

Division of Research
School of Business Administration

October 1988

THE DIFFERENTIAL PROCESSING OF PRODUCT CATEGORY
AND NONCOMPARABLE CHOICE ALTERNATIVES

Working Paper #585

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ABSTRACT

This article contrasts consumer choice processing of single products from different categories, or noncomparable alternatives, with the processing of multiple products from different categories, or product category alternatives. Recent studies reveal similarities in the processing of these two different types of choices. Theoretically, however, the processing of product categories should be more top-down while the processing of noncomparables should be more bottom-up. The results reported herein support the theoretical predictions and demonstrate the perceptual and processing differences between the two types of choices.

INTRODUCTION

Consumer researchers have examined the processing of two different types of across-category choice alternatives: product categories and noncomparables. While product category choice involves different categories of alternatives (Howard 1977), noncomparable choice involves specific ($n=1$) alternatives from different product categories (Johnson 1984). A growing number of studies demonstrate how these two types of across-category choices differ from more comparable, brand-level choice processing (Bettman and Sujon 1987; Boote 1975; Johnson 1984, 1988; Park and Smith 1988).

The difference between product category and noncomparable choice is not as clear. In many ways the processing of product categories and noncomparables may be identical, calling into question the usefulness of the distinction. At the same time, the theoretical development of product category and noncomparable choice processing suggests that important and systematic differences should exist.

This paper examines the differential processing of noncomparable and product category choice alternatives. Theoretically, the top-down or hierarchical nature of product category choice (Howard 1977) contrasts with the bottom-up nature of many noncomparable choices (Johnson 1984). This implies, for example, that choice processing among categories should proceed from the abstract to the concrete while the opposite should hold for noncomparables. After reviewing recent consumer research on across-category choice, the theoretical differences between product category and noncomparable choice are developed into a set of research hypotheses. A test of the hypotheses supports both processing and perceptual differences between the two types of choices.

ACROSS-CATEGORY CHOICE PROCESSING

Early examinations of consumer choice processing focused on choice among relatively similar brands from the same product category (see Bettman 1979, 1986 and Johnson and Puto 1987 for reviews of this literature). More recent research has moved beyond brands to study choices involving products from traditionally different categories. Two different types of across-category choice have been studied: choice among product categories and choice among noncomparables. Yet it is unclear whether or not these supposedly different choices are represented and processed differently by consumers. A review of the literature reveals more similarities than differences.

Product Category Choice

Howard (1977; see also Howard and Sheth 1969) views product category choice as a hierarchical process. Accordingly, consumers begin choosing among relatively abstract product categories and work down, in a hierarchical or top-down fashion (Hauser 1986), to a choice among brands. Consistent with memory and categorization research in psychology (Anderson 1983; Collins and Loftus 1975; Rosch 1975; Rosch et al. 1976), Howard hypothesized a corresponding hierarchy of abstract to concrete choice criteria. Howard's model predicts that as consumers move hierarchically from categories, to subcategories, to brands, there is a corresponding decrease in the level of abstraction of their choice criteria.

Boote's (1975) study, contrasting category- and brand-level appliance choices, supports this prediction. Boote used Rokeach's (1973) terminal and instrumental values as surrogates for relatively abstract and concrete choice criteria respectively. Subjects rated the

more abstract, terminal values as more important to product category choice and the more concrete, instrumental values as more important to brand-level choice (see Howard 1977, pp. 99-100).

More recently, Park and Smith (1988) examined how subjects process product category alternatives when provided with an explicit choice goal.¹ Their subjects were presented with five categories of entertainment alternatives, each category containing five available brands, and instructed to choose among the product categories using "satisfaction of entertainment needs" as their goal. Verbal protocols were collected to examine the type of processing involved. Interestingly, their subjects tended to use alternative-based processing, in which consumers combined or evaluated the attributes of particular choice alternatives. Rather than comparing the alternatives directly on descriptive attributes (attribute-based processing), it appears that the subjects focused on how particular alternatives' attributes mapped into the experimentally provided choice goal.

Noncomparable Choice

Consumers also face choices involving specific alternatives from different categories, or noncomparable alternatives (Johnson 1984). Consumers may evaluate and eliminate alternatives within categories and later choose from among particular, across-category alternatives. A consumer may, for example, have both a particular video cassette recorder and a particular bicycle in mind when the opportunity arises to choose between them. While the VCR may be described on recording quality and remote control, the bicycle may be described by its style and number of speeds. Such alternatives are relatively noncomparable in that they are described or represented on very different concrete,

nonprice attributes. Noncomparable choices also arise whenever the supply of available alternatives is limited to particular products from different categories. This is often the case in consumption, as opposed to purchase, choice situations (Belk 1985; Holbrook and Hirschman 1982).

Johnson proposed two general strategies that consumers might use to compare noncomparable alternatives. The first is a straightforward alternative-based strategy (e.g., an additive or linear compensatory strategy). Descriptive attributes may be combined or examined for each alternative and the alternatives compared on the basis of their resulting overall evaluations (i.e., overall worth or value). The second strategy is an attribute-based strategy with abstraction, whereby consumers compare alternatives at a level of abstraction short of an overall evaluation. Consumers may compare the alternatives directly on descriptive, nonprice attributes (using, for example, an additive difference strategy; Tversky 1969), but only after they form a more abstract, comparable representation of the alternatives. The more noncomparable the alternatives, the more abstract the required representation and resulting nonprice comparisons. For example, the VCR and the bicycle may be described and compared directly on frequency of use and entertainment.

These more abstract attribute representations may be either recalled or constructed in order to directly compare the alternatives (Johnson 1984, 1986). Consumers may, for example, simply recall product category knowledge in order to form a more abstract, comparable representation. Noncomparable choice processing may be very similar to product category processing in such cases. In other cases, however, a

comparable representation must be constructed from the particular products' descriptive, concrete attributes.

Consumers' use of these two general noncomparable choice strategies suggests systematic similarities and differences between comparable (i.e., brand-level) and more noncomparable choice processing. Both comparables and noncomparables may be evaluated using a straightforward alternative-based strategy. Hence the attribute combinations which underlie this strategy should remain relatively concrete for both types of choices. Using an attribute-based strategy, meanwhile, requires a comparable attribute representation. Thus attribute-based product comparisons should become more abstract the more noncomparable the choice alternatives.

One should also observe an increase in alternative-based attribute combinations relative to attribute-based product comparisons from comparables to noncomparables. One reason to expect an increase is that alternative-based processing is often required to form the more abstract, comparable representations on which noncomparable alternatives are compared. The additional effort required to form an abstract, comparable representation also suggests a decrease in attribute-based processing. Finally, there are generally fewer abstract attributes on which to compare alternatives than there are concrete attributes to combine (Johnson 1988).

Johnson (1984) reports two studies that test these general predictions. Subjects were presented with binary choices varying in comparability (e.g. two bicycles, a bicycle and a motorcycle, a bicycle and a stereo). In one study subjects were asked to project how a third party would choose between the alternatives in each choice. The second

study asked subjects to make a personal choice between the alternatives. On the basis of verbal protocols collected during both experiments, and eye-fixation data collected in study two, both predictions were supported. The more noncomparable the alternatives, the more abstract were the subjects' attribute-based comparisons, and the more the subjects relied on alternative-based processing of concrete attribute information. More recently, Johnson (1988) found convergent support for these predictions using verbal protocols, multialternative choices, and actual consumer products as stimuli.

The Johnson (1988) study also demonstrates how the variance in the comparability of multiple choice alternatives affects choice processing. Comparability variance is the degree to which comparability varies among each possible pair of alternatives in a multialternative choice set. As part of the study, low variance comparable and noncomparable choices, involving either multiple alternatives from a single category or single alternatives from multiple categories (e.g. six toasters or a toaster, mixer, corn popper, coffee grinder, wok, and coffee maker), were compared with high comparability variance choices, involving a mixture of comparable and noncomparable product pairs (e.g. three toasters and three blow dryers).

Products' natural categorical relationships are more transparent in the high comparability variance choices. Indeed, many of these choices involved product category alternatives. This should result in more hierarchical processing, in which products are eliminated as members of groups or categories (Howard 1977; Hauser 1986). As predicted, the high comparability variance alternatives were much more likely to be eliminated as a group or category.

In another recent study, Bettman and Sujan (1987) examined how the ready availability of an abstract decision criterion affects expert and naive consumers' judgments of comparable and noncomparable products. Subjects were either primed or not primed for a particular criterion (reliability or creativity) and then asked to form an impression of each of two comparable products (two 35mm cameras) or two noncomparable products (a 35 mm camera and a personal computer). Cognitive responses revealed the content of the subjects' evaluations. The evaluation of both the comparable and the noncomparable alternatives occurred at a concrete level for those subjects who were primed for a particular abstract criterion. It appears that, when primed, the subjects considered how the products' concrete attributes affected the criterion.

Notice the similarity between Bettman and Sujan's priming results, involving noncomparables, and Park and Smith's results, involving product categories. The priming condition in Bettman and Sujan's study is qualitatively different from Park and Smith's explicit provision of a choice goal. However, these conditions are similar in the sense that they both make salient, or focus attention on, a particular abstract choice goal or criterion. Moreover, their effects on the two supposedly different types of across category choices are very similar. When primed for a criterion, Bettman and Sujan's subjects evaluated noncomparables using concrete attributes. Although the cognitive responses in the study did not allow for explicit process tracing, this result very strongly suggests the use of an alternative-based processing strategy. Similarly, Park and Smith observed predominantly alternative-based processing of product category alternatives for subjects facing an explicit choice goal.

Those subjects who were not primed for a criterion in the Bettman and Sujan study are more comparable to the subjects in the Johnson studies. Here the experts formed impressions of the comparable alternatives on the basis of concrete product attributes, and formed impressions of the noncomparables on the basis of more abstract attributes. This is consistent with Johnson's (1984, 1988) results as well as Boote's (1975) results contrasting brand- and product-level choice. Interestingly, the results for novices were quite different. Novices evaluated both comparables and noncomparables on the basis of abstract attributes. For the relatively sophisticated stimuli in this study (35mm cameras and personal computers), novices may not have been able to evaluate the alternatives on concrete attributes. They apparently relied on their abstract, categorical knowledge of the alternatives.

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Unfortunately, these studies fail to distinguish between noncomparable and product category choice processing. In particular, the results reported to date fail to clearly demonstrate Johnson's (1984) original contention that consumers construct, in a bottom-up fashion, abstract attribute representations on which to directly compare noncomparable alternatives. One should be able to observe the bottom-up, constructive nature of this particular form of processing. Specifically, evaluative attributes should become more abstract through the course of choice processing, with alternative-based attribute combinations preceding attribute-based product comparisons.²

This bottom-up processing of noncomparables should contrast directly with the proposed hierarchical or top-down processing of product categories. Product category choice should proceed hierarchically from the abstract to the concrete as the consumer narrows from a choice among categories to a choice among brands (Howard 1977). And whether the consumer is choosing among categories early on, or brands later in the process, the representations should be relatively comparable (Johnson and Fornell 1987). Therefore, unlike noncomparable choice, attribute-based processing should not be dependent on alternative-based processing through the course of a product category choice.

Recall that the Johnson (1988) study supports product group or category eliminations as more likely for high comparability variance choices. This finding does not necessitate a distinction between product category and noncomparable choice processing. One would expect multiple product eliminations for the high variance alternatives, many of which involved categories of products, based solely on the similarity relationships among the products (Ranyard 1987; Tversky 1972).

The proposed bottom-up processing of noncomparables versus the top-down processing of product categories may also be reflected in the perceptually salient attributes used to describe (versus evaluate) the choice alternatives.³ Descriptive attributes may become more abstract for noncomparable alternatives and more concrete for product category alternatives through the course of a choice. In other words, changes in the abstractness of descriptive product attributes may mirror any changes in evaluative attributes.

There should also be a basic perceptual difference between noncomparable and product category alternatives. A growing number of studies support products being described by a range of concrete to abstract attributes (Bettman and Sujan 1987; Johnson 1984, 1988; Johnson and Fornell 1987; Park and Smith 1988; Sujan 1985). Consider that noncomparable alternatives overlap more on abstract than concrete attributes, while product category alternatives, containing a mix of categories and brands, overlap on both abstract and concrete attributes. Therefore, noncomparable alternatives should activate perceptually more abstract information, on average, than should categories of alternatives. This difference should apply to both evaluative and descriptive product attributes.

Finally, it is natural for consumers to assess their basic need for across-category choice alternatives (Howard 1977; McAlister 1982). This need assessment, or screening, should be quite different for product category and noncomparable choices. The hierarchical nature of product category choice implies that need assessment occurs very early in the process. For example, consumers first decide whether they need a toaster or a mixer and then, having established a need for one of the available categories, choose among the available brands. The need assessment of noncomparables should be more sequential due to the bottom-up nature of noncomparable choice; need assessment should be more distributed throughout the choice process.

HYPOTHESES

The preceding discussion suggests a number of testable hypotheses regarding the differential processing of noncomparable and product

category alternatives. Two hypotheses focus on the level of abstraction of evaluative product attributes.

H1: The level of abstraction of evaluative attributes increases for noncomparable choices and decreases for product category choices through the course of choice processing.

H2: Evaluative product attributes are more abstract for noncomparable choices than for product category choices.

Hypothesis one follows directly from the abstraction presumed to underlie noncomparable choice versus the concretization presumed to underlie product category choice. A basic perceptual difference between noncomparable and product category alternatives drives the second hypothesis; particular alternatives from different categories (a noncomparable choice) should stimulate or make salient more abstract attributes, on average, than multiple alternatives from different categories (a product category choice).

A third hypothesis concerns the nature of the evaluation process at different stages of a choice.

H3: Alternative-based attribute combinations generally precede attribute-based product comparisons for noncomparable choices but not for product category choices.

Following Johnson (1984, 1988), alternative-based processing should precede attribute-based processing for many noncomparable choices (i.e., when an abstract representation is constructed) but not for product categories.

Two further hypotheses focus on descriptive (versus evaluative) product attributes. The interaction and main effects predicted under hypotheses one and two for evaluative product attributes may hold for descriptive attributes as well.

H4: The level of abstraction of descriptive product attributes increases for noncomparable choices and decreases for product category choices through the course of choice processing.

H5: Descriptive product attributes are more abstract for noncomparable choices than for product category choices.

Finally, the hierarchical nature of product category choice should result in consumer need assessment occurring earlier for categories of alternatives than for noncomparables.

H6: The assessment of consumer needs occurs earlier for product category choices than for noncomparable choices.

The next section describes the data used to test these hypotheses, the analyses, and the empirical results.

EMPIRICAL TEST

Data

A reexamination and extension of the Johnson (1988) study provides a test of the research hypotheses. Subjects in the study made choices among comparable products (brands), noncomparables, and a mixture of comparables and noncomparables. Most of the mixed choices involved product category alternatives. Specifically, those mixed choices containing at least two alternatives from each of two or more categories involve product categories. These choices are contrasted directly with the available noncomparable choices from the study in order to test the hypotheses.

The five available product category choices include: 1) two desk clocks and two desk lamps, 2) two cameras and two fire extinguishers, 3) three desk clocks and three desk lamps, 4) three toasters and three blow dryers, and 5) two toasters, two mixers, and two desk clocks. The eight available noncomparable choices include: 1) a corn popper and a toaster, 2) a smoke detector and a heating pad, 3) a corn popper, mixer, wok, and coffee maker, 4) a coffee grinder, electric razor, heating pad, and camera, 5) a toaster, mixer, corn popper, coffee grinder, wok, and

coffee maker, 6) a corn popper, desk lamp, fire extinguisher, electric razor, heating pad, and pocket camera, 7) a desk clock, desk lamp, smoke detector and fire extinguisher, and 8) an electric razor, blow dryer, mixer, toaster, desk clock, and desk lamp. These choices constitute 13 of the original 17 choices in the study. Of the remaining choices, three involved brands from the same category while one involved two woks, a mixer and a desk clock. This final choice is problematic (it contains both a category and noncomparables) and was therefore excluded from the present analysis.

All of the choice sets involved actual products. Thirty subjects were each asked to make a choice among the individual choice sets and verbal protocols were collected. Subjects were able to keep one of their chosen products as compensation, and the subjects were video taped during the experiment. These video tapes were used to help identify the products associated with the processing in the protocols. Prior to making their choices, subjects rated their knowledge of the products' attributes. Three naive judges coded the protocols for product attributes and then classified each attribute as being the basis of an attribute-based comparison, part of an alternative-based combination of attributes, or a stand-alone description of a product or product group. The coding reliabilities were all reasonably large and the classification reliabilities all significantly positive (see Johnson 1988 for more details of the procedure and protocol coding). Attribute concreteness-abstractness ratings were obtained from a separate group of judges, who rated the attributes in the protocols on a scale from 0 (very concrete) to 10 (very abstract).

Those attributes classified as comparisons (i.e., attribute-based processing) and combinations (i.e., alternative-based processing) were used to test hypotheses one, two, and three (n=848). Hypotheses four, five, and six were tested using those attributes classified as product descriptions in the original study.

Need Assessment

The descriptions were divided into two categories for the present analysis. Descriptions of need or necessity were categorized as instances of need assessment and used to test hypothesis six (n=153). All other descriptive attributes were used to test hypotheses four and five (n=565).

There is a good argument for treating descriptions of product need separately. When a subject makes a stand-alone, blanket statement regarding their need or lack of need for a product, it strongly suggests an overall screening of the product for further consideration. Descriptions of need are also qualitatively different from comparisons or combinations involving need. When need is used to compare alternatives (i.e., "I need a toaster more than a blow dryer") the absolute level of need for the products involved is unclear. When used as part of an alternative-based combination of attributes (i.e., "I need the toaster and its the right color for my kitchen"), need constitutes only one of two or more attributes used to evaluate an alternative.

Stage of Processing

The ordinal information available in the original protocol codes was used to operationalize a stage of processing variable. (Attributes were coded in the order in which they were mentioned in the protocols.) Stage of processing equaled $p/(T+1)$ where p is an attribute's position

in the order of processed attributes for a choice and T is the total number of attributes coded for the choice. This creates a variable with a constant mean of .5 across the choice protocols. This stage of processing measure is the dependent variable used to test hypotheses three and six. Stage of processing is an independent variable when testing the remaining hypotheses. Attributes were classified into early, intermediate, and late stages of processing for the purpose of testing these hypotheses. This three-level classification was based on a three-way split of the relevant observations.

Analysis

A series of general linear models were used to test the hypotheses. Given the potential importance of product knowledge (Bettman and Sujan 1987; Sujan 1985), a knowledge covariate (the subjects' self-rated knowledge of each choice set) was included along with the independent variables of interest.

The dependent variable used to test hypotheses one and two is the level of abstraction of the evaluative attributes (comparisons and combinations). The independent variables in the model were the type of choice (noncomparable versus product category), the stage of processing (three levels: early, intermediate, late), a covariate for choice set knowledge, the interactions involving these variables, a repeated measures variable for subjects (thirty levels), a random choice set size variable nested within type of choice, and a random choice set variable nested within choice set size.⁴ Hypothesis one predicts a significant interaction between the type of choice and the stage of processing on the level of abstraction of evaluated attributes. Hypothesis two predicts a main effect for type of choice on attribute abstraction.

In the second model, stage of processing was the dependent variable used to test hypothesis three. The independent variables were the type of choice (two levels), how the evaluative attribute was processed (alternative-based attribute combination versus attribute-based product comparison), a knowledge covariate, the interactions involving these variables, a repeated measures variable for subjects, and random effects variables for set size nested within type of choice and choice sets nested within set size. Hypothesis three predicts an interaction between the type of choice and the type of processing (combination versus comparison) on the stage of processing.

A third model identical to that used to test hypotheses one and two was used to test hypotheses four and five, with the exception of substituting descriptive attributes for evaluative attributes. Hypothesis four predicts a significant interaction between the type of choice and the stage of processing on the level of abstraction of descriptive product attributes. Hypothesis five predicts a main effect for the type of choice on attribute abstraction.

In the fourth and final model, stand-alone descriptions of product need were used to test hypothesis six. The dependent variable was the stage of processing of need assessment. The independent variables included the type of choice, knowledge, a type of choice by knowledge interaction, subjects, and the nested effects of set size and choice set. The prediction is a significant main effect for the type of choice on the stage of processing of need assessment.

Results

The results of the first model, presented in Figure A, reveal the significant interaction predicted by hypothesis one ($F=3.83$, $p<.05$).

Insert Figure A about here

The level of abstraction of evaluated attributes increased for noncomparables and decreased for product category choices through the course of choice processing. For the noncomparable choices, the average abstractness of the evaluative attributes was 5.17, 5.20, and 5.60 respectively for the early, intermediate and late stages of processing. The corresponding averages for the product category choices were 5.05, 4.66, and 4.51. These results support hypothesis one.

There was also a significant main effect for the type of choice on attribute abstraction ($F=17.26$, $p<.0001$). As shown in Figure A, evaluative attributes were more abstract for the noncomparable choices than for the product category choices across all three stages of processing. (Independent contrasts support significant differences for both the intermediate ($p<.05$) and late ($p<.001$) stages of processing.) These results generally support hypothesis two. Of the remaining independent variables, there was a significant effect for subjects ($F=3.34$, $p<.0001$), and a significant random effect for the different choice sets nested under set size ($F=3.17$, $p<.01$). The stage of processing main effect, the covariance due to knowledge, the remaining interactions, and the random effects of set size were not significant.

The results of the second model reveal that, as predicted, combinations occurred earlier than comparisons for the noncomparables, but not for the product categories. Overall there was a significant interaction between type of choice and type of processing on stage of processing ($F=20.18$, $p<.0001$). For the noncomparable choices, the average stage of processing of the alternative-based combinations and

the attribute-based comparisons was .47 and .63 respectively. For the product category choices, the corresponding averages were .52 and .51. The main effect for type of processing was also significant ($F=13.76$, $p<.001$), though it is driven by the significant type of choice by type of processing interaction. There were no other significant effects in this model. The results show that combinations generally preceded comparisons for the noncomparables but not for the categories. These results support hypothesis three. When combined with the support for hypothesis one, the results support the notion that consumers overtly construct abstract attribute representations in order to directly compare many noncomparable alternatives.

The third analysis model examined the level of abstraction of descriptive product attributes. The results, presented in Figure B, again reveal a significant interaction between type of choice and stage of processing on the level of abstraction of these attributes ($F=4.20$, $p<.05$).

Insert Figure B about here

Notice, however, that while descriptive attributes decreased in abstraction for the product category choices, there was basically no change for the noncomparables. The abstractness of the descriptive attributes for the noncomparable choices was 6.14, 6.03, and 6.16 respectively for early, intermediate and late stages of processing. The corresponding values for the product category choices were 5.63, 4.79, and 4.37. The significant choice by stage interaction supports a distinction between noncomparable and product category alternatives, but only partially supports hypothesis three.

A main effect for the type of choice on the abstractness of descriptive attributes ($F=54.99$, $p<.0001$) supports hypothesis five. As was the case for evaluative attributes, descriptive attributes were more abstract for the noncomparable alternatives at each stage of processing. (Independent contrasts again reveal significant differences in abstraction between noncomparable and product category choices at the intermediate and late stages of processing ($p<.001$).) The support for both hypotheses two and five is consistent with a general perceptual difference between noncomparable and product category choice alternatives. It may also explain why descriptive attributes were relatively abstract throughout the noncomparables choices.

There were two other significant effects in the descriptive attribute model, one for subjects ($F=1.98$, $p<.01$) and one for knowledge ($F=11.41$, $p<.001$). The significant knowledge covariance represents a negative relationship between self-rated product knowledge and attribute abstraction. This is consistent with existing models of consumer behavior (e.g., Howard 1977) and recent research (Bettman and Sujan 1987; Sujan 1985) that supports consumers' concrete to abstract product knowledge increasing with expertise.

Finally, the need assessment model reveals a significant difference in the stage of need assessment for the different choices ($F=28.41$, $p<.0001$). The average stage of processing for need assessment was .27 for the product categories compared to .47 for the noncomparables, supporting hypothesis six, and consistent with the more hierarchical nature of product category choice. There were no other significant effects in this model.

Summary

The results support differences in both the processing and the perception of product category and noncomparable choice alternatives. Evaluative attributes became more abstract through the course of the noncomparable choices, with alternative-based processing occurring earlier than attribute-based processing. Both evaluative and descriptive attributes became more concrete through the course of the product category choices, with need assessment occurring early in the process. And the noncomparables were represented at a consistently higher level of abstraction than were the categories.

DISCUSSION

These observations extend our understanding of across-category choice processing on several dimensions. They explicitly contrast the top-down or hierarchical processing of product categories with the more bottom-up processing of noncomparables. It is apparent that product category and noncomparable alternatives are very different in their composition and potential processing. This underscores their differential treatment in consumer choice research.

When combined with earlier studies of within- versus across-category choice (Bettman and Sujan 1987; Boote 1975; Johnson 1984, 1988; Park and Smith 1988), the results suggest a tripartite view of consumer choices. Consumers face brand, category, and noncomparable choice alternatives which may elicit very different evaluative processing. This is not to say that processing will always be different in the two cases. Experimental manipulations, such as the provision of a well-defined goal (Park and Smith 1988) or priming of a decision criteria

(Bettman and Sujan 1987), may result is the similar processing of product categories, noncomparables, and brands.

Following the lead of previous studies (e.g. Biehal and Chakravarti 1986; Lussier and Olshavsky 1979; Payne 1976), the results demonstrate the value of examining different types of processing by choice phase. The results expand our knowledge of noncomparable choice processing in this regard. In particular, the observation that relatively concrete attribute combinations precede more abstract attribute comparisons supports Johnson's (1984) contention that consumers often construct more abstract, comparable representations in order to directly compare noncomparables.

Examining the stages of product category choice, meanwhile, extends our knowledge of product category processing. Both descriptive and evaluative attributes decreased in abstraction through the course of the product category choices. Alternative-based and attribute-based processing were very equally distributed through the course of the product category choices. Finally, need assessment occurred earlier for the categories than the noncomparables. These findings, combined with the observed hierarchical elimination of product category alternatives (Johnson 1988), strongly supports a hierarchical view of product category choice (Bettman 1970; Hauser 1986; Howard 1977; Howard and Sheth 1969).

The observed top-down versus bottom-up processing observed here may have important implications for future research on consumer judgment and choice. Consider that hierarchical elimination is the basis of such common choice strategies as elimination by aspects (Tversky 1972) and related choice models (Hauser 1986; Kahn, Moore and Glazer 1987; Tversky

and Sattath 1979). Indeed, a hierarchical approach to problem solving is an extremely efficient way of handling a large number of alternatives (Simon 1969). The present study suggests, however, that hierarchical strategies and models may be more applicable to product category than noncomparable choice alternatives.

The revealed perceptual difference between noncomparable and product category alternatives is also significant. Recall that both evaluative and descriptive attributes were more abstract for the noncomparable choices than the product category choices. It appears that noncomparable alternatives stimulate more abstract attributes, on average, than do categories of alternatives. Such perceptual differences are often difficult to explain within error-effort or cost-benefit views of choice strategy selection (Beach and Mitchell 1978; Johnson and Payne 1985). This finding reinforces the need for consumer researchers to adopt a more perceptual view of contingent decision behavior (Payne 1982).

An important question for future consumer choice research becomes just when, where, and how do these qualitatively different choices arise? Given the variety of observed decision making processes, a search for any all encompassing theory of choice may be in vain (Slovic, Lichtenstein, and Fischhoff 1985). Instead, as our understanding of choice processing grows, we should begin to turn our attention to understanding and predicting the existence of the different choices themselves.

FOOTNOTES

1. Although these authors refer to noncomparable choice, their experimental stimuli constitute product category alternatives according to the conceptualization presented herein.
2. Although noncomparables may be represented and processed using product category representations (Johnson 1984, 1986), the net result should still be an increase in processing abstraction through the course of noncomparable choice processing with attribute combinations preceding attribute comparisons.
3. For present purposes, descriptive attributes are defined as those attributes that arise in the course of choice processing which are not a part of some particular attribute- or alternative-based evaluation. This does not imply that descriptive attributes serve no evaluative purpose.
4. The model, in keeping with hypotheses one and two, does not distinguish between attribute-based product comparisons and alternative-based attribute combinations. The differential use of comparisons and combinations is explicitly modeled in hypothesis three (see also Johnson 1988).

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Figure A
Abstractness of Evaluative Attributes

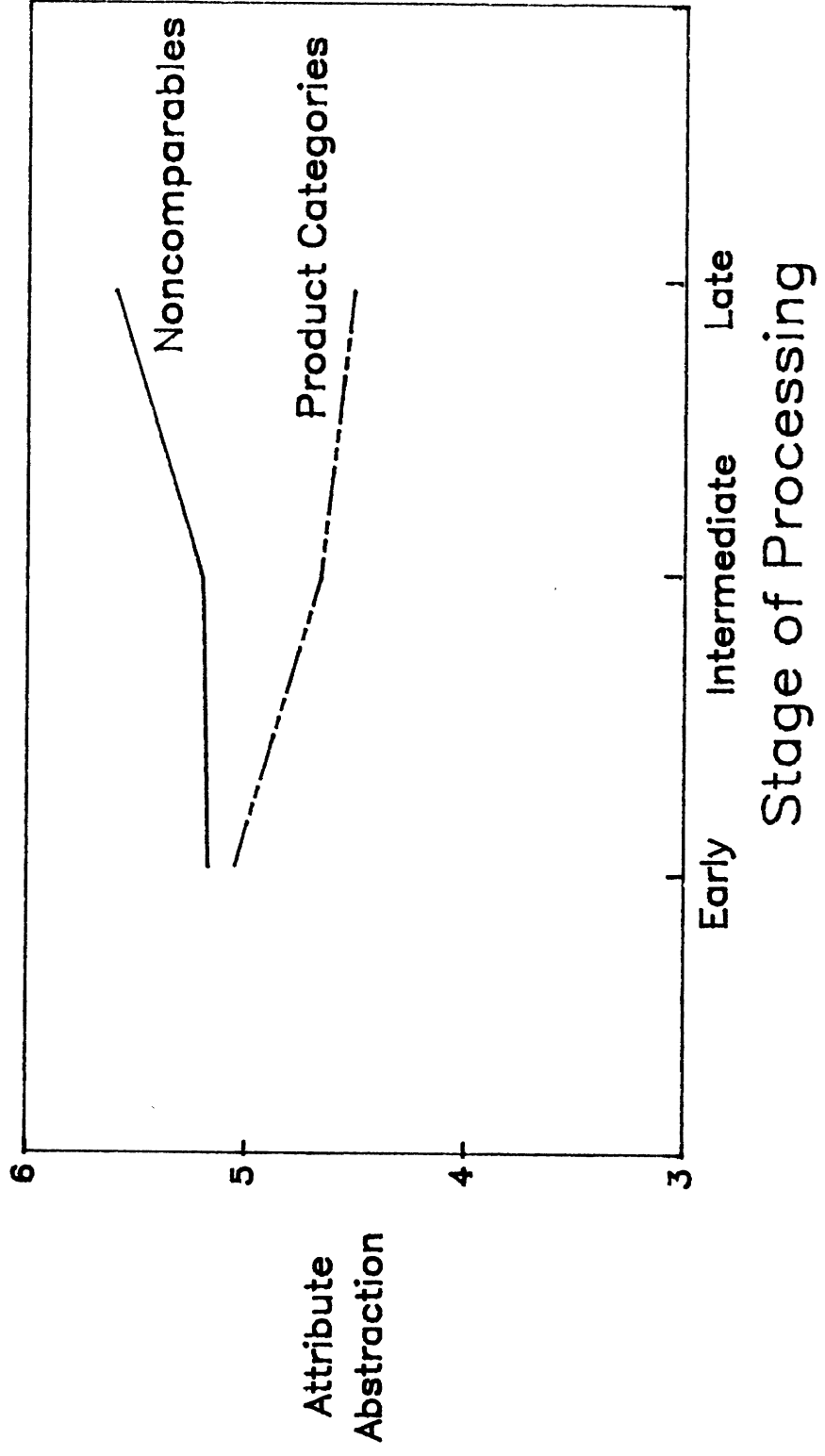


Figure B
Abstractness of Descriptive Attributes

