.93	1.54	3.0	8.0	14
Samsung	5.78	1.83	3.0	9.0	18
Emerson	5.65	2.18	2.0	9.0	20
Koss	5.30	2.00	3.0	9.0	10
Yorx	5.29	2.13	1.0	8.0	14
Craig	4.79	1.85	2.0	9.0	14
Garrad	4.67	2.18	1.0	8.0	9
JC-Penny	4.33	1.41	2.0	8.0	18
Symphonic	4.30	1.64	2.0	8.0	10
Gold Star	4.14	1.66	2.0	8.0	14
Soundesign	4.12	1.36	2.0	7.0	17

Table C-12
Quality Ratings of Brand Names of VCRs

Brands	Mean	Std Dev	Minimum	Maximum	N
Sony	8.59	.59	7.0	9.0	22
Panasonic	7.55	1.63	5.0	9.0	22
JVC	7.45	1.44	4.0	9.0	22
Mitsubishi	7.41	1.40	4.0	9.0	22
Magnovox	7.18	1.59	5.0	9.0	22
RCA	7.14	1.64	4.0	9.0	22
Sharp	7.09	1.48	5.0	9.0	22
Zenith	7.09	1.44	5.0	9.0	22
Sanyo	6.41	2.15	2.0	9.0	22
Fisher	5.86	2.01	2.0	9.0	21
Emerson	5.81	2.02	2.0	9.0	21
Memorex	5.76	1.89	2.0	9.0	21
Samsung	5.62	1.99	2.0	9.0	21
Sears	5.41	1.37	3.0	8.0	22
Philips	5.10	2.21	1.0	9.0	21
Quasar	4.86	1.82	1.0	8.0	21
Teac	4.71	2.31	1.0	9.0	21
Symphonic	4.67	1.59	2.0	8.0	21
Proscan	4.65	1.84	1.0	9.0	20
Bell & Howell	4.62	1.32	1.0	7.0	21
Admiral	4.43	1.89	1.0	9.0	21
Gold Star	4.43	1.25	2.0	7.0	21
Signature	3.95	1.47	1.0	7.0	21
Daewoo	3.71	1.74	1.0	7.0	21

Table C-13
Distribution of Subjects in Each Treatment
for the Pilot Experiment

Manipulation Types[1]	With CR	Without CR	Total
111	6	4	10
121	5	7	12
112	6	6	12
122	8	6	14
211	7	3	10
212	7	6	13
221	7	6	13
222	8	5	13
Total	54	43	97

[1] The first digit represents perceived quality: 1 is high and 2 is low. The second digit represents brand breadth: 1 is narrow, and 2 is broad. The third digit represents product category similarity: 1 is high, and 2 is low. For example, 211 means low perceived quality, narrow brand, and high product category similarity.

Table C-14
Characteristics of Subjects in the Pilot Experiment

Category	Subcategory	N	Percent
Sex	Male	41	43.2
	Female	54	56.8
	Total	95	100.0
Status	Freshman	1	1.1
	Sophomore	0	0.0
	Junior	36	37.9
	Senior	53	55.8
	Graduate	5	5.3
	Total	95	100.0
Age	Less than 20	1	1.1
	20 to 29	85	89.5
	30 or more	9	9.5
	Total	95	100.0
Major	Business	55	57.9
	Non-business	40	42.1
	Total	95	100.0

Table C-15
Manipulation Results of Three Factors
in the Pilot Experiment

Factors	Types	n	Mean Ratings	t-value	*p*-value
PQ	High	48	5.0745	23.66	.000
	Low	49	2.2238		
PCS	High	52	4.7957	13.54	.000
	Low	45	2.1611		
BB	Broad	45	14.7351	4.72	.000
	Narrow	52	9.1331		

Table C-16
Manipulation Results of Brand Breadth in
the Pilot Experiment

Types	Ratings in Number Dimension	Ratings in Cohesiveness Dimension	Overall Ratings of Brand Breadth	
			Avg.[1]	Multpl.[2]
Broad	4.52	3.29	3.90	14.74
Narrow	3.22	2.79	3.00	9.13

[1]: Average values.
[2]: Multiplied values.

Table C-17
Effects of Cognitive Responses Measurement and Manipulation Checks Order on Attitudes in the Pilot Experiment

Types[1]	n[2]	Mean Attitudes	t-value (2 tailed)	*p*-value (2 tailed)
111	6	4.3519	.25	.808
	4	4.1944		
121	5	3.9556	.88	.400
	7	3.0635		
112	6	5.4074	1.33	.212
	6	4.8704		
122	8	4.8472	-.33	.746
	6	4.9815		
211	7	1.6984	-.26	.801
	3	1.8519		
221	7	2.1429	.80	.440
	6	1.8889		
212	7	2.0635	-1.00	.340
	6	2.5000		
222	8	2.0694	-1.94	.078
	5	2.8000		

[1] The first digit represents perceived quality: 1 is high and 2 is low. The second digit represents brand breadth: 1 is narrow, and 2 is broad. The third digit represents product category similarity: 1 is high, and 2 is low.

[2] The first figure represents number of observations without cognitive responses and those receiving manipulation checks before rating a dependent measure. The second figure represents number of observations with cognitive responses and those receiving manipulation checks afterwards.

APPENDIX D

LIST OF 51 DURABLE GOODS

Table D-1
List of Durable Goods

Dryer	Electronic blanket	Refrigerator
Ski set	Copying machine	Binoculars
Freezer	Electric razor	Camcorder
Piano	Microwave oven	Desk lamp
Fur coat	Burglar alarm	Heating pad
Mixer	Washing machine	Dishwasher
TV	Food processor	Coffee maker
VCR	Vacuum cleaner	Corn popper
Toaster	Answering machine	Slow cooker
Sofa bed	Air conditioner	Curling iron
Bicycle	Fire extinguisher	Lawn mower
Camera	Pencil sharpener	Sail boat
Stapler	Hand calculator	Desk clock
Heater	Smoke detector	Exercise bike
Car	Personal computer	Desktop radio
Printer	Coffee grinder	Hi-fi stereo
CD player	Weight lifting eq.	Power drill

APPENDIX E

CALCULATION OF EFFECT SIZES (f^2) FROM THOMPSON'S (1988) STUDY

Squared correlation coefficients (r^2) of variables

	High Involvement	Low Involvement
PBA	.168	.053
P-ELC	.289	.023
PBS	.040	.000

Independent variables included in the model	R^2 of the model: High Involvement	Low Involvement
PBA	.168	.053
PBA, P-ELC	.390	.086
PBA, P-ELC, PBS	.390	.104

Effect Size (f^2) = sr_1^2 / ($1 - R^2$)

<u>Case I</u>: If the model with three independent variables (PBA, P-ELC, PBS) is assumed as the full model:

High Involvement Situation

Effect size (f^2) for P-ELC:

$$f^2 = (.39 - .168)/(1 - .39) = .364$$

Effect size (f^2) for PBA:

$$f^2 = (.39 - .289)/(1 - .39) = .166$$

Low Involvement Situation

Effect size (f^2) for P-ELC:

$f^2 = (.086 - .053)/(1 - .104) = .037$

Effect size (f^2) for PBA:

$f^2 = (.086 - .023)/(1 - .104) = .070$

Case 2: If the model with two independent variables (PBA, P-ELC) is assumed as the full model:

High Involvement Situation

Effect size (f^2) for P-ELC:

$f^2 = (.39 - .168)/(1 - .39) = .364$

Effect size (f^2) for PBA:

$f^2 = (.39 - .289)/(1 - .39) = .166$

Low Involvement Situation

Effect size (f^2) for P-ELC:

$f^2 = (.086 - .053)/(1 - .086) = .036$

Effect size (f^2) for PBA:

$f^2 = (.086 - .023)/(1 - .086) = .069$

Note that results of Case 2 were reported in the main body. Case 1 contained PBS which was irrelevant to the present study.

APPENDIX F

RESULTS OF HYPOTHESIS TEST WITH MEANS OF "NUMBER OF CATEGORIES" AS OVERALL BRAND BREADTH

Table F-1
Hierarchical Regression Analysis Results of Categorization Theory Hypotheses

Effects	sr^2	st. b	t	p
PQ	.3903	.6247	17.962	.0000
PCS	.1231	.3538	11.281	.0000
BB	.0003	.0175	.540	.5896
PQ*PCS	.0626	1.0062	8.600	.0000
PQ*BB	.0003	.0801	.625	.5324
PCS*BB	.0018	-.1388	-1.449	.1480
PQ*PCS*BB	.0109	-1.2190	-3.634	.0003

Table F-2
Hierarchical Regression Analysis Results of Cognitive Response Theory Hypotheses

Dependent Variables	Effects	sr^2	st. b	t	p
AE	PQ	.4182	.6466	13.323	.0000
	PCS	.2395	.4894	8.820	.0000
	BB	.0786	.2804	4.591	.0000
CR	PQ	.3168	.5628	10.701	.0000
	PCS	.1367	.3697	6.254	.0000
	BB	.0757	.2751	4.497	.0000
AE	CR	.5757	.7587	18.306	.0000
	PQ	.0706	.3214	7.007	.0000
AE	CR	.5757	.7587	18.306	.0000
	PCS	.0505	.2420	5.767	.0000
AE	CR	.5757	.7587	18.306	.0000
	BB	.0056	.0775	1.807	.0720

Table F-3
Regression Analysis Results with Fully Partialed Models for Cognitive Response Theory Hypotheses

R^2	D.V.	Effects	st. b	t	*p*
.5572	AE	PQ	.5500	12.192	.0000
		PCS	.3684	8.464	.0000
		BB	.0757	1.701	.0903
.3948	CR	PQ	.4801	9.103	.0000
		PCS	.2594	5.097	.0000
		BB	.1042	2.001	.0465
.6982	AE	CR	.4827	10.678	.0000
		PQ	.3183	7.372	.0000
		PCS	.2432	6.423	.0000
		BB	.0254	.685	.4939

APPENDIX G

RESULTS OF HYPOTHESIS TEST WITH AVERAGE VALUES OF TWO DIMENSIONS' MEANS AS OVERALL BRAND BREADTH

Table G-1
Hierarchical Regression Analysis Results of
Categorization Theory Hypotheses

Effects	sr^2	st. b	t	p
PQ	.3903	.6247	17.962	.0000
PCS	.1231	.3538	11.281	.0000
BB	.0027	.0525	1.669	.0957
PQ*PCS	.0622	1.0015	8.597	.0000
PQ*BB	.0017	.2116	1.423	.1552
PCS*BB	.0037	-.2489	-2.107	.0356
PQ*PCS*BB	.0037	-.9944	-2.103	.0360

Table G-2
Hierarchical Regression Analysis Results of Cognitive
Response Theory Hypotheses

Dependent Variable	Effects	sr^2	st. b	t	p
AE	PQ	.4182	.6466	13.323	.0000
	PCS	.2395	.4894	8.820	.0000
	BB	.0711	.2667	4.348	.0000
CR	PQ	.3168	.5628	10.701	.0000
	PCS	.1367	.3697	6.254	.0000
	BB	.0656	.2561	4.165	.0000
AE	CR	.5757	.7587	18.306	.0000
	PQ	.0706	.3214	7.007	.0000
AE	CR	.5757	.7587	18.306	.0000
	PCS	.0505	.2420	5.767	.0000
AE	CR	.5757	.7587	18.306	.0000
	BB	.0056	.0774	1.813	.0710

Table G-3
Regression Analysis Results with Fully Partialed Models for Cognitive Response Theory Hypotheses

R^2	D.V.	Effects	st. b	t	*p*
.5652	AE	PQ	.5503	12.600	.0000
		PCS	.3637	8.423	.0000
		BB	.1178	2.734	.0067
.4017	CR	PQ	.4856	9.478	.0000
		PCS	.2553	5.041	.0000
		BB	.1326	2.624	.0092
.7004	AE	CR	.4753	10.493	.0000
		PQ	.3195	7.522	.0000
		PCS	.2423	6.422	.0000
		BB	.0547	1.507	.1331

APPENDIX H

SAMPLES OF QUESTIONNAIRES USED IN THE FIRST PRETEST

June, 1993

Dear Students:

We are conducting a study about your attitudes toward various brand names. Your opinion will be highly appreciated. Although we want as many students as possible to participate in this project, your participation is strictly voluntary. There will be no undue disadvantages for those who don't participate in this project.

You may be assured of complete confidentiality of your responses to this questionnaire. This study is not interested in a specific person's or a specific group of persons' opinion. This is a study about general public. Individual data will not be released to anyone and all questionnaires will be destroyed once the responses have been entered into a computer file.

We believe that all the question items are fairly simple, easy, and non-provoking to answer. We hope to get all of your answers.

The findings of this study will help us understand how consumers behave in the market. We sincerely hope that your participation in this project enhance your understanding how a marketing research is conducted.

Thank you for your assistance.

Sincerely,

Assistant Professor, Ken Thompson
Doctoral Student, Dongdae Lee

Department of Marketing
College of Business Administration
University of North Texas

Measurement of Brand Name Preference

We are developing a brand name for a manufacturer of consumer durable goods. Following is a list of suggested brand names. Please indicate your preference level to each brand name by circling an appropriate number.

How do you like each of the following brand names:

	Not at all			Neutral			very much
ALTREX	-3	-2	-1	0	1	2	3
COTAL	-3	-2	-1	0	1	2	3
TECHOUS	-3	-2	-1	0	1	2	3
OLMEC	-3	-2	-1	0	1	2	3
SILLA	-3	-2	-1	0	1	2	3
ARIRANG	-3	-2	-1	0	1	2	3
eGAP	-3	-2	-1	0	1	2	3
VENUX	-3	-2	-1	0	1	2	3
TEGRAL	-3	-2	-1	0	1	2	3
GPT	-3	-2	-1	0	1	2	3
TPT	-3	-2	-1	0	1	2	3

Measurement of Brand Breadth

Following is a scale to measure how you feel about a brand name, **GE**. For each statement, please indicate your opinion by circling an appropriate number.

	Strongly Agree						Strongly Disagree
GE makes lots of different kinds of products.	7	6	5	4	3	2	1
GE means very limited product categories.	7	6	5	4	3	2	1
GE represents diverse product categories.	7	6	5	4	3	2	1
There is only a small number of product categories GE represents.	7	6	5	4	3	2	1
GE seems to represent a wide range of product categories.	7	6	5	4	3	2	1
Product categories represented by GE are highly interrelated to each other.	7	6	5	4	3	2	1
Product categories represented by GE are conceptually similar to each other.	7	6	5	4	3	2	1
Technically similar product categories are represented by GE.	7	6	5	4	3	2	1
Product categories represented by GE complement one another.	7	6	5	4	3	2	1
Product categories represented by GE share many features.	7	6	5	4	3	2	1

Please write down all the product categories you know that

GE represents: ____

____

____

____

ex: Kodak: film, camera, video tape, copier, etc.

Measurement of similarity

What is your opinion about similarity between:

	Extremely similar								Extremely dissimilar
TV & VCR	9	8	7	6	5	4	3	2	1
TV & Camcorder	9	8	7	6	5	4	3	2	1
TV & Bicycle	9	8	7	6	5	4	3	2	1
TV & Camera	9	8	7	6	5	4	3	2	1
TV & Binoculars	9	8	7	6	5	4	3	2	1
TV & Lawn Mower	9	8	7	6	5	4	3	2	1
TV & CD Player	9	8	7	6	5	4	3	2	1
TV & Refrigerator	9	8	7	6	5	4	3	2	1
TV & Piano	9	8	7	6	5	4	3	2	1
TV & Sail boat	9	8	7	6	5	4	3	2	1
TV & Coffee Maker	9	8	7	6	5	4	3	2	1
TV & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
TV & Food Processor	9	8	7	6	5	4	3	2	1
TV & Microwave oven	9	8	7	6	5	4	3	2	1
VCR & Camcorder	9	8	7	6	5	4	3	2	1
VCR & Bicycle	9	8	7	6	5	4	3	2	1
VCR & Camera	9	8	7	6	5	4	3	2	1
VCR & Binoculars	9	8	7	6	5	4	3	2	1
VCR & Lawn Mower	9	8	7	6	5	4	3	2	1
VCR & CD Player	9	8	7	6	5	4	3	2	1
VCR & Refrigerator	9	8	7	6	5	4	3	2	1
VCR & Piano	9	8	7	6	5	4	3	2	1
VCR & Sail boat	9	8	7	6	5	4	3	2	1

VCR & Coffee Maker	9	8	7	6	5	4	3	2	1
VCR & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
VCR & Food Processor	9	8	7	6	5	4	3	2	1
VCR & Microwave oven	9	8	7	6	5	4	3	2	1
Camcorder & Bicycle	9	8	7	6	5	4	3	2	1
Camcorder & Camera	9	8	7	6	5	4	3	2	1
Camcorder & Binoculars	9	8	7	6	5	4	3	2	1
Camcorder & Lawn Mower	9	8	7	6	5	4	3	2	1
Camcorder & CD Player	9	8	7	6	5	4	3	2	1
Camcorder & Refrigerator	9	8	7	6	5	4	3	2	1
Camcorder & Piano	9	8	7	6	5	4	3	2	1
Camcorder & Sail boat	9	8	7	6	5	4	3	2	1
Camcorder & Coffee Maker	9	8	7	6	5	4	3	2	1
Camcorder & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Camcorder & Food Processor	9	8	7	6	5	4	3	2	1
Camcorder & Microwave oven	9	8	7	6	5	4	3	2	1
Bicycle & Camera	9	8	7	6	5	4	3	2	1
Bicycle & Binoculars	9	8	7	6	5	4	3	2	1
Bicycle & Lawn Mower	9	8	7	6	5	4	3	2	1
Bicycle & CD Player	9	8	7	6	5	4	3	2	1
Bicycle & Refrigerator	9	8	7	6	5	4	3	2	1
Bicycle & Piano	9	8	7	6	5	4	3	2	1
Bicycle & Sail boat	9	8	7	6	5	4	3	2	1
Bicycle & Coffee Maker	9	8	7	6	5	4	3	2	1
Bicycle & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Bicycle & Food Processor	9	8	7	6	5	4	3	2	1
Bicycle & Microwave oven	9	8	7	6	5	4	3	2	1
Camera & Binoculars	9	8	7	6	5	4	3	2	1
Camera & Lawn Mower	9	8	7	6	5	4	3	2	1
Camera & CD Player	9	8	7	6	5	4	3	2	1

Camera & Sail boat	9	8	7	6	5	4	3	2	1
Camera & Coffee Maker	9	8	7	6	5	4	3	2	1
Camera & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Camera & Food Processor	9	8	7	6	5	4	3	2	1
Camera & Microwave oven	9	8	7	6	5	4	3	2	1
Binoculars & Lawn Mower	9	8	7	6	5	4	3	2	1
Binoculars & CD Player	9	8	7	6	5	4	3	2	1
Binoculars & Refrigerator	9	8	7	6	5	4	3	2	1
Binoculars & Piano	9	8	7	6	5	4	3	2	1
Binoculars & Sail boat	9	8	7	6	5	4	3	2	1
Binoculars & Coffee Maker	9	8	7	6	5	4	3	2	1
Binoculars & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Binoculars & Food Processor	9	8	7	6	5	4	3	2	1
Binoculars & Microwave oven	9	8	7	6	5	4	3	2	1
Lawn Mower & CD Player	9	8	7	6	5	4	3	2	1
Lawn Mower & Refrigerator	9	8	7	6	5	4	3	2	1
Lawn Mower & Piano	9	8	7	6	5	4	3	2	1
Lawn Mower & Sail boat	9	8	7	6	5	4	3	2	1
Lawn Mower & Coffee Maker	9	8	7	6	5	4	3	2	1
Lawn Mower & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Lawn Mower & Food Processor	9	8	7	6	5	4	3	2	1
Lawn Mower & Microwave oven	9	8	7	6	5	4	3	2	1
CD Player & Refrigerator	9	8	7	6	5	4	3	2	1
CD Player & Piano	9	8	7	6	5	4	3	2	1
CD Player & Sail boat	9	8	7	6	5	4	3	2	1
CD Player & Coffee Maker	9	8	7	6	5	4	3	2	1
CD Player & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
CD Player & Food Processor	9	8	7	6	5	4	3	2	1
CD Player & Microwave oven	9	8	7	6	5	4	3	2	1
Refrigerator & Piano	9	8	7	6	5	4	3	2	1
Refrigerator & Sail boat	9	8	7	6	5	4	3	2	1

Refrigerator & Coffee Maker	9	8	7	6	5	4	3	2	1
Refrigerator & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Refrigerator & Food Processor	9	8	7	6	5	4	3	2	1
Refrigerator & Microwave oven	9	8	7	6	5	4	3	2	1
Piano & Sail boat	9	8	7	6	5	4	3	2	1
Piano & Coffee Maker	9	8	7	6	5	4	3	2	1
Piano & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Piano & Food Processor	9	8	7	6	5	4	3	2	1
Piano & Microwave oven	9	8	7	6	5	4	3	2	1
Sail boat & Coffee Maker	9	8	7	6	5	4	3	2	1
Sail boat & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Sail boat & Food Processor	9	8	7	6	5	4	3	2	1
Sail boat & Microwave oven	9	8	7	6	5	4	3	2	1
Coffee Maker & Hi-fi Stereo	9	8	7	6	5	4	3	2	1
Coffee Maker & Food Processor	9	8	7	6	5	4	3	2	1
Coffee Maker & Microwave oven	9	8	7	6	5	4	3	2	1
Hi-fi Stereo & Food Processor	9	8	7	6	5	4	3	2	1
Hi-fi Stereo & Microwave oven	9	8	7	6	5	4	3	2	1
Food Processor & Microwave oven	9	8	7	6	5	4	3	2	1
Camera & Refrigerator	9	8	7	6	5	4	3	2	1
Camera & Piano	9	8	7	6	5	4	3	2	1

Measurement of Product Category Similarity

	Strongly Agree						Strongly Disagree
I think TV and VCR are technically very similar.	7	6	5	4	3	2	1
As a consumer, I think that TV and VCR are used in very similar situations.	7	6	5	4	3	2	1
Overall, I think that TV and VCR have very similar features.	7	6	5	4	3	2	1
In my opinion, TV and VCR have very similar functions.	7	6	5	4	3	2	1
What are your overall feelings about how much TV and VCR are related?	7	6	5	4	3	2	1
How much sense does it make to you as a consumer that a company which makes TV would also make VCR?	7	6	5	4	3	2	1
I think that an extension into VCR by a manufacturer of TV is a consistent move.	7	6	5	4	3	2	1
In general, it is logical that a company that markets TV would also market VCR.	7	6	5	4	3	2	1

Measurement of Perceived Quality in TV Category

Following are some brand names of TVs currently available in the market. For each brand, please indicate your perceptions of the quality by circling an appropriate number.

		Very high quality								Very low quality
1.	Hitachi	9	8	7	6	5	4	3	2	1
2.	Magnovox	9	8	7	6	5	4	3	2	1
3.	Proscan	9	8	7	6	5	4	3	2	1
4.	Sears	9	8	7	6	5	4	3	2	1
5.	GE	9	8	7	6	5	4	3	2	1
6.	Signature	9	8	7	6	5	4	3	2	1
7.	Quasar	9	8	7	6	5	4	3	2	1
8.	Memorex	9	8	7	6	5	4	3	2	1
9.	Samsung	9	8	7	6	5	4	3	2	1
10.	Bell & Howell	9	8	7	6	5	4	3	2	1
11.	Mitsubishi	9	8	7	6	5	4	3	2	1
12.	Toshiba	9	8	7	6	5	4	3	2	1
13.	Emerson	9	8	7	6	5	4	3	2	1
14.	RCA	9	8	7	6	5	4	3	2	1
15.	JVC	9	8	7	6	5	4	3	2	1
16.	Sanyo	9	8	7	6	5	4	3	2	1
17.	Admiral	9	8	7	6	5	4	3	2	1
18.	Sharp	9	8	7	6	5	4	3	2	1
19.	Zenith	9	8	7	6	5	4	3	2	1
20.	Sylvania	9	8	7	6	5	4	3	2	1
21.	Philips	9	8	7	6	5	4	3	2	1

22. Gold Star	9	8	7	6	5	4	3	2	1
23. Craig	9	8	7	6	5	4	3	2	1
24. Sony	9	8	7	6	5	4	3	2	1
25. Proton	9	8	7	6	5	4	3	2	1

If you know any other brand name not listed which has **the "highest quality"** in the TV product category,

please specify: ____________________

If you know any other brand name not listed which has **the "lowest quality"** in the TV product category,

please specify: ____________________

Measurement of Perceived Quality

What brand of **"camera"** are you familiar with or currently using? Please write down one brand name: ____________

How long had or have you used the above mentioned brand of **"camera"**? _______ years and _______ months

Now we want to measure your perceptions of <u>quality toward the brand in camera product category</u>. For each statement, please indicate your perceptions by circling an appropriate number. Please assume ABC in the subsequent scale as the brand name you mentioned above.

		Strongly agree						Strongly disagree
1.	ABC is easy to start.	7	6	5	4	3	2	1
2.	ABC has clear instructions on how it should be used.	7	6	5	4	3	2	1
3.	I do not have any difficulty in understanding all of ABC's functions.	7	6	5	4	3	2	1
4.	Most people can operate ABC without reading the instructions.	7	6	5	4	3	2	1
5.	ABC is easy to operate.	7	6	5	4	3	2	1
6.	Even a child can start ABC.	7	6	5	4	3	2	1
7.	ABC's functions are easy to understand.	7	6	5	4	3	2	1
8.	Manuals for ABC are easy to understand.	7	6	5	4	3	2	1
9.	More often than not, I am frustrated with ABC because it is difficult to operate.	7	6	5	4	3	2	1
10.	ABC has unique functions which cannot be found in other brands.	7	6	5	4	3	2	1
11.	ABC has more functions than other brands.	7	6	5	4	3	2	1
12.	ABC has a unique function which distinguishes it from the others.	7	6	5	4	3	2	1
13.	ABC is generally considered a stripped-down model.	7	6	5	4	3	2	1
14.	ABC is versatile in how it functions.	7	6	5	4	3	2	1
15.	ABC always has a unique function.	7	6	5	4	3	2	1
16.	ABC provides only basic functions.	7	6	5	4	3	2	1
17.	ABC has complex functions.	7	6	5	4	3	2	1
18.	ABC has more "bells and whistles" than other brands.	7	6	5	4	3	2	1
19.	Parts for ABC easily can be obtained.	7	6	5	4	3	2	1
20.	The service warranty of ABC is well respected.	7	6	5	4	3	2	1
21.	ABC has many service centers.	7	6	5	4	3	2	1
22.	Minor problems with ABC can be solved by users, rather than involving service personnel.	7	6	5	4	3	2	1
23.	You get quick response when you contact a ABC's service facility.	7	6	5	4	3	2	1

24.	ABC's service people are willing to help with problems.	7	6	5	4	3	2	1
25.	ABC provides longer service warranty than provided by other brands.	7	6	5	4	3	2	1
26.	You can contact ABC's service people without any hassle.	7	6	5	4	3	2	1
27.	ABC's service centers are easy to get to.	7	6	5	4	3	2	1
28.	ABC's service personnel are always sympathetic to your problems.	7	6	5	4	3	2	1
29.	I can easily service ABC products myself.	7	6	5	4	3	2	1
30.	ABC has a longer product life than other brands.	7	6	5	4	3	2	1
31.	ABC requires less servicing than other brands.	7	6	5	4	3	2	1
32.	ABC can endure various adverse usage conditions.	7	6	5	4	3	2	1
33.	You can expect a longer product life for ABC than for other brands.	7	6	5	4	3	2	1
34.	In normal conditions, ABC outlives other brands.	7	6	5	4	3	2	1
35.	You risk frequent breakdowns when you purchase ABC.	7	6	5	4	3	2	1
36.	I have never experienced a breakdown with ABC.	7	6	5	4	3	2	1
37.	Most people will agree that ABC lasts a long time.	7	6	5	4	3	2	1
38.	ABC will outlast other brands if you use it under normal conditions.	7	6	5	4	3	2	1
39.	ABC breaks down only on rare occasions.	7	6	5	4	3	2	1
40.	Incidence of repair for ABC is rare.	7	6	5	4	3	2	1
41.	ABC does its basic job very consistently.	7	6	5	4	3	2	1
42.	ABC does its basic job at a reasonable costs.	7	6	5	4	3	2	1
43.	You always get good results from using ABC.	7	6	5	4	3	2	1
44.	ABC never fails to satisfy my expectations.	7	6	5	4	3	2	1
45.	It is unrealistic to expect consistent performance from ABC.	7	6	5	4	3	2	1
46.	You can depend on ABC.	7	6	5	4	3	2	1
47.	ABC outperforms other brands.	7	6	5	4	3	2	1
48.	ABC always works better than other brands.	7	6	5	4	3	2	1
49.	ABC is an excellent performer in doing its job.	7	6	5	4	3	2	1
50.	ABC is a very popular brand.	7	6	5	4	3	2	1
51.	I would be proud to own ABC.	7	6	5	4	3	2	1
52.	I would recommend other people to purchase ABC for camera.	7	6	5	4	3	2	1
53.	The image of ABC matches my self-image.	7	6	5	4	3	2	1
54.	I feel superiority by owning ABC.	7	6	5	4	3	2	1
55.	I am impressed by ABC's image.	7	6	5	4	3	2	1
56.	Owning ABC enhances a person's image in his/her social group.	7	6	5	4	3	2	1

57.	Owning ABC makes other people envious.	7	6	5	4	3	2	1
58.	If I buy ABC, it will improve my social status.	7	6	5	4	3	2	1
59.	Other people boast of owning ABC.	7	6	5	4	3	2	1

What is your sex? Please check one.

male ( )
female ( )

What is your academic status? Please check one.

Freshman ( )
Sophomore ( )
Junior ( )
Senior ( )
Graduate ( )

What is your age? ( )

What is your major? Please specify: ________________

Thank you very much.

APPENDIX I

SAMPLES OF QUESTIONNAIRES USED IN THE SECOND PRETEST

August, 1993

Dear Students:

We are conducting a study about your attitudes toward various brand names. Your opinion will be highly appreciated. Although we want as many students as possible to participate in this project, your participation is strictly voluntary. There will be no undue disadvantages for those who don't participate in this project.

You may be assured of complete confidentiality of your responses to this questionnaire. This study is not interested in a specific person's or a specific group of persons' opinion. This is a study about general public. Individual data will not be released to anyone and all questionnaires will be destroyed once the responses have been entered into a computer file.

We believe that all the question items are fairly simple, easy, and non-provoking to answer. We hope to get all of your answers.

The findings of this study will help us understand how consumers behave in the market. We sincerely hope that your participation in this project enhance your understanding how a marketing research is conducted.

Thank you for your assistance.

Sincerely,

Assistant Professor, Ken Thompson
Doctoral Student, Dongdae Lee

Department of Marketing
College of Business Administration
University of North Texas

Following is a scale to measure how you feel about a brand name, **JVC**. For each statement, please indicate your opinion by circling an appropriate number.

	Strongly Agree						Strongly Disagree
JVC makes lots of different kinds of products.	7	6	5	4	3	2	1
JVC means very limited product categories.	7	6	5	4	3	2	1
JVC represents diverse product categories.	7	6	5	4	3	2	1
There is only a small number of product categories JVC represents.	7	6	5	4	3	2	1
JVC seems to represent a wide range of product categories.	7	6	5	4	3	2	1
Product categories represented by JVC are not much interrelated to each other.	7	6	5	4	3	2	1
Product categories represented by JVC are conceptually similar to each other.	7	6	5	4	3	2	1
Technically dissimilar product categories are represented by JVC.	7	6	5	4	3	2	1
Product categories represented by JVC complement one another.	7	6	5	4	3	2	1
Product categories represented by JVC share many features.	7	6	5	4	3	2	1

Please write down all the product categories you know that **JVC** represents:

____

____

____

____

ex: Kodak: film, camera, video tape, copier, etc.

What brand of **"camcorder"** are you familiar with or currently using? Please write down one brand name: ______________

How long had or have you used the above mentioned brand of **"camcorder"**? _______ years and _______ months

Now we want to measure your perceptions of <u>quality toward the brand in camcorder product category</u>. For each statement, please indicate your perceptions by circling an appropriate number. Please assume ABC in the subsequent scale as the brand name you mentioned above.

		Strongly agree						Strongly disagree
1.	ABC has clear instructions on how it should be used.	7	6	5	4	3	2	1
2.	I have difficulty in understanding all of ABC's functions.	7	6	5	4	3	2	1
3.	Most people can operate ABC without reading the instructions.	7	6	5	4	3	2	1
4.	ABC is easy to operate.	7	6	5	4	3	2	1
5.	ABC's functions are difficult to understand.	7	6	5	4	3	2	1
6.	Manuals for ABC are easy to understand.	7	6	5	4	3	2	1
7.	ABC has unique functions which cannot be found in other brands.	7	6	5	4	3	2	1
8.	ABC has less functions than other brands.	7	6	5	4	3	2	1
9.	ABC has a unique function that distinguishes it from the others.	7	6	5	4	3	2	1
10.	ABC always has more functions than other brands.	7	6	5	4	3	2	1
11.	You get quick response when you contact a ABC's service facility.	7	6	5	4	3	2	1
12.	ABC's service people are not willing to help with problems.	7	6	5	4	3	2	1
13.	You can contact ABC's service people without any hassle.	7	6	5	4	3	2	1

		Strongly agree						Strongly disagree
14.	ABC's service personnel are not very sympathetic to your problems.	7	6	5	4	3	2	1
15.	ABC has a longer product life than other brands.	7	6	5	4	3	2	1
16.	ABC requires more servicing than other brands.	7	6	5	4	3	2	1
17.	You can expect a shorter product life for ABC than for other brands.	7	6	5	4	3	2	1
18.	In normal conditions, ABC outlives other brands.	7	6	5	4	3	2	1
19.	ABC will outlast other brands if you use it under normal conditions.	7	6	5	4	3	2	1
20.	ABC does not do its basic job very consistently.	7	6	5	4	3	2	1
21.	You always get good results from using ABC.	7	6	5	4	3	2	1
22.	You can depend on ABC.	7	6	5	4	3	2	1
23.	ABC is a poor performer in doing its job.	7	6	5	4	3	2	1
24.	I feel superiority by owning ABC.	7	6	5	4	3	2	1
25.	I am impressed by ABC's image.	7	6	5	4	3	2	1
26.	Owning ABC diminishes a person's image in his/her social group.	7	6	5	4	3	2	1
27.	Owning ABC makes other people envious.	7	6	5	4	3	2	1
28.	If I buy ABC, it will improve my social status.	7	6	5	4	3	2	1
		Very high Quality						Very low Quality
29.	Overall, I think ABC has:	7	6	5	4	3	2	1

Please indicate your opinion by circling an appropriate number.

I think TV and Bicycle are technically very dissimilar.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
As a consumer, I think that TV and Bicycle are used in very similar situations.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
Overall, I think that TV and Bicycle have very dissimilar features.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
In my opinion, TV and Bicycle have very similar functions.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
I think an extension into Bicycle by a manufacturer of TV is a consistent move.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
In general, it is not logical that a company that markets TV would also market Bicycle.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
How much sense does it make to you as a consumer that a company which makes TV would also make Bicycle?	A lot of Sense	7	6	5	4	3	2	1	Very little Sense
What are your overall feelings about how much TV and Bicycle are are related?	Very Related	7	6	5	4	3	2	1	Very Unrelated

APPENDIX J

SAMPLES OF QUESTIONNAIRES USED IN THE PILOT TEST

August, 1993

Dear Students:

We are conducting a study about your attitudes toward brands and brand extensions. Your opinion will be highly appreciated. Although we want as many students as possible to participate in this project, your participation is strictly voluntary. There will be no undue disadvantages for those who don't participate in this project.

You may be assured of complete confidentiality of your responses to this questionnaire. This study is not interested in a specific person's or a specific group of persons' opinion. This is a study about general public. Individual data will not be released to anyone and all questionnaires will be destroyed once the responses have been entered into a computer file.

We believe that all the question items are fairly simple, easy, and non-provoking to answer. We hope to get all of your answers.

The findings of this study will help us understand how consumers behave in the market. We sincerely hope that your participation in this project enhance your understanding how a marketing research is conducted.

Thank you for your assistance.

Sincerely,

Assistant Professor, Ken Thompson
Doctoral Student, Dongdae Lee

Department of Marketing
College of Business Administration
University of North Texas

Please read the following two-page report very carefully.

Quality Report on GPT's **TVs**

GPT is a disguised name of a manufacturer. GPT produces only **TVs** and **VCRs**. GPT markets diverse models of **TVs** and **VCRs** using GPT as the brand name. Following is an excerpt of a test report about GPT's TVs published in an independent magazine.

GPT

GPT produces a wide variety of models of TV from small 13 inch sets to wide 70 inch sets. We tested the quality of GPT TVs on eight dimensions: ease of use, functionality, serviceability, durability, performance, and prestige.

Ease of use

GPT's TVs are easy to turn on and operate. Its manual has clear instructions and easy-to-understand explanations. The remote control has a sleek design and we could operate various functions without any glitch.

Functionality

All GPT models are equipped with popular functions such as picture-in-picture, timer, on-screen menu, video and game reception, power surge protection, and computer monitor function. All GPT models over 30 inches come with their own satellite dish antenna. GPT models also are quite multi-media ready. They are easily connected to computers, hifi stereos, VCRs, camcorders, and CD players.

Serviceability

GPT maintains a total of 50 service stations across the country. GPT also has a 24 hour toll free answering service. We called GPT's answering service and service stations 20 times at various times of day using different people, and we always got quick and hospitable responses from GPT personnel. We rarely waited on the phone to be served, and service persons consistently showed good responsiveness.

Durability

One of the most rigorous test of TVs in our lab is 24 hour non-stop test. GPT showed one of the longest product lives in this test. We also created various adverse situations associated with the use of a TV set such as power surges, occasional impacts, extreme dampness, dryness, heat, cold, etc. GPT models' survival rates were one of the best among the 25 brands we tested.

Performance

GPT had, by far, the cleanest, smoothest picture among 25 brands of TVs tested. GPT has the best stereo capabilities, and all GPT models are equipped with amplifiers and detachable speakers. All models of GPT have A/V (Audio/Video) receivers to accommodate video sound and special home theater sound systems. Unlike other brands, GPT models also showed remarkably strong and consistent performance even at the end of durability test.

Prestige

Each year, our market research team conducts a random survey of 1,000 consumers in which we assess consumers' perceptions toward various brands of TV sets. More than 80% of subjects said, if price and size are equal, they would prefer to buy a GPT model. More than 90% of those who currently own a GPT model said they are satisfied with their GPT TV. About half of those who own a GPT model said they are proud of owning a GPT TV.

GPT's **VCRs** have received similar quality ratings.

Stop here.

Please wait until you get further instructions.

Following is a scale to measure how you feel about the brand name, **GPT**. For each statement, please indicate your opinion by circling an appropriate number.

	Strongly Agree						Strongly Disagree
GPT makes lots of different kinds of products.	7	6	5	4	3	2	1
GPT means very limited product categories.	7	6	5	4	3	2	1
GPT represents diverse product categories.	7	6	5	4	3	2	1
There is only a small number of product categories GPT represents.	7	6	5	4	3	2	1
GPT seems to represent a wide range of product categories.	7	6	5	4	3	2	1
Product categories represented by GPT are not much interrelated to each other.	7	6	5	4	3	2	1
Product categories represented by GPT are conceptually similar to each other.	7	6	5	4	3	2	1
Technically dissimilar product categories are represented by GPT.	7	6	5	4	3	2	1
Product categories represented by GPT complement one another.	7	6	5	4	3	2	1
Product categories represented by GPT share many features.	7	6	5	4	3	2	1

Following is a scale to measure your perceptions of **quality toward GPT in TV product category.** For each statement, please indicate your perceptions by circling an appropriate number.

		Strongly agree						Strongly disagree
1.	GPT TVs would have clear instructions on how it should be used.	7	6	5	4	3	2	1
2.	I would have difficulty in understanding all of GPT's functions.	7	6	5	4	3	2	1
3.	Most people would be able to operate GPT without reading the instructions.	7	6	5	4	3	2	1
4.	GPT TVs would be easy to operate.	7	6	5	4	3	2	1
5.	GPT's functions would be difficult to understand.	7	6	5	4	3	2	1
6.	Manuals for GPT TVs would be easy to understand.	7	6	5	4	3	2	1
7.	GPT would have unique functions which cannot be found in other brands.	7	6	5	4	3	2	1
8.	GPT would have less functions than other brands.	7	6	5	4	3	2	1
9.	GPT would have a unique function that distinguishes it from the others.	7	6	5	4	3	2	1
10.	GPT always would have more functions than other brands.	7	6	5	4	3	2	1
11.	You would get quick response when you contact a GPT's service facility.	7	6	5	4	3	2	1
12.	GPT's service people would not be willing to help with problems.	7	6	5	4	3	2	1
13.	You would be able to contact GPT's service people without any hassle.	7	6	5	4	3	2	1
14.	GPT's service personnel would not be very sympathetic to your problems.	7	6	5	4	3	2	1
15.	GPT models would have a longer product life than other brands.	7	6	5	4	3	2	1
16.	GPT models would require more servicing than other brands.	7	6	5	4	3	2	1
17.	You could expect a shorter product life for GPT than for other brands.	7	6	5	4	3	2	1

		Strongly agree						Strongly disagree
18.	In normal conditions, GPT would outlive other brands.	7	6	5	4	3	2	1
19.	GPT would outlast other brands if you use it under normal conditions.	7	6	5	4	3	2	1
20.	GPT would not do its basic job very consistently.	7	6	5	4	3	2	1
21.	You always would get good results from using GPT.	7	6	5	4	3	2	1
22.	You could depend on GPT.	7	6	5	4	3	2	1
23.	GPT would be a poor performer in doing its job.	7	6	5	4	3	2	1
24.	I would feel superiority by owning a GPT.	7	6	5	4	3	2	1
25.	I would be impressed by GPT's image.	7	6	5	4	3	2	1
26.	Owning a GPT would diminish a person's image in his/her social group.	7	6	5	4	3	2	1
27.	Owning GPT would make other people envious.	7	6	5	4	3	2	1
28.	If I buy GPT, it would improve my social status.	7	6	5	4	3	2	1

		Very high Quality						Very low Quality
29.	Overall, I think GPT would have:	7	6	5	4	3	2	1

We want to measure your perceptions of similarity between TV and bicycle. Please indicate your opinion by circling an appropriate number.

I think TV and Bicycle are technically very dissimilar.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
As a consumer, I think that TV and Bicycle are used in very similar situations.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
Overall, I think that TV and Bicycle have very dissimilar features.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
In my opinion, TV and Bicycle have very similar functions.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
I think an extension into Bicycle by a manufacturer of TV is a consistent move.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
In general, it is not logical that a company that markets TV would also market Bicycle.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
How much sense does it make to you as a consumer that a company which makes TV would also make Bicycle?	A lot of Sense	7	6	5	4	3	2	1	Very little Sense
What are your overall feelings about how much TV and Bicycle are are related?	Very Related	7	6	5	4	3	2	1	Very Unrelated

Stop here.

Please wait until you get further instructions.

"Now, suppose GPT is considering to develop and market bicycles under the same brand name."

What are your thoughts about GPT bicycles? Please write down all the thoughts that come to your mind - whatever they are. Don't worry about grammar, spelling, or completing sentences.

Now, we want to measure your perceptions toward GPT' extension into bicycle product category. Please indicate your perceptions by circling an appropriate number.

	Strongly Agree						Strongly Disagree
I like GPT's extension into bicycle product category.	7	6	5	4	3	2	1
My impression toward the proposed GPT bicycles is unfavorable.	7	6	5	4	3	2	1
People will not approve of GPT's extension into bicycle category.	7	6	5	4	3	2	1
I think I would be satisfied with a GPT bicycle.	7	6	5	4	3	2	1
People will like GPT bicycles.	7	6	5	4	3	2	1
I don't think that I would be happy with a GPT's bicycle.	7	6	5	4	3	2	1
The extension of GPT into bicycle category would make me happy.	7	6	5	4	3	2	1
Most people would view GPT bicycles favorably.	7	6	5	4	3	2	1
People will be dissatisfied with GPT bicycles.	7	6	5	4	3	2	1

What is your sex? Please check one.

male ( )
female ( )

What is your academic status? Please check one.

Freshman ( )
Sophomore ( )
Junior ( )
Senior ( )
Graduate ( )

What is your age? ( )

What is your major? Please specify: ________________

Thank you very much.

Quality Report on GPT's **TVs**

GPT is a disguised name of a manufacturer. GPT produces only **TVs** and **VCRs**. GPT markets diverse models of **TVs** and **VCRs** using GPT as the brand name. Following is an excerpt of a test report about GPT's TVs published in an independent magazine.

GPT

GPT produces a variety of TV models ranging from 9 inch sets to 30 inch sets. We tested the quality of GPT TVs on eight dimensions: ease of use, functionality, serviceability, durability, performance, and prestige. Results of our tests are summarized below.

Ease of use

GPT's TVs are not very user-friendly. Its manual is not well organized and contains difficult instructions and complex terminology without clear explanations. The remote control does not look very attractive and we encountered difficulties using various functions with the remote.

Functionality

All GPT models are equipped with timer, on-screen menu, and video game reception capability. However, more popular functions such as picture-in-picture, power surge protection, and computer monitor emulation are not provided in any model.

Serviceability

GPT maintains seven service centers across the country. GPT also has a 24 hour toll free answering service. We called GPT's answering service and service centers 20 times at various times of day using different people, and we rarely got quick and hospitable responses from GPT personnel. In many cases (18 out of 20), we waited on the phone more than 5 minutes to be served, and service persons' responses were not very helpful.

Durability

GPT models performed very poorly in our 24 hour non-stop test. Average product life of all GPT models was in the bottom 10% among 25 brands we tested. In another performance test under adverse conditions such as power surges, occasional impacts, extreme dampness, dryness, heat, cold, etc, GPT models again performed very poorly. GPT models' failure rates were among the highest of the 25 brands tested.

Performance

Compared with other brands', GPT's pictures were neither clean nor smooth. GPT's stereo capabilities are about average among the brands we tested. During the durability test, most GPT models showed very weak and inconsistent performance.

Prestige

Each year, our market research team conducts a random survey of 1,000 consumers in which we assess consumers' perceptions toward various brands of TV sets. Less than 1% of subjects said, if price and size are equal, they would prefer to buy a GPT model. More than 75% of those who currently own a GPT model said they are dissatisfied with their GPT TV. None of those who own a GPT model said they are proud of owning a GPT TV.

GPT's **VCRs** have received similar quality ratings.

Quality Report on GPT's **TVs**

GPT is a disguised name of a manufacturer. GPT produces TVs, VCRs, Refrigerators, Hifi Stereos, Microwave Ovens, Food Processors, and Coffee Makers. GPT markets diverse models of these products using GPT as the brand name. Following is an excerpt of a test report about GPT's **TVs** published in an independent magazine.

GPT

GPT produces a variety of TV models ranging from 9 inch sets to 30 inch sets. We tested the quality of GPT TVs on eight dimensions: ease of use, functionality, serviceability, durability, performance, and prestige. Results of our tests are summarized below.

Ease of use

GPT's TVs are not very user-friendly. Its manual is not well organized and contains difficult instructions and complex terminology without clear explanations. The remote control does not look very attractive and we encountered difficulties using various functions with the remote.

Functionality

All GPT models are equipped with timer, on-screen menu, and video game reception capability. However, more popular functions such as picture-in-picture, power surge protection, and computer monitor emulation are not provided in any model.

Serviceability

GPT maintains seven service centers across the country. GPT also has a 24 hour toll free answering service. We called GPT's answering service and service centers 20 times at various times of day using different people, and we rarely got quick and hospitable responses from GPT personnel. In many cases (18 out of 20), we waited on the phone more than 5 minutes to be served, and service persons' responses were not very helpful.

Durability

GPT models performed very poorly in our 24 hour non-stop test. Average product life of all GPT models was in the bottom 10% among 25 brands we tested. In another performance test under adverse conditions such as power surges, occasional impacts, extreme dampness, dryness, heat, cold, etc, GPT models again performed very poorly. GPT models' failure rates were among the highest of the 25 brands tested.

Performance

Compared with other brands', GPT's pictures were neither clean nor smooth. GPT's stereo capabilities are about average among the brands we tested. During the durability test, most GPT models showed very weak and inconsistent performance.

Prestige

Each year, our market research team conducts a random survey of 1,000 consumers in which we assess consumers' perceptions toward various brands of TV sets. Less than 1% of subjects said, if price and size are equal, they would prefer to buy a GPT model. More than 75% of those who currently own a GPT model said they are dissatisfied with their GPT TV. None of those who own a GPT model said they are proud of owning a GPT TV.

GPT's other products **(VCRs, Refrigerators, Hifi Stereos, Microwave Ovens, Food Processors, and Coffee Makers)** have received similar quality ratings.

APPENDIX K

SAMPLES OF QUESTIONNAIRES USED IN THE MAIN EXPERIMENT

October, 1993

Dear Students:

We are conducting a study about your attitudes toward brands and brand extensions. Your opinion will be highly appreciated.

You may be assured of complete confidentiality of your responses to this questionnaire. Individual data will not be released to anyone and all questionnaires will be destroyed once the responses have been entered into a computer file.

We believe that all the question items are fairly simple, easy, and non-provoking to answer. We hope to get all of your answers.

The findings of this study will help us understand how consumers behave in the market. We sincerely hope that your participation in this project enhances your understanding how marketing research is conducted.

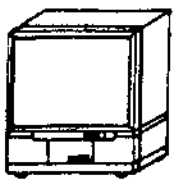
Thank you for your participation.

Sincerely,

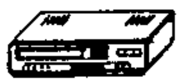
Assistant Professor, Ken Thompson
Doctoral Student, Dongdae Lee

Department of Marketing
College of Business Administration
University of North Texas

<u>**Toshiba**</u> is the brand name of a Japanese manufacturer. **Toshiba** produces and markets various products. You can find most of **Toshiba's** products in local department stores, office supplies stores, and specialty stores. Product categories **Toshiba** currently represents are:



TVs: from 13 inches models to 70 inches big screen models.



VCRs: various models with 2 heads as well as 4 heads.

Printers: diverse models of computer printers.

Copiers: various models of office copiers.

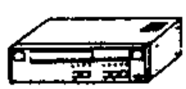
Lap-top Computers: from 386SX to 486DX models.

Satellite Dish: for for commercial and household models.

Fax-Phones: diverse models of facsimiles and fax-phones.

Cellular Phones: various models of cellular phones.

Microwave Ovens: various common household types.



CD-Players: various models.

CD-ROM Devices: for personal computers.

Please turn the page and continue.

Toshiba's quality reputation is well established. The next two pages contain recently published reports about various TV brands. The first page is from Consumer Reports (1993 edition), and the second page is from a consumer electronics magazine (1993 edition). Please use these reports to compare quality levels of **Toshiba** TVs against those of other TV brands.

Please turn the page and continue.

Ratings of 27-inch TV sets

Recommendations: The top-rated Toshiba CX2779K and the Sony KV27XBR50 earned high scores for top-notch picture quality and above average audio system. Another admirable performer worthy of consideration is the Hitachi CT7892B, which performed well and lacked only the sophisticated sound system of its peers.

27-INCH TV SETS

Better ● ◐ ○ ◐ ● Worse

Ratings order: Listed in order of overall score, based primarily on picture and sound quality. Differences in score of 7 points or less are judged not very significant. Models with identical scores are listed alphabetically. Price is the suggested retail as quoted by the manufacturer; actual retail may be lower. [S] Indicates tested model has been replaced by successor model; according to the manufacturer, the performance of new model should be similar to the tested model but features may vary. See page 68 for new model number and suggested retail price, if available. [D] Indicates model discontinued.

Brand and model	Price	Overall score	Picture quality: Image quality	Brightness	Geometric distortion	Color correction	Airplane flutter	Adj. channel rejection	Fringe reception, VHF	Fringe reception, UHF	Spot rejection	Audio tone quality	Audio response
Toshiba CX2779K [S]	$ 960	90	●	◐	◐	◐	●	◐	◐	◐	○	●	○
Sony KV27XBR50 [S]	1300	89	●	◐	●	○	○	◐	◐	◐	○	●	◐
Hitachi CT7892B [S]	736	88	●	◐	●	◐	◐	◐	○	○	○	◐	◐
JVC AV27806	700	87	◐	◐	●	●	○	○	◐	◐	◐	◐	◐
Mitsubishi CS-2724R	850	87	●	◐	○	○	◐	○	○	○	○	○	◐
Sony KV27EXR10 [S]	740	87	●	○	◐	○	○	○	○	○	○	◐	◐
Quasar SP2790EK [S]	745	87	●	○	●	◐	●	○	○	◐	○	◐	◐
Zenith ZB2782S [S]	1200	86	◐	◐	○	●	◐	○	◐	○	○	●	○
GE 27GT908 [S]	590	86	◐	○	●	◐	◐	○	◐	◐	◐	◐	○
Panasonic CTM2782S [S]	700	85	◐	◐	○	◐	◐	○	◐	◐	◐	◐	○
Prism CTM2781S	940	85	◐	○	○	◐	◐	○	○	○	◐	◐	◐
J.C. Penney 685-2509 [D]	850	84	●	○	◐	●	◐	○	○	○	◐	○	◐
RCA F27193BT [S]	750	84	◐	○	◐	●	○	◐	◐	○	○	○	◐
Zenith SQ2789Y [D]	830	83	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
Philips 27S272 [S]	860	80	○	○	◐	○	◐	○	◐	○	○	◐	●
Emerson TS2790O [S]	480	78	◐	○	○	●	○	○	◐	○	○	○	◐
Magnavox RS5660 [S]	860	79	○	○	●	◐	◐	○	◐	○	○	◐	●

Ease of use	Remote use	Inputs/outputs: Antenna	Video	Audio	[illegible]	Advantages	Disadvantages	Comments	Brand and model
○	◐	2/1	3/2	3/2	2/0	B,C,E,F,G,K,N,S,T	h	B,C,D,F,H,R	Toshiba CX2779K [S]
◐	◐	2/1	3/1	3/2	3/1	A,C,F,G,H,L,N,O,Q,T	e,s	D,F,H,L,P	Sony KV27XBR50 [S]
○	◐	2/1	2/1	2/2	1/0	C,G,L,K,O,Q,T,U	—	A,F,H,J,S	Hitachi CT7892B [S]
○	○	2/0	1/1	1/2	1/0	B,C,F,G,I,N,Q,T	c,j,m	A,B,D,F,H,N,R	JVC AV27806
◐	◐	2/0	3/1	2/1	1/0	C,F,G,J,L,N,O	—	A,B,D,R	Mitsubishi CS-2724R
◐	◐	1/0	2/1	2/2	1/0	C,F,G,H,L,O	c,h	A,F,H,J	Sony KV27EXR10 [S]
◐	○	1/0	3/1	3/2	1/0	G,J,N,P,Q,U	—	N,S	Quasar SP2790EK [S]
○	◐	3/2	3/1	3/2	0/0	C,D,G,J,L,M,N,Q,T,U	b	G,H,K,O,Q	Zenith ZB2782S [S]
○	◐	1/0	1/0	1/2	1/0	C,R,U	i	A,G,H	GE 27GT908 [S]
○	◐	2/1	1/0	1/1	1/0	B,C,F,G,N,S,T	h,l	A,B,D,F,H	Panasonic CTM2782S [S]
○	◐	2/1	1/0	1/1	1/0	B,C,F,G,N,S,T	h,l	A,B,D,F,H	Prism CTM2781S
◐	◐	2/0	2/1	2/2	1/0	F,G	j,n	A,B,E,H,M	J.C. Penney 685-2509 [D]
◐	◐	1/0	2/1	2/2	1/0	B,C,J,R,U	—	H	RCA F27193BT [S]
◐	◐	2/1	1/1	1/2	1/0	C,N,T,U	—	G,H,Q	Zenith SQ2789Y [D]
◐	◐	1/0	1/1	1/2	1/0	B,C,G,I,J,Q,S,T,U	—	E,D,G,H,L,S	Philips 27S272 [S]
○	◐	1/0	1/1	1/1	1/0	F	b,e,g,i,k	A,B,C,E,S	Emerson TS2790O [S]
◐	◐	1/0	1/1	1/2	1/0	B,C,G,I,J,Q,S,T,U	—	B,D,H,L	Magnavox RS5660 [S]

Ratings continued

TV SETS

	Overall rating	Failure rate within 1,000 hours (%) *	Failure rate within 3,000 hours (%) *	Service requirement rate in the first 3 years **	Number of service stations	24-hour answering service	Responses by service personnel ***
Sony	97	0	0	3	57	Yes	Good
Quasar	96	0	0	2	20	Yes	Good
Toshiba	95	0	0	4	36	Yes	Excel
RCA	94	0	5	3	64	Yes	Excel
Pioneer	90	5	5	7	25	Yes	Good
JVC	89	0	5	6	25	No	Avg
Mitsubishi	89	5	15	5	45	No	Avg
Hitachi	86	5	15	8	34	Yes	Avg
Magnovox	80	10	20	12	70	Yes	Good
GE	79	10	20	11	88	Yes	Avg
Zenith	79	5	20	13	55	Yes	Avg
Philips	78	10	20	12	20	No	Good
Samsung	76	5	25	11	25	Yes	Avg
Panasonic	75	10	20	15	45	No	Avg
Emerson	70	15	25	21	44	No	Poor
Sanyo	67	20	30	17	30	Yes	Avg
Sylvania	64	20	40	25	25	No	Poor
Gold Star	62	20	45	19	10	No	Poor
Funai	58	25	n/a	n/a	5	No	Poor

* Based on our 24-hour non-stop laboratory test which includes various adverse situations such as power surge, occasional impacts, extreme dampness, dryness, heat, cold, etc.

** Based on a random survey of 100 listed customers of each brand.

*** Based on a panel study, a random survey of 1,000 consumers, and a telephone survey by our marketing team. The scale we used is: Excel Good Avg Poor Bad

If you have finished reading the reports, please start answering questions in the following pages. You may refer back to the reports at any times.

Following is a scale to measure how you feel about the brand name, **Toshiba**. For each statement, please indicate your opinion by circling an appropriate number.

		Strongly Agree						Strongly Disagree
1.	Toshiba makes lots of different kinds of products.	7	6	5	4	3	2	1
2.	Toshiba means very limited product categories.	7	6	5	4	3	2	1
3.	Toshiba represents diverse product categories.	7	6	5	4	3	2	1
4.	There is only a small number of product categories Toshiba represents.	7	6	5	4	3	2	1
5.	Toshiba seems to represent a wide range of product categories.	7	6	5	4	3	2	1
6.	Product categories represented by Toshiba are highly interrelated to each other.	7	6	5	4	3	2	1
7.	Product categories represented by Toshiba are conceptually similar to each other.	7	6	5	4	3	2	1
8.	Technically similar product categories are represented by Toshiba.	7	6	5	4	3	2	1
9.	Product categories represented by Toshiba complement one another.	7	6	5	4	3	2	1
10.	Product categories represented by Toshiba share many features.	7	6	5	4	3	2	1

Following is a scale to measure your perceptions of **quality toward Toshiba TVs**. For each statement, please indicate your perceptions by circling an appropriate number.

		Strongly agree						Strongly disagree
1.	I will have difficulty in understanding all of a Toshiba TV's functions.	7	6	5	4	3	2	1
2.	Toshiba TVs will be easy to operate.	7	6	5	4	3	2	1
3.	Toshiba TVs' functions will be difficult to understand.	7	6	5	4	3	2	1
4.	Toshiba TVs will have unique functions which cannot be found in other brands.	7	6	5	4	3	2	1
5.	Toshiba TVs will have more functions than other brands.	7	6	5	4	3	2	1
6.	You will get quick response when you contact a Toshiba TV's service facility.	7	6	5	4	3	2	1
7.	Toshiba TV's service people will not be willing to help with problems.	7	6	5	4	3	2	1
8.	Toshiba TV's service personnel will not be very sympathetic to your problems.	7	6	5	4	3	2	1
9.	Toshiba TVs will have a longer product life than other brands.	7	6	5	4	3	2	1
10.	In normal conditions, Toshiba TVs will outlive other brands.	7	6	5	4	3	2	1
11.	A Toshiba TV will not do its basic job very consistently.	7	6	5	4	3	2	1
12.	You will get good results from using a Toshiba TV.	7	6	5	4	3	2	1
13.	A Toshiba TV will be a poor performer in doing its job.	7	6	5	4	3	2	1
14.	I will be impressed by Toshiba TV's image.	7	6	5	4	3	2	1
15.	Owning a Toshiba TV will make other people envious.	7	6	5	4	3	2	1
16.	If I buy a Toshiba TV, it will improve my social status.	7	6	5	4	3	2	1

We want to measure your perceptions of similarity between TVs and bicycles. Please indicate your opinion by circling an appropriate number.

I think TV and Bicycle are technically very similar.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
As a consumer, I think that TV and Bicycle are used in very similar situations.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
Overall, I think that TV and Bicycle have very similar features.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
In my opinion, TV and Bicycle have very similar functions.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
I think an extension into Bicycle by a manufacturer of TV is a consistent move.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
In general, it is logical that a company that markets TV would also market Bicycle.	Strongly Agree	7	6	5	4	3	2	1	Strongly Disagree
How much sense does it make to you as a consumer that a company which makes TV would also make Bicycle?	A lot of Sense	7	6	5	4	3	2	1	Very little Sense
What are your overall feelings about how much TV and Bicycle are are related?	Very Related	7	6	5	4	3	2	1	Very Unrelated

Stop here.

Please wait until you get further instructions.

"Now, suppose Toshiba is considering developing and marketing bicycles under the Toshiba brand name."

What are your thoughts about Toshiba bicycles? Please write down all the thoughts that come to your mind - whatever they are. Don't worry about grammar, spelling, or completing sentences.

Now, we want to measure your attitudes toward Toshiba's extension into bicycle product category. Please indicate your perceptions by circling an appropriate number.

		Strongly Agree						Strongly Disagree
1.	I like Toshiba's extension into the bicycle product category.	7	6	5	4	3	2	1
2.	My impression toward the proposed Toshiba bicycle is unfavorable.	7	6	5	4	3	2	1
3.	I think I would be satisfied with a Toshiba bicycle.	7	6	5	4	3	2	1
4.	People will like Toshiba bicycles.	7	6	5	4	3	2	1
5.	I don't think that I would be happy with a Toshiba bicycle.	7	6	5	4	3	2	1
6.	Most people would view Toshiba bicycles favorably.	7	6	5	4	3	2	1
7.	People will be dissatisfied with Toshiba bicycles.	7	6	5	4	3	2	1

Following is a scale to measure your expectations of **quality toward Toshiba bicycles.** For each statement, please indicate your expectations by circling an appropriate number.

		Strongly agree						Strongly disagree
1.	I will have difficulty in understanding all of a Toshiba bicycle's functions.	7	6	5	4	3	2	1
2.	Toshiba bicycles will be easy to operate.	7	6	5	4	3	2	1
3.	Toshiba bicycles' functions will be difficult to understand.	7	6	5	4	3	2	1
4.	Toshiba bicycles will have unique functions which cannot be found in other brands.	7	6	5	4	3	2	1
5.	Toshiba bicycles will have more functions than other brands.	7	6	5	4	3	2	1
6.	You will get quick response when you contact a Toshiba bicycle's service facility.	7	6	5	4	3	2	1
7.	Toshiba bicycles' service people will not be willing to help with problems.	7	6	5	4	3	2	1
8.	Toshiba bicycles' service personnel will not be very sympathetic to your problems.	7	6	5	4	3	2	1
9.	Toshiba bicycles will have a longer product life than other brands.	7	6	5	4	3	2	1
10.	In normal conditions, Toshiba bicycles will outlive other brands.	7	6	5	4	3	2	1
11.	A Toshiba bicycle will not do its basic job very consistently.	7	6	5	4	3	2	1
12.	You will get good results from using a Toshiba bicycle.	7	6	5	4	3	2	1
13.	A Toshiba bicycle will be a poor performer in doing its job.	7	6	5	4	3	2	1
14.	I will be impressed by Toshiba bicycle's image.	7	6	5	4	3	2	1
15.	Owning a Toshiba bicycle will make other people envious.	7	6	5	4	3	2	1
16.	If I buy a Toshiba bicycle, it will improve my social status.	7	6	5	4	3	2	1

Now, suppose Toshiba is considering developing and marketing bicycles under the Toshiba brand name. What do you think about Toshiba's extension into the bicycle category? Please indicate your opinions about Toshiba's extension into the bicylce category by circling an appropriate number for each question.

		Strongly Agree						Strongly Disagree
1.	I like Toshiba's extension into the bicycle product category.	7	6	5	4	3	2	1
2.	My impression toward the proposed Toshiba bicycle is unfavorable.	7	6	5	4	3	2	1
3.	I think I would be satisfied with a Toshiba bicycle.	7	6	5	4	3	2	1
4.	People will like Toshiba bicycles.	7	6	5	4	3	2	1
5.	I don't think that I would be happy with a Toshiba's bicycle.	7	6	5	4	3	2	1
6.	Most people would view Toshiba bicycles favorably.	7	6	5	4	3	2	1
7.	People will be dissatisfied with Toshiba bicycles.	7	6	5	4	3	2	1

What is your sex? Please check one.

male ( )
female ( )

What is your academic status? Please check one.

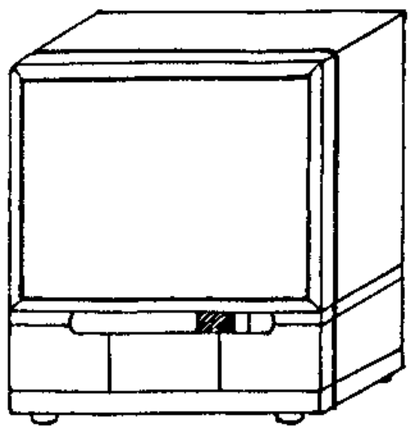
Freshman ( )
Sophomore ( )
Junior ( )
Senior ( )
Graduate ( )

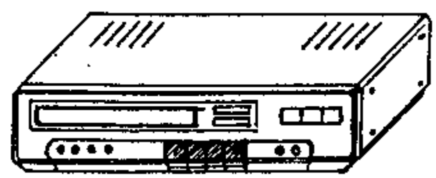
What is your age? ( )

What is your major? Please specify: ________________

Thank you very much.

Quasar is the brand name of a Japanese manufacturer. **Quasar** produces and markets TVs and VCRs. **Quasar** has traditionally focused on TVs and VCRs. You can find **Quasar's** products mostly in specialty stores.





TVs: from 13 inches models to 70 inches big screen models

VCRs: various models with 2 heads as well as 4 heads.

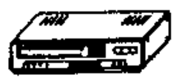
Please turn the page and continue.

Quasar's quality reputation is well established. The next two pages contain recently published reports about various TV brands. The first page is from Consumer Reports (1993 edition), and the second page is from a consumer electronics magazine (1993 edition). Please use these reports to compare quality levels of **Quasar** TVs against those of other TV brands.

Please turn the page and continue.

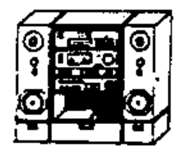
Gold Star is the brand name of a Korean manufacturer. **Gold Star** produces and markets various products. You can find most of **Gold Star's** products in local K-Mart, Wal-Mart, and Service Merchandise stores. Traditionally **Gold Star** has focused on the low end segment of the market for its products where price is an important factor in purchasing decision making. Product categories **Gold Star** currently represents are:

TVs: from 9 inches models to 27 inches models.

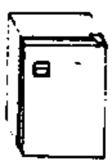


VCRs: diverse models of VCRs including 2 heads and 4 heads.

Personal Computers: various desk-top models from 386SX to 486DX.



Stereo Systems: small size hifi stereo systems.



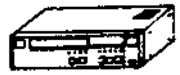
Refrigerators: mostly small one door models.

Tape Recorders: diverse models of tape recorders.

Microwave Ovens: Various sizes and models.

Cordless Phones: Diverse models.

Portable Stereos: Various models of portable music boxes.



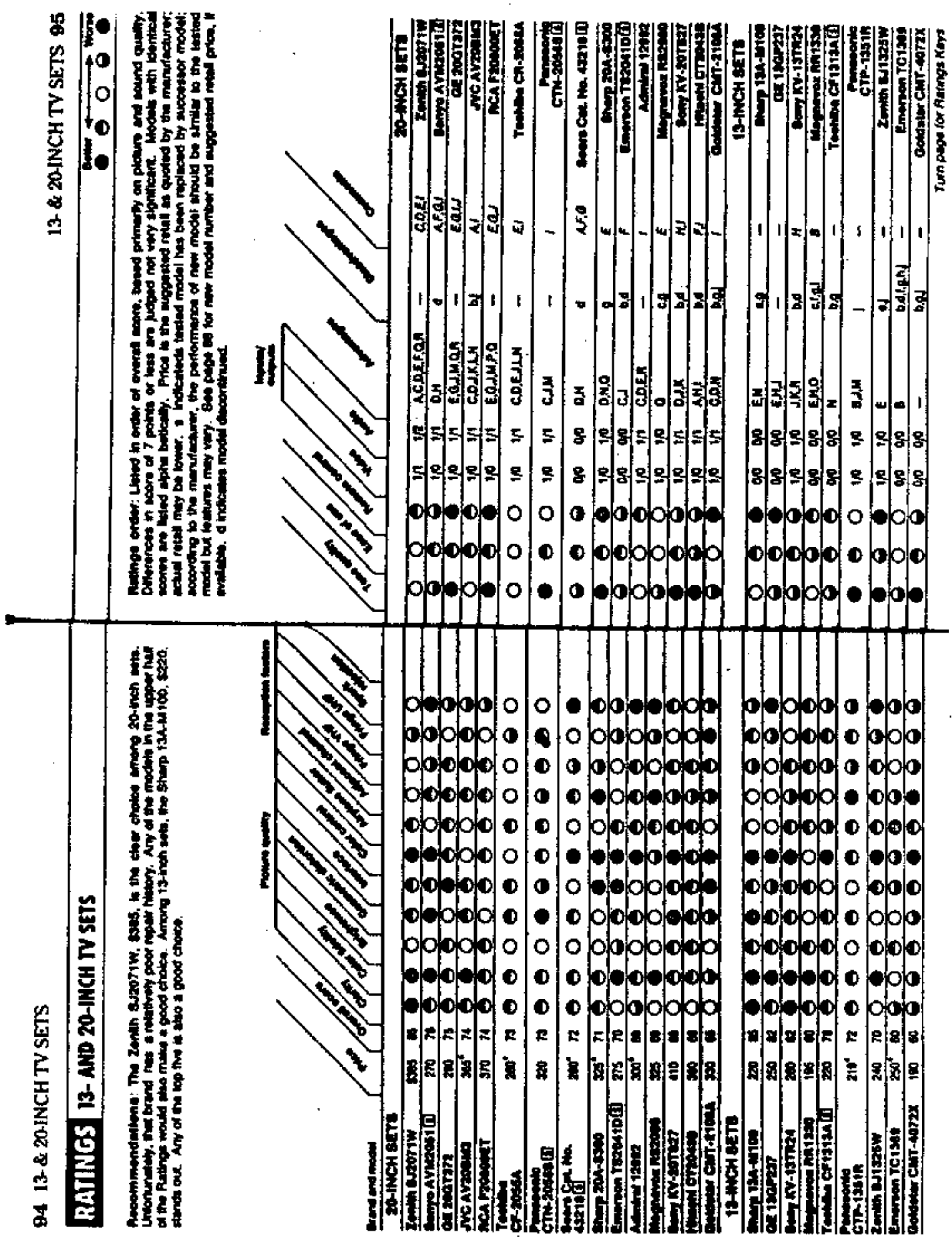
CD-players: various models.

Clock-Radios: diverse models of digital clock-radios.

Please turn the page and continue.

Although **Gold Star** has been in the US market for some time, **Gold Star's** quality reputation has yet to be established. The next two pages contain recently published reports about various TV brands. The first page is from Consumer Reports (1993 edition), and the second page is from a consumer electronics magazine (1993 edition). Please use these reports to compare quality levels of **Gold Star** TVs against those of other TV brands.

Please turn the page and continue.



94 13- & 20-INCH TV SETS

13- & 20-INCH TV SETS 95

RATINGS 13- AND 20-INCH TV SETS

Recommendations: The Zenith SJ2071W, $385, is the clear choice among 20-inch sets. Unfortunately, that brand has a relatively poor repair history. Any of the models in the upper half of the Ratings would also make a good choice. Among 13-inch sets, the Sharp 13A-M100, $220, stands out. Any of the top five is also a good choice.

Ratings order: Listed in order of overall score, based primarily on picture and sound quality. Differences in score of 7 points or less are judged not very significant. Models with identical scores are listed alphabetically. Price is the suggested retail as quoted by the manufacturer; actual retail may be lower. s indicates tested model has been replaced by successor model; according to the manufacturer, the performance of new model should be similar to the tested model but features may vary. See page 96 for new model number and suggested retail price, if available. d indicates model discontinued.

Better ← → Worse

Brand and model	Price	Overall score	Clarity	Color fidelity	Brightness	Geometric distortion	Interlace	Color control	Airplane flutter	Adjacent channel	Fringe VHF	Fringe UHF	Signal rejection
20-INCH SETS													
Zenith SJ2071W	$385	85	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sanyo AVM2061 [s]	270	76	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GE 20GT372	290	75	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
JVC AV20BM3	365[s]	74	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
RCA F20800ET	370	74	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toshiba CF-2056A	260*	73	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Panasonic CTN-2056S [s]	320	73	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sears Cat. No. 43218 [s]	260*	72	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sharp 20A-S300	325[s]	71	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Emerson TS2041D [s]	275	70	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Admiral 12882	300[s]	69	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Magnavox RS2080	325	69	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sony KV-20TS27	410	68	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Hitachi CT2043B	360	68	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Goldstar CMT-2108A	330	66	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13-INCH SETS													
Sharp 13A-M100	220	85	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
GE 13GP237	250	82	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sony KV-13TR24	280	82	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Magnavox RR1330	195	80	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Toshiba CF1313A [s]	220	78	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Panasonic CTP-1351R	219[d]	72	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Zenith SJ1325W	240	70	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Emerson TC1369	250[d]	60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Goldstar CMT-4072X	190	60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Brand and model	Tone quality	Ease of use	Remote control	Inputs/outputs: Video	Inputs/outputs: Audio	Advantages	Disadvantages	Comments
20-INCH SETS								
Zenith SJ2071W	[illegible]	[illegible]	[illegible]	1/1	1/2	A,C,D,E,F,Q,R	—	C,D,E,I
Sanyo AVM2061 [s]	[illegible]	[illegible]	[illegible]	1/0	1/1	D,H	d	A,F,G,I
GE 20GT372	[illegible]	[illegible]	[illegible]	1/0	1/1	E,G,J,M,Q,R	—	E,G,I,J
JVC AV20BM3	[illegible]	[illegible]	[illegible]	1/0	1/1	C,D,J,K,L,N	b,j	A,I
RCA F20800ET	[illegible]	[illegible]	[illegible]	1/0	1/1	E,G,J,M,P,Q	—	E,G,J
Toshiba CR-2056A	[illegible]	[illegible]	[illegible]	1/0	1/1	C,D,E,J,L,N	—	E,I
Panasonic CTN-2056S [s]	[illegible]	[illegible]	[illegible]	1/0	1/1	C,J,M	—	I
Sears Cat. No. 43218 [s]	[illegible]	[illegible]	[illegible]	0/0	0/0	D,H	d	A,F,G
Sharp 20A-S300	[illegible]	[illegible]	[illegible]	1/0	1/0	D,N,Q	g	E
Emerson TS2041D [s]	[illegible]	[illegible]	[illegible]	0/0	0/0	C,J	b,d	F
Admiral 12882	[illegible]	[illegible]	[illegible]	1/0	1/1	C,D,E,R	—	I
Magnavox RS2080	[illegible]	[illegible]	[illegible]	1/0	1/0	Q	c,g	E
Sony KV-20TS27	[illegible]	[illegible]	[illegible]	1/0	1/1	D,J,K	b,d	H,I
Hitachi CT2043B	[illegible]	[illegible]	[illegible]	1/0	1/1	A,H,I	b,d	F,I
Goldstar CMT-2108A	[illegible]	[illegible]	[illegible]	1/0	1/1	C,D,N	b,g,j	I
13-INCH SETS								
Sharp 13A-M100	[illegible]	[illegible]	[illegible]	0/0	0/0	E,N	e,g	—
GE 13GP237	[illegible]	[illegible]	[illegible]	0/0	0/0	E,H,J	—	—
Sony KV-13TR24	[illegible]	[illegible]	[illegible]	1/0	1/0	J,K,R	b,d	H
Magnavox RR1330	[illegible]	[illegible]	[illegible]	0/0	0/0	E,H,O	c,f,g,j	B
Toshiba CF1313A [s]	[illegible]	[illegible]	[illegible]	0/0	0/0	N	b,g	—
Panasonic CTP-1351R	[illegible]	[illegible]	[illegible]	1/0	1/0	B,J,M	j	—
Zenith SJ1325W	[illegible]	[illegible]	[illegible]	1/0	1/0	E	e,j	—
Emerson TC1369	[illegible]	[illegible]	[illegible]	0/0	0/0	B	b,d,f,g,h,j	—
Goldstar CMT-4072X	[illegible]	[illegible]	[illegible]	0/0	0/0	—	b,g,j	—

Turn page for Ratings Keys

TV SETS

	Overall rating	Failure rate within 1,000 hours (%) *	Failure rate within 3,000 hours (%) *	Service requirement rate in the first 3 years **	Number of service stations	24-hour answering service	Responses by service personnel ***
Sony	97	0	0	3	57	Yes	Good
Quasar	96	0	0	2	20	Yes	Good
Toshiba	95	0	0	4	36	Yes	Excel
RCA	94	0	5	3	64	Yes	Excel
Pioneer	90	5	5	7	25	Yes	Good
JVC	89	0	5	6	25	No	Avg
Mitsubishi	89	5	15	5	45	No	Avg
Hitachi	86	5	15	8	34	Yes	Avg
Magnovox	80	10	20	12	70	Yes	Good
GE	79	10	20	11	88	Yes	Avg
Zenith	79	5	20	13	55	Yes	Avg
Philips	78	10	20	12	20	No	Good
Samsung	76	5	25	11	25	Yes	Avg
Panasonic	75	10	20	15	45	No	Avg
Emerson	70	15	25	21	44	No	Poor
Sanyo	67	20	30	17	30	Yes	Avg
Sylvania	64	20	40	25	25	No	Poor
Gold Star	62	20	45	19	10	No	Poor
Funai	58	25	n/a	n/a	5	No	Poor

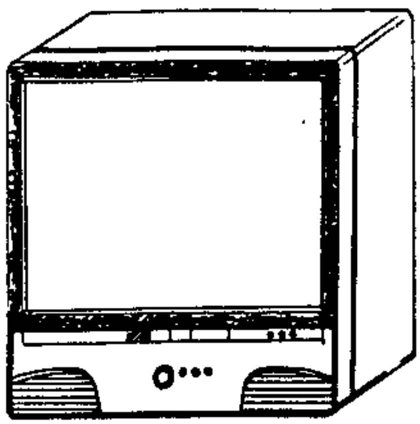
* Based on our 24-hour non-stop laboratory test which includes various adverse situations such as power surge, occasional impacts, extreme dampness, dryness, heat, cold, etc.

** Based on a random survey of 100 listed customers of each brand.

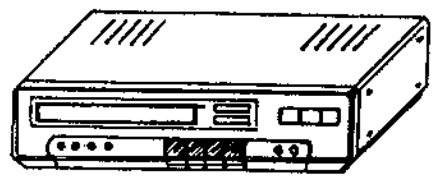
*** Based on a panel study, a random survey of 1,000 consumers, and a telephone survey by our marketing team. The scale we used is: Excel Good Avg Poor Bad

If you have finished reading the reports, please start answering questions in the following pages. You may refer back to the reports at any times.

__**Funai**__ is the brand name of a Chinese manufacturer. **Funai** produces and markets TVs and VCRs. You can find **Funai's** products in local Target stores. **Funai** currently focuses only on these two product categories.



TVs: from 13 inches models to 20 inches models.



VCRs: various models with 2 heads as well as 4 heads.

Please turn the page and continue.

As a relatively new and unknown brand, **Funai's** quality reputation is far from being established. The next two pages contain recently published reports about various TV brands. The first page is from Consumer Reports (1993 edition), and the second page is from a consumer electronics magazine (1993 edition). Please use these reports to compare <u>quality levels of **Funai** TVs</u> against those of other TV brands.

Please turn the page and continue.

BIBLIOGRAPHY

Aaker, David A. (1990), "Brand Extensions: The Good, the Bad, and the Ugly," Sloan Management Review, 31 (Summer), 47-56.

_____ and Kevin L. Keller (1990), "Consumer Evaluations of Brand Extensions," Journal of Marketing, 54 (January), 27-41.

Adelson, Beth (1984), "When Novices Surpass Experts: The Difficulty of a Task May Increase With Expertise," Journal of Experimental Psychology: Learning, Memory, and Cognition, 10 (3), 483-495.

Alba, Joseph W. and J. Wesley Hutchinson (1987), "Dimensions of Consumer Expertise," Journal of Consumer Research, 13 (March), 411-454.

Alpert, Bernard (1967), "Non-businessmen as Surrogates for Businessmen in Behavioral Experiments," Journal of Business, 40 (April), 203-207.

Anderson, Carol H. (1986), "Hierarchical Moderated Regression Analysis: A Useful Tool for Retail Management Decisions," Journal of Retailing, 62 (2), 186-203.

Applebaum, Mark I. and Elliot M. Cramer (1974), "Some Problems in the Nonorthogonal Analysis of Variance," Psychological Bulletin, 81 (6), 335-343.

Archibald, Robert B., Clyde A. Haulman, Carlisle E. Moody, Jr. (1983), "Quality, Price, Advertising, and Published Quality Ratings," Journal of Consumer Research, 9 (March), 347-356.

Assael, Henry (1984), Consumer Behavior and Marketing Action, 2nd ed. Boston, MA: Kent Publishing Co.

Baron, Reuben M. and David A. Kenny (1986), "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," Journal of Personality and Social Psychology, 51 (6), 1173-1182.

Barsalou, Lawrence W. (1983), "Ad hoc Categories," Memory and Cognition, 11 (3), 211-227.

_____ (1985), "Ideals, Central Tendency, and Frequency of Instantiation as Determinants of Graded Structure in Categories," Journal of Experimental Psychology: Learning, Memory, and Cognition, 11 (4), 629-654.

Belch, George E. (1981), "An Examination of Comparative and Noncomparative Television Commercials: The Effects of Claim Variation and Repetition on Cognitive Response and Message Acceptance," Journal of Marketing Research, 18 (August), 333-349.

Berry, Leonard L., Valarie A. Zeithaml, and A. Parasuraman (1990), "Five Imperatives for Improving Service Quality," Sloan Management Review, 31 (Summer), 29-38.

Bird, M., C. Channon, and A. Ehrenberg (1970), "Brand Image and Brand Usage," Journal of Marketing Research, 7 (August), 307-314.

Bonner, P. Greg and Richard Nelson (1985), "Product Attributes and Perceived Quality: Foods," in Perceived Quality, J. Jacoby and J. Olson eds., Lexington, MA: Lexington Books, 65-79.

Boush, David M. (1988), "A Categorization Model of Attitude Transfer and Its Application to Brand Extension," Unpublished Doctoral Dissertation, University of Minnesota, Minneapolis, MN.

_____ and Barbara Loken (1991), "A Process-Tracing Study of Brand Extension Evaluation," Journal of Marketing Research, 28 (February), 16-28.

Brock, Timothy C. and Sharon Shavitt (1983), "Cognitive-Response Analysis in Advertising," in Advertising and Consumer Psychology, Larry Percy and Arch Woodside eds., Lexington, MA: Lexington Books, 91-110.

Broh, R. A. (1982), Managing Quality for Higher Profits, New York, NY: McGraw-Hill, Ch.1.

Brucks, Merrie and Valarie A. Zeithaml (1991), "Price and Brand Name as Indicators of Quality Dimensions," unpublished working paper, Duke University, Durham, NC.

_____, Gary M. Armstrong, and Marvin E. Goldberg (1988), "Children's Use of Cognitive Defenses Against Television Advertising: A Cognitive Response Approach," Journal of Consumer Research, 14 (March), 471-482.

Bruner, J. S. (1957), "Going Beyond the Information Given," in Contemporary Approaches to Cognition, J. S. Bruner, H. Gruber, G. Terrell, and M. Wertheimer eds., Cambridge, MA: Harvard University Press, 151-156.

Cacioppo, John T., Stephen G. Harkins, and Richard E. Petty (1981), "The Nature of Attitudes and Cognitive Responses and Their Relationships to Behavior," in Cognitive Responses in Persuasion, Richard E. Petty, Thomas M. Ostrom, and Timothy C. Brock eds., Hillsdale, NJ: Lawrence Erlbaum, 31-54.

Calder, Bobby J., Lynn W. Phillips, and Alice M. Tybout (1981), "Designing Research for Application," Journal of Consumer Research, 8 (September), 197-207.

_____, _____, _____ (1982), "The Concept of External Validity," Journal of Consumer Research, 9 (December), 240-244.

Campbell, Donald T. and Julian C. Stanley (1966), Experimental and Quasi-Experimental Designs for Research, Chicago, IL: Rand McNally.

Cantor, Nancy and Walter Mischel (1979), "Prototypes in Person Perception," Advances in Experimental Social Psychology, 12, 3-52.

Carlston, Donal E. (1980), "The Recall and Use of Traits and Events in Social Inference Processes," Journal of Experimental Social Psychology, 16, 303-328.

Chakravarti, Dipankar, Deborah J. MacInnis, and Kent Nakamoto (1990), "Product Category Perceptions, Elaborative Processing and Brand Name," Advances in Consumer Research, 17, 910-916.

Churchill, Gilbert A. (1979), "A Paradigm for Developing Better Measures of Marketing Constructs," Journal of Marketing Research, 16 (February), 64-73.

_____ and J. Paul Peter (1984), "Research Design Effects on the Reliability of Rating Scales: A Meta Analysis," Journal of Marketing Research, 21 (November), 360-375.

Cialdini, Robert B., Richard E. Petty, and John T. Cacioppo (1981), Annual Review of Psychology, 32, 357-404.

Cohen, Jacob (1968), "Multiple Regression as a General Data-Analytic System," Psychological Bulletin, 70 (6), 426-443.

_____ (1977), Statistical Power Analysis for the Behavioral Sciences, Revised ed., New York, NY: Academic Press.

_____ and Patricia Cohen (1983), Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences, 2nd ed., Hillsdale, NJ: Lawrence Erlbaum.

Cohen, Joel B. and Kunal Basu (1987), "Alternative Models of Categorization: Toward a Contingent Processing Framework," Journal of Consumer Research, 13 (March), 455-472.

Cook, Thomas D. and Donald D. Campbell (1979), Quasi-Experimentation: Design and Analysis Issues for Field Settings, Boston, MA: Houghton Mifflin Co.

Corfman, Kim P., Donald R. Lehmann, and Sunder Narayanan (1991), "Values, Utility, and Ownership: Modeling the Relationships for Consumer Durables," Journal of Retailing, 67 (2), 184-204.

Cunningham, William H., W. Thomas Anderson Jr. and John H. Murphy (1974), "Are Students Real People?" Journal of Business, 47 (July), 399-409

Dholakia, Ruby R. and Brian Sternthal (1977), "Highly Credible Sources: Persuasive Facilitators or Persuasive Liabilities," Journal of Consumer Research, 3 (March), 223-232.

Dobni, Dawn and George M. Zinkhan (1990), "In Search of Brand Image," Advances in Consumer Research, 17, 110-119.

Doyle, Peter and Ian Fenwick (1974), "How Store Image Affects Shopping Habits in Grocery Chains," Journal of Retailing, 50 (4), 39-52.

Engel, James F., David T. Kollat, and Roger D. Blackwell (1973), Consumer Behavior, 2nd ed., New York, NY: Holt, Rinehart and Winston Inc.

Enis, Ben M., Keith K. Cox, and James E. Stafford (1972), "Students as Subjects in Consumer Behavior Experiments," Journal of Marketing Research, 9 (February), 72-74.

Farquhar, Peter H., Paul M. Herr, and Russell H. Fazio (1990), "A Relational Model for Category Extensions of Brands," Advances in Consumer Research, 17, 856-860.

Fishbein, Martin and Icek Ajzen (1975), Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research, Reading, MA: Addison-Wesley Publishing Co.

Fiske, Susan T. (1982), "Schema-triggered Affect: Applications to Social Perception," in Affect and Cognition: The 17th Annual Carnegie Symposium on Cognition, M. Clark and S. Fiske eds., Hillsdale, NJ: Erlbaum, 55-78

_____ and Mark A. Pavelchak (1986), "Category-Based versus Piecemeal-Based Affective Responses: Developments in Schema-Triggered Affect," in Handbook of Motivation and Cognition: Foundations of Social Behavior, Richard M. Sorrentino and E. Tory Higgins eds., New York: Guilford Press, 167-203.

Friedmann, Roberto (1986), "Psychological Meaning of Products: Identification and Marketing Applications," Psychology and Marketing, 3 (Spring), 1-15.

_____ and V. Parker Lessig (1987), "Psychological Meaning of Products and Product Positioning," Journal of Product Innovation Management, 4 (December), 265-273.

Fry, Joseph N. (1967), "Family Branding and Consumer Brand Choice," Journal of Marketing Research, 4 (August), 237-247.

Garvin, David A. (1984a), "Product Quality: An Important Strategic Weapon," Business Horizons, 27 (May-June), 40-43.

_____ (1984b), "What Does 'Product Quality' Really Mean?" Sloan Management Review, 26 (Fall), 25-43.

_____ (1987), "Competing on the Eight Dimensions of Quality," Harvard Business Review, 65 (Nov-Dec), 101-109.

Gensch, Dennis H. (1978), "Image-Measurement Segmentation," Journal of Marketing Research, 15 (August), 384-394.

Gilovich, Thomas (1981), "Seeing the Past in the Present: The Effect of Associations to Familiar Events on Judgments and Decisions," Journal of Personality and Social Psychology, 40 (5), 797-808.

Gorn, Gerald J. and Charles B. Weinberg (1984), "The Impact of Comparative Advertising on Perception and Attitude:

Some Positive Findings," Journal of Consumer Research, 11 (September), 719-727.

Green, Paul E., Donald S. Tull, and Gerald Albaum (1988), Research for Marketing Decisions, 5th ed., Englewood Cliffs, NJ: Prentice Hall.

Greenwald, Anthony G. (1968), "Cognitive Learning, Cognitive Response to Persuasion, and Attitude Change," in Psychological Foundations of Attitudes, Anthony Greenwald, Timothy Brock, and Thomas Ostrom eds., New York: Academic Press, 147-170.

Harnad, Stevan (1987), "Category Induction and Representation," in Categorical Perception: The Groundwork of Cognition, Stevan Harnad ed., New York: Cambridge University Press, 535-565.

Hartman, Cathy L., Linda L. Price, and Calvin P. Duncan (1990), "Consumer Evaluation of Franchise Extension Products: A Categorization Processing Perspective," Advances in Consumer Research, 17, 120-127.

Hastak, Manoj and Jerry C. Olson (1989), "Assessing the Role of Brand-Related Cognitive Responses as Mediators of Communication Effects on Cognitive Structure," Journal of Consumer Research, 15 (March), 444-456.

Herr, David G. and Jacquelyn Gaebelein (1978), "Nonorthogonal Two-Way Analysis of Variance," Psychological Bulletin, 85 (1), 207-216.

Hirschman, Elizabeth C., Barnett Greenberg, and Dan H. Robertson (1978), "The Intermarket Reliability of Retail Image Research: An Empirical Examination," Journal of Retailing, 54 (1), 3-12.

Hjorth-Anderson, Chr. (1984), "The Concept of Quality and the Efficiency of Markets for Consumer Products," Journal of Consumer Research, 11 (September), 708-718.

Insko, Chester A., William Turnbull, and Ben Yandell (1974), "Facilitative and Inhibiting Effects of Distraction on Attitude Change," Sociometry, 37 (4), 508-528.

Jacoby, Jacob, Jerry C. Olson, and Rafael A. Haddock (1971), "Price, Brand Name, and Product Composition Characteristics as Determinants of Perceived Quality," Journal of Applied Psychology, 55 (6), 570-579.

Jain, Arun K. and Michael Etgar (1976), "Measuring Store Image Through Multidimensional Scaling of Free Response Data," Journal of Retailing, 52 (4), 61-70.

Johnson, Michael D. (1984), "Consumer Choice Strategies for Comparing Noncomparable Alternatives," Journal of Consumer Research, 11 (December), 741-753.

_____ (1988), "Comparability and Hierarchical Processing in Multialternative Choice," Journal of Consumer Research, 15 (December), 303-314.

Judd, Charles M. and David A. Kenny (1981), Estimating the Effects of Social Interventions, New York, NY: Cambridge University Press.

Kahneman, Daniel and Amos Tversky (1972), "Subjective Probability: A Judgment of Representativeness," Cognitive Psychology, 3 (July), 430-454.

_____ and _____ (1973), "On the Psychology of Prediction," Psychological Review, 80 (4), 237-251.

Keller, Kevin L. and David A.Aaker (1992), "The Effects of Sequential Introduction of Brand Extensions," Journal of Marketing Research, 29 (February), 35-50.

Kerby, Joe Kent (1967), "Semantic Generalization in the Formation of Consumer Attitudes," Journal of Marketing Research, 4 (August), 314-317.

_____ (1969), "Borrowing From the Behavioral Sciences," Journal of Business, 42 (April), 152-161.

Kesler, Lori (1987), "Extensions Leave Brand in New Area," Advertising Age, (June 1), S1.

Khera, Inder P. and James D. Benson (1970), "Are Students Really Poor Substitutes for Businessmen in Behavioral Research?" Journal of Marketing Research, 7 (November), 529-532.

Kidd, Robert F. (1976), "Manipulation Checks: Advantage or Disadvantage," Representative Research in Social Psychology, 7 (2), 160-165.

Kotler, Philip (1984), Marketing Management: Analysis, Planning, and Control, 5th ed., Englewood Cliffs, NJ: Prentice-Hall.

Laurent, Gilles and Jean-Noel Kapferer (1985), "Measuring Consumer Involvement Profiles," Journal of Marketing Research, 12 (February), 41-53.

Lindquist, Jay D. (1974), "Meaning of Image," Journal of Retailing, 50 (4), 29-37.

Lingle, John H. and Thomas M. Ostrom (1979), "Retrieval Selectivity in Memory-Based Impression Judgments," Journal of Personality and Social Psychology, 37 (2), 180-194

Loken, Barbara and James Ward (1987), "Measures of the Attribute Structure Underlying Product Typicality," Advances in Consumer Research, 14, 22-26.

Love, Robert E. and Anthony G. Greenwald (1978), "Cognitive Responses to Persuasion as Mediators of Opinion Change," Journal of Social Psychology, 104 (2), 231-240.

Lutz, Richard J. and Scott B. MacKenzie (1982), "Construction of A Diagnostic Cognitive Response Model for Use in Commercial Pretesting," in Straight Talk about Attitude Research, Joseph Chasin ed., AMA Proceedings series, Chicago, IL: American Marketing Association, 145-156.

MacKenzie, Scott B. (1986), "The Role of Attention in Mediating the Effect of Advertising on Attribute Importance", Journal of Consumer Research, 13 (September), 174-195.

_____ and Richard A. Spreng (1992), "How Does Motivation Moderate the Impact of Central and Peripheral Processing on Brand Attitudes and Intentions?", Journal of Consumer Research, 18 (March), 519-529.

Mandler, George (1982), "The Structure of Value: Accounting for Taste," in Affect and Cognition: The 17th Annual Carnegie Symposium on Cognition, M. Clark and S. Fiske eds., Hillsdale, NJ: Erlbaum, 3-36.

Marks, Ronald B. (1976), "Operationalizing the Concept of Store Image," Journal of Retailing, 52 (3), 37-46.

Martineau, Pierre (1957), Motivation in Advertising: Motives that make people buy, New York, NY: McGraw-Hill.

Maynes, E. Scott (1976), Decision-Making for Consumers, New York, NY: MacMillan Publishing Co.

Mazanec, Josef A. and Gunter C. Schweiger (1981), "Improved Marketing Efficiency Through Multi-product Brand Names?" European Research, 7 (January), 32-44.

Medin, Douglas L. and Lawrence W. Barsalou (1987), "Categorization Processes and Categorical Perception," in Categorical Perception: The Groundwork of Cognition, Stevan Harnad ed., New York: Cambridge University Press, 455-490.

Mervis, Carolyn B. and Eleanor Rosch (1981), "Categorization of Natural Objects," Annual Review of Psychology, 32, 89-115.

Mitchell, Walter G. (1967), "Systematic Synthesis of Advertising Research Verbatims," Journal of Advertising Research, 18 (August), 318-332.

Monroe, Kent B. and R. Krishnan (1985), "The Effect of Price on Subjective Product Evaluations," in Perceived Quality, J. Jocoby and J. Olson, eds., Lexington, MA: Lexington Books, 209-232.

Morgan, Leonard A. (1985), "The Importance of Quality," in Perceived Quality, J. Jacoby and J. Olson, eds., Lexington, MA:Lexington Books, 61-64.

Murphy, Gregory L. and Douglas L. Medin (1985), "The Role of Theories in Conceptual Coherence," Psychological Review, 92 (July), 289-316.

_____ and Edward E. Smith (1982), "Basic-Level Superiority in Picture Categorization," Journal of Verbal Learning and Verbal Behavior, 21 (February), 1-20.

_____ and Jack C. Wright (1984), "Changes in Conceptual Structure With Expertise: Differences Between Real-World Experts and Novices," Journal of Experimental Psychology: Learning, Memory, and Cognition, 10 (1), 144-155.

Myers-Levy, Joan and Alice M. Tybout (1989), "Schema Congruity as a Basis for Product Evaluation," Journal of Consumer Research, 16 (June), 39-54.

Neuhaus, Colin F. and James R. Taylor (1972), "Variables Affecting Sales of Family-Branded Products," Journal of Marketing Research, 9 (November), 419-422.

Nunnally, Jum C. (1978), Psychometric Theory, 2nd ed., New York, NY: McGraw-Hill Book Co.

Olshavski, Richard W. (1985), "Perceived Quality in Consumer Decision Making: An Integrated Theoretical Perspective," in Perceived Quality, J. Jacoby and J. Olson, eds., Lexington, MA: Lexington Books, 3-29.

Olson, Jerry C., Daniel R. Toy, and Philip A. Dover (1982), "Do Cognitive Responses Mediate the Effects of Advertising Content on Cognitive Structure?" Journal of Consumer Research, 9 (December), 245-262.

Osgood, Charles E. (1963), "Psycholinguistics," in Psychology: A Study of a Science, Volume 6., Sigmund Koch ed., NY: McGraw-Hill Book Company, 244-316.

Oxenfeldt, Alfred R. (1974), "Developing a Favorable Price-Quality Image," Journal of Retailing, 50 (4), 8-14.

Ozanne, Julie L., Merrie Brucks, and Dhruv Grewal (1992), "A Study of Information Search Behavior during the Categorization of New Products.", Journal of Consumer Research, 18 (March), 452-463.

Parasuraman, A., Valarie A. Zeithaml, and Leonard L. Berry (1985), "A Conceptual Model of Service Quality and Its Implications for Future Research," Journal of Marketing, 49 (Fall), 41-50.

_____, _____, and _____ (1988), "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality," Journal of Retailing, 64 (1), 12-40.

Park, C. Whan, Bernard J. Jaworski, and Deborah J. MacInnis (1986), "Strategic Brand Concept-Image Management," Journal of Marketing, 50 (October), 135-145.

_____, Robert Lawson, and Sandra Milberg (1989), "Memory Structure of Brand Names," Advances in Consumer Research, 16, 726-731.

_____, Sandra Milberg, and Robert Lawson (1991), "Evaluation of Brand Extensions: The Role of Product Feature Similarity and Brand Concept Consistency," Journal of Consumer Research, 18 (September), 185-193.

Perdue, Barbara C. and John O. Summers (1986), "Checking the Success of Manipulations in Marketing Experiments," Journal of Marketing Research, 23 (November), 317-326.

Perreault, William D. and William R. Darden (1975), "Unequal Cell Sizes in Marketing Experiments: Use of the General

Linear Hypothesis," Journal of Marketing Research, 12 (August), 333-342.

Peterson, Robert A. (1970), "The Price - Perceived Quality Relationship: Experimental Evidence," Journal of Marketing Research, 7 (November), 525-528.

Petty, Richard E. and John T. Cacioppo (1983), "Central and Peripheral Routes to Persuasion: Application to Advertising," in Advertising and Consumer Psychology, Larry Percy and Arch Woodside eds., Lexington, MA: Lexington Books, 3-23.

_____, _____, and David Schumann (1983), "Central and Peripheral Routes to Advertising Effectiveness: The Moderating Role of Involvement," Journal of Consumer Research, 10 (September), 135-146.

Read, Stephen J. (1983), "Once is Enough: Causal Reasoning From a Single Instance," Journal of Personality and Social Psychology, 45 (2), 323-334.

Reynolds, Thomas J. and Jonathan Gutman (1984), "Advertising Is Image Management," Journal of Advertising Research, 24 (February-March), 27-37.

Roberts, Donald F. and Nathan MacCoby (1973), "Information Processing and Persuasion: Counterarguing Behavior," in New Models for Mass Communication Research, Peter Clarke, ed., Beverly Hills, CA: Sage Publications, 269-307.

Roman, Hope S. (1969), "Semantic Generalization in Formation of Consumer Attitudes," Journal of Marketing Research, 6 (August), 369-373.

Rosch, Eleanor H. (1973), "On the Internal Structure of Perceptual and Semantic Categorization," in Cognitive Development and the Acquisition of Language, Timothy E. Moore ed., New York, NY: Academic Press, 111-144.

_____ (1975), "Cognitive Representations of Semantic Categories," Journal of Experimental Psychology: General, 104 (3), 192-233.

_____ and Carolyn B. Mervis (1975), "Family Resemblances: Studies in the Internal Structure of Categories," Cognitive Psychology, 7 (October), 573-605.

_____, _____, W. D. Gray, D. M. Johnson, and P. Boyes-Braem (1976), "Basic Objects in Natural Categories," Cognitive Psychology, 8 (July), 382-439.

Schoenfeld, Alan H. and Douglas J. Herrmann (1982), "Problem Perception and Knowledge Structure in Expert and Novice Mathematical Problem Solvers, Journal of Experimental Psychology: Learning, Memory, and Cognition, 8 (5) 484-494.

Schuptrine, F. Kelly (1975), "On the Validity of Using Students as Subjects in Consumer Behavior Investigations," Journal of Business, 48 (July), 383-390.

Sharma, Subhash, Richard M. Durand, and Oded Gur-Arie (1981), "Identification and Analysis of Moderator Variables," Journal of Marketing Research, 18 (August), 291-300.

Sherif, Carolyn W., Muzafer Sherif, and Roger W. Nebergall (1965), Attitude and Attitude Change: the Social Judgment - Involvement Approach, Philadelphia, PA:Saunders.

Smith, Edward E. and Douglas L. Medin (1981), Categories and Concepts, Cambridge, MA: Harvard University Press.

Soley, Lawrence C. and Leonard N. Reid (1983), "On the Validity of Students as Subjects in Advertising Experiments," Journal of Advertising Research, 23 (4), 57-59.

Soutar, Geoffrey N., Richard C. Bell, and Yvonne M. Wallis (1990), "Consumer Acquisition Patterns for Durable Goods: A Rasch Analysis," European Journal of Marketing, 24 (8), 31-39.

Steenkamp, Jan-Benedict E. M. (1990), "Conceptual Model of the Quality Perception Process," Journal of Business Research, 21 (December), 309-333.

Sternthal, Brian, Ruby Dholakia, and Clark Leavitt (1978), "The Persuasive Effect of Source Credibility: Tests of Cognitive Response," Journal of Consumer Research, 4 (March), 252-260.

Sujan, Mita (1985), "Consumer Knowledge: Effects on Evaluation Strategies Mediating Consumer Judgments," Journal of Consumer Research, 12 (June), 31-46.

_____ and Christine Dekleva (1987), "Product Categorization and Inference Making: Some Implications for Comparative Advertising," Journal of Consumer Research, 14 (December), 372-378

Szybillo, George J. and Jacob Jacoby (1974), "Intrinsic versus Extrinsic Cues as Determinants of Perceived Product Quality," Journal of Applied Psychology, 59 (1), 74-78.

Tauber, Edward M. (1981), "Brand Franchise Extension: New Product Benefits From Existing Brand Names," Business Horizons, 24 (March/April), 36-41.

_____ (1988), "Brand Leverage: Strategy for Growth in a Cost-Control World," Journal of Advertising Research, 28 (Aug-Sep), 26-30.

Thompson, Kenneth Neil (1988), "An Exploratory Model of Consumer Brand Extension Behavior," Unpublished Doctoral Dissertation, University of Colorado, Boulder, CO.

_____, James E. Nelson, and Calvin P. Duncan (1987), "A Moderator Variables Model of Brand Extension Behavior," in 1987 AMA Winter Educator's Conference Proceedings, Russell W. Belk et al. eds., Chicago, IL: American Marketing Association, 45-49

Toy, Daniel R. (1982), "Monitoring Communication Effects: A Cognitive Structure/Cognitive Response Approach," Journal of Consumer Research, 9 (June), 66-76.

Tversky, Barbara and Kathleen Hemenway (1984), "Objects, Parts, and Categories," Journal of Experimental Psychology: General, 113, No.2, 169-191.

University of Minnesota Consumer Behavior Seminar (1987), "Affect Generalization to Similar and Dissimilar Brand Extensions," Psychology and Marketing, 4 (3), 225-237.

Ward, James and Barbara Loken (1988), "The Generality of Typicality Effects on Preference and Comparison: An Exploratory Test," Advances in Consumer Research, 15, 55-61.

_____, _____, Ivan Ross, and Tedi Hasapopoulos (1986), "The Influence of Physical Similarity on Generalization of Affect and Attribute Perceptions from National Brands to Private Label Brands," in 1986 AMA Educators'

Proceedings, Terence A. Schimp et al. eds., Chicago, IL:American Marketing Association, 51-56.

Wilkie, William L. (1986), Consumer Behavior, New York, NY: John Wiley & Sons.

_____ and Edgar A. Pessemier (1973), "Issues in Marketing's Use of Multi-Attribute Attitude Models," Journal of Marketing Research, 10 (November), 428-441.

Wright, Peter (1973), "The Cognitive Processes Mediating Acceptance of Advertising," Journal of Marketing Research, 10 (February), 53-62.

_____ (1974), "On the Direct Monitoring of Cognitive Response to Advertising," in Buyer/Consumer Information Processing, G. David Hughes and Michael L. Ray eds., Chapel Hill, NC: University of North Carolina Press, 220-248.

_____ (1980), "Message-Evoked Thoughts: Persuasion Research Using Thought Verbalizations," Journal of Consumer Research, 7 (September), 151-175.

Wyer, Robert S. and Thomas K. Srull (1980), "The Processing of Social Stimulus Information: A Conceptual Integration," in Person Memory: The Cognitive Basis of Social Perception, Reid Hastie, Thomas M. Ostrom, Ebbe B. Ebbesen, Robert S. Wyer, David L. Hamilton, and Donal E. Carlston eds., Hillsdale, NJ: Erlbaum, 227-300.

Zaichkowsky, Judith L. (1985), "Measuring the Involvement Construct," Journal of Consumer Research, 12 (December), 341-352.

Zeithaml, Valarie A. (1988), "Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence," Journal of Marketing, 52 (July), 2-22.