Alternative Approaches to Understanding the Determinants of Typicality

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Data were collected for eight sets of product- and brand-level categories to better understand the determinants of typicality and the relationship between typicality and attitude for each category level. Measures of both feature similarity (family resemblance) and goal achievement (ideals, attribute structure) predicted typicality. However, the latter measures were more likely to moderate the typicality-attitude relationship. Frequency of instantiation was superior to a general familiarity measure in predicting typicality. Attitudes and attribute structure better predicted typicality for subordinate (e.g., fast-food restaurants) than superordinate (e.g., restaurants) categories. Implications for the nature and structure of product and brand categories are discussed.

How do consumers decide whether a granola bar coated with chocolate yogurt is a type of candy or a health food? If they perceive it as a type of candy, then what type of candy will they compare it with and how typical of such candies will it seem? In general, what determines whether a product is perceived to be more or less a member of any particular category? Prior research suggests that people's judgments of how typical an item is of a category may be influenced by such factors as the degree to which it shares attributes with other members, its frequency of instantiation, and its evaluation. However, there is by no means a consensus on what actually determines product typicality, either at the superordinate (product type) or subordinate (brand) category level. The factors that determine typicality in product categories, their relative strength in superordinate and subordinate product categories, and explanations for why such relationships exist are important issues for consumer researchers to consider for at least two reasons.

First, a variety of issues about typicality and its determinants have not been adequately explored in past studies. A few studies suggest that a relationship between typicality and preference should exist in product categories (Barsalou 1983, 1985; Nedungadi and Hutchinson 1985), but little work explores why such a relationship should exist. Also, more work is needed on how superordinate and subordinate product categories may differ in structure. Moreover, knowledge of the relative importance of various predictors of typicality could provide insight into whether product categories should be thought of as goal-oriented or taxonomic categories.

Second, better understanding the determinants of typicality has implications for a variety of other issues of interest to consumer researchers. Past research has shown that typical instances of a category are more likely than atypical instances to be named sooner in free recall of category instances (Mervis and Rosch 1981; Nedungadi and Hutchinson 1985; Ward and Loken 1986), classified more quickly and with fewer errors (Mervis and Rosch 1981), learned more rapidly as category members (Mervis and Rosch 1981), and used more often as cognitive reference points in comparisons (Mervis and Rosch 1981). Thus, a better understanding of typicality may provide more insight into how products are remembered, learned, compared, and chosen. The typicality of a brand or product type should be related to the probability of its inclusion in the consumer's evoked set, to the likelihood of its classification into a target category, to its choice as a standard of comparison, and to its evaluation. For example, Alba and Hutchinson (1987) note that if a consumer decides to buy a product from a particular category (e.g., white table wine) but is not sufficiently motivated to compare specific brands, the consumer might tend to choose whatever brand seems most typical because it is easier to recall.

The present study explores three related issues not sufficiently researched previously concerning product typicality:

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- the effects of multiple constructs as *determinants of typicality* in product and brand categories,
- the *relationship between typicality and attitude*,
- the effects of *category level*, namely, superordinate versus subordinate categories, on the predictive ability of constructs relating to typicality.

In the sections that follow, an overview of each of these three issues is provided and prior research relevant to each is discussed.

DETERMINANTS OF TYPICALITY

Cognitive psychologists have become increasingly interested in categorization research and in the question of why one category member is more typical or prototypical than another. Typicality is usually defined as the degree to which an item is perceived to represent a category. The construct is usually measured by asking subjects to rate items along scales with endpoints of "good example/poor example," "representative/unrepresentative," or simply "typical/atypical." Rosch and Mervis's (1975, p. 588) instructions to subjects on how to rate typicality have been an operational definition of the construct in many studies:

> Let's take the word red as an example. Close your eyes and imagine a true red. Now imagine an orangish red . . . imagine a purple red. Although you might still name the orange-red or the purple-red with the term red, they are not as good examples of red (as clear cases of what *red* refers to) as the clear "true" red. In short, some reds are redder than others. The same is true of other kinds of categories. Think of dogs. You all have some notion of what a "real dog," a "doggy dog" is. . . . Notice that this kind of judgment has nothing to do with how well you like the thing; you can like a purple-red better than a true red but still recognize that the color you like is not a true red. You may prefer to own a Pekinese without thinking that it is the breed that best represents what people mean by dogginess.

After defining a typical category member as a good, true example, Rosch's instructions ask subjects to rate category exemplars on goodness-of-example scales.

Past research has focused on four major determinants of typicality: (1) whether an item shares or does not share attributes with other items, (2) familiarity with an item's meaning, (3) frequency of exposure to the item, and (4) attitude toward the item, that is, the positive or negative value associated with the item. Research on each of these factors and its utility in understanding the structure of product categories is discussed next.

Attribute Sharing

Two major approaches, Rosch and Mervis's (1975) family-resemblance approach and Tversky's (1977) feature-similarity approach, have different implications for the relationship of attribute sharing to typicality.

Family Resemblance. Rosch and Mervis's concept of family resemblance is the best-known conceptualization of the relationship between an item's perceived typicality and its attributes. Rosch defines family resemblance as the degree to which a category member has attributes in common with other category members. The more typical a product is of a category, the more attributes it shares with other members of the category and the greater its family-resemblance score. Family resemblance is measured by asking a group of subjects to list the attributes of a set of items from a category. Each item's family-resemblance score is calculated by weighting its attributes by the number of items that share each attribute and then summing these weights.[1] In a series of studies (for a review, see Mervis and Rosch [1981]), Rosch and her colleagues demonstrated that their measure of family resemblance is significantly related to the perceived typicality of members of taxonomic categories like vegetables, fruits, and animals. These findings suggest that perceived typicality in product categories may also be related to family resemblance.

H1: Family resemblance is positively related to typicality in product categories.

The family-resemblance measure has two aspects that distinguish it from other attempts to relate attributes to perceived typicality. First, the measure assumes that a greater number of common attributes increases perceived typicality but a greater number of distinctive attributes does not decrease perceived typicality. Second, Rosch's model focuses more on the relationship of the presence or absence of actual physical similarities to perceived typicality than on the relationship of the salience, degree of possession, or evaluation of attributes to typicality.

Tversky's Feature-Similarity Approach. In Tversky's (1977) model of attribute sharing, the similarity of two objects, A and B, is a function of their common features minus the distinctive features of A and minus the distinctive features of B. Tversky's model, like the family-resemblance model, suggests that typicality increases to the extent that a category member shares common attributes with other members, but, in contrast, it suggests that typicality will be negatively related to the number of distinctive attributes that A and B have.

The relative importance of common versus distinctive attributes in predicting typicality is an interesting question. Common attributes should predict typicality better than distinctive attributes, but arguments

[1]Other researchers have computed family-resemblance scores employing only consensual attributes, i.e., attributes listed by two or more subjects (e.g., Sujan 1985).

can be advanced that distinctive attributes are either virtually unrelated to perceived typicality (as the family-resemblance measure assumes) or negatively related (as Tversky's feature-similarity approach assumes). On the one hand, the concept of typicality suggests that shared attributes should be strongly related to its perception. Further, if consumers tend to think of products as alternative means of achieving a goal or set of goals, they may focus more on their similarities than differences. This perspective also underlies multiattribute models of consumer choice, which usually depict choice sets as alternatives compared with one another on a set of common attributes, at a greater or lesser level of abstraction (see, e.g., Johnson 1988; Wilkie and Pessemier 1973). On the other hand, a greater number of distinctive attributes should encourage perception of a product as unusual and different rather than typical. Furthermore, marketers often encourage consumers to consider distinctive as well as common attributes in their purchase decisions. Products are often advertised as having all the features of the competition "plus more."

The preceding discussion suggests the following predictions:

H2a: Common features are positively related to typicality in product categories.

H2b: Distinctive features are either not significantly related to typicality or negatively related to typicality in product categories.

Familiarity and Frequency of Exposure to an Item

Although most explanations suggest that typicality is primarily a function of the structural properties of categories (e.g., attribute or feature-overlap approaches), other explanations suggest that typicality is related to familiarity, which is measured either by an item's meaningfulness or by frequency of exposure to the item (Ashcraft 1978; Hampton and Gardiner 1983; Malt and Smith 1982). However, the evidence for these relations is mixed, and prior studies have not distinguished adequately between the meaningfulness and frequency definitions of the familiarity construct.

In categorization research, familiarity is usually measured as perceived knowledge about an item, also referred to as its meaningfulness (Malt and Smith 1982; McCloskey 1980). In contrast, frequency of instantiation is usually measured as knowledge of the frequency with which an item appears as an instance of a certain category (Barsalou 1985).

Studies that measured familiarity by asking subjects to rate category members on low/high meaningfulness scales include Hampton and Gardiner (1983), McCloskey (1980), and Schwanenflugel and Ray (1986). Two of these studies found weak relationships between meaningfulness ratings and typicality (Hampton and Gardiner 1983; Schwanenflugel and Ray 1986).

Studies have also measured familiarity by asking subjects to list the attributes of words, a measure assumed to be related to their meaningfulness. Several studies have found positive relationships between the number of attributes listed and typicality (Ashcraft 1978; Malt and Smith 1982). However, the assumption of a positive relationship between recall of attributes and typicality may be questionable. Other research suggests that more salient, less typical people, things, and events are sometimes better remembered (Woll and Graesser 1982).

Only a few studies have investigated the relationship of frequency of instantiation to typicality. Barsalou (1985) measured frequency of instantiation in two ways. He asked subjects about their frequency of encountering an object across all contexts in which it might occur and about their frequency of encountering an object presented as a member of a specific category. These two methods of measurement have very different implications. For example, an apple might be rated as a familiar object in general but as an unfamiliar instance of a pizza topping. Barsalou found that, when he measured both frequency of encounter in general and frequency of instantiation as a specific member of a category (measured with stimuli blocked by category), the latter was a better predictor of typicality.

The only other studies that employed frequency-related measures of stimulus familiarity did not find support for a relationship between frequency and typicality. However, these studies differed in important ways from Barsalou's. Mervis, Catlin, and Rosch (1976) found no relationship between norms for word frequency and the rated typicality of category members. However, their norms seem to be more a measure of frequency of encounter in general than of frequency of instantiation in a category. Rosch, Simpson, and Miller (1976) manipulated how frequently the members of artificial categories were presented and found that frequency of presentation did not appear to influence the relationship between typicality and category structure (family resemblance). However, the range of familiarity for natural stimuli, such as Barsalou's, may be greater than the range present in the Rosch et al. (1976) study.

Thus, results of past research on the relationship between typicality and familiarity and between typicality and frequency of instantiation are confusing and dependent on which measure is used (and thus on the definition of familiarity). Furthermore, the relationship of familiarity and frequency of instantiation measures to measures of category structure other than typicality (e.g., attitude) has been less explored.

In the present study, we compare the relationship between typicality and familiarity construed as meaningfulness versus frequency of encounter. We expect the relationship between typicality and meaningfulness to be tenuous. People may remember more about a product either because it is typical (and encountered frequently) or because it is atypical and therefore attention getting, perhaps because of its salience relative to other products (cf. Hastie and Kumar 1979; Woll and Graesser 1982). Furthermore, people may become more familiar with an item through exposure to it across many categories rather than through a particular category. For example, people might become more familiar with the meaning of "airplane" by exposure to airplanes as combat aircraft, acrobatic stunt planes, and airliners. For this reason, people might rate "airplane" as a more meaningful example of "modes of transportation" because of learning unrelated to the concept's typicality as a mode of transportation.

In contrast, the relationship between typicality and frequency of instantiation seems more likely to be consistently positive, particularly in product categories in which more popular items tend to share the attributes desired by mass markets. People should tend to perceive more frequently encountered stimuli as more typical because, in consumer-product categories, more commonly encountered products (e.g., more widely distributed, advertised, and used) tend to have attributes that are more widely shared by imitative competitors than do less popular products. Thus, the frequency of instantiation of category members should be more directly related to their typicality as members of particular categories than should their meaningfulness.

H3: Frequency of instantiation is positively related to typicality across product categories and more positively related than familiarity.

Attitude toward an Item and Valued Attribute Associations

In addition to attribute sharing, familiarity, and frequency of exposure, research shows that an item's typicality is also positively related to one's attitude toward or overall evaluation of the item. More typical examples tend to be better liked (cf. Barsalou 1983, 1985; Nedungadi and Hutchinson 1985). Explanations for the typicality-attitude relationship include the possibilities that (1) more typical category items have more valued attributes, (2) more typical items are more familiar and therefore better liked, and (3) the typicality-attitude relationship found in past studies is an artifact of measurement procedures.

Barsalou's (1983, 1985) "ideals" construct and Loken and Ward's (1987) "attribute structure" are two approaches to understanding typicality determinants that have incorporated the idea that typical category items have more valued attributes or goals associated with them.

The Ideals Construct. Barsalou (1983, 1985) argues that typical category members have more value for fulfilling a goal, at least for categories that he calls "goal-derived." Barsalou suggests that people create taxonomic categories and goal-derived categories. He defines taxonomic categories as those commonly used by members of a culture to classify phenomena such as "animals," "fruit," and "vegetables"—phenomena that share attributes with each other to a greater or lesser degree. In contrast, goal-derived categories, such as "things to take from one's home during a fire," are created ad hoc of items related to goal achievement that may be physically dissimilar and initially not associated with each other in memory. Barsalou labels the goal associated with a category its ideal. For example, the goal or ideal for "things to take from home during a fire" might be minimization of loss. Barsalou proposes that family resemblance may be a poor predictor of typicality in goal-derived categories because the measure or its variants focus on physical similarities and not necessarily on the degree to which an exemplar is capable of serving the goal or goals of the category. Goal-derived categories may include items that have very dissimilar attributes but are still good examples of things that serve the goal of the category.

Two studies provide some empirical insight into the extent to which valued attributes predict typicality. Barsalou measured the extent to which the members of taxonomic and goal-derived categories fulfilled an ideal for their category by asking subjects to rate the extent to which each item in the category had a single ideal characteristic. Although his measure included only a single item, chosen by judgment, he notes that most goal-derived categories have multiple ideals. "For example, *possible restaurants to eat at* may have the ideals of *lowest possible cost, highest possible quality,* and *closest proximity.* The most important ideal(s) on a given occasion may depend on the goal a person is pursuing" (1985, p. 631, italics in original). He found a significant relationship between his measure and typicality. Although possession of an ideal characteristic should be related to attitude, he did not employ a separate attitude measure.

Attribute Structure. Loken and Ward (1987) have also argued that consumers judge the typicality of a product less by its family resemblance to other products and more by the degree to which the product has salient attributes related to the goals or uses of the category. Their attribute-structure measure of the degree to which category members possess attributes relevant to goals consumers have for using the category differs from Barsalou's measure in that it focuses on a set of salient goals for the category instead of just

one. Furthermore, these salient goals are identified by a pretest instead of being subjectively chosen. The measure is based upon procedures similar to those developed for multiattribute attitude models that focus on the degree to which an item possesses a set of salient attributes. Thus, instead of being used just to predict attitude, the measure is used to investigate the degree to which a category member's salient, goal-relevant attributes are related to its perceived typicality. In comparison with Barsalou's ideals measure, the attribute-structure measure is assumed to encompass a more complete set of beliefs rather than a single ideal. Furthermore, the specific beliefs are not so abstract that the resulting construct is virtually synonymous with attitudes.

The attribute-structure approach allows insight into the typicality-attitude relationship and bridges the typicality literature with multiattribute attitude theory. However, in the version employed here, the measure omits the evaluative component of the expectancy-value measure (Fishbein and Ajzen 1975).

Substantial justification exists in categorization theory for suggesting that attributes salient for the evaluation of category members are important in predicting and understanding typicality effects. Murphy and Medin (1985; see also Medin 1989) argue that similarity per se does not adequately explain category structure, and Medin, Wattenmaker, and Hampson (1987, p. 277) state that "concepts should be viewed as embedded in theories and are coherent to the extent they fit people's background knowledge or naive theories about the world." To this extent, causal theories about the world may also include an evaluative component. If an attribute is viewed as causal, then it may be more likely to contribute to the object's evaluation. Finally, Malt and Smith (1984) argue that real-world exemplars have properties that vary in salience and that salience weights may affect judgments (see also Tversky 1977).

These suggestions seem particularly applicable to product categories in which the structure seems likely to be a function of salient beliefs about the member's utility to consumers. Consideration of how product categories evolve suggests why members with more typical attributes should also be more preferred. As product or brand categories evolve, one or a few products tend to become market-share leaders because they have attributes widely desired by consumers who buy the product (e.g., McDonald's in the category of fast-food restaurants). Competitive brands tend to differentiate themselves from the market leaders. Most are designed to appeal to larger segments of consumers so that they are similar in many ways to the market leaders but have a few points of difference (e.g., Wendy's). Other competitors tend to develop that appeal to smaller segments of consumers and have even more different attributes than the market leaders (e.g., Hardee's, Kentucky Fried Chicken, Long John Silver). Given this situation, if a representative sample of the market for the category is asked to rate the typicality of items and their possession of valued attributes, a positive correlation between possessing more common attributes and attitude would be observed. More abstractly, this would occur because the attributes underlying typicality are related to their ability to fulfill consumer goals. Since possession of salient attributes should also be related to attitude, typicality and attitude should also be positively related.

Based upon our discussion of the relationship of attributes, goals, and typicality, the following hypotheses are proposed:

H4: Typicality and attitude are positively related across product categories.

Furthermore, category-structure measures that incorporate valence should be related to attitude:

H5: The attribute-structure and ideals measures are (1) positively related to typicality, (2) positively related to global attitude, and (3) more positively related to global attitude than the family-resemblance measure.

A second, and perhaps additional, explanation for the typicality-preference relationship is that *familiarity* determines both typicality and attitudes. Zajonc (1980) and his colleagues have demonstrated that the more frequently one has been exposed to an object, the greater the amount of liking one will attach to it even if exposure to the object cannot be recalled. He attributes this effect to precognitive processes, although others disagree (Gordon and Holyoak 1983; Lazarus 1982). Whether or not cognitive factors underlie this relationship, recent studies (e.g., Barsalou 1985) in categorization that have found a link between familiarity and valence ratings (ideals) have employed frequency-of-instantiation measures.

A third possibility is that the typicality-attitude relationship is an artifact of the measurement procedure. Rosch and Mervis (1975) and others who have borrowed their instructions describe global typicality to subjects as "how good an example" of a category an item is, and measure exemplar goodness on a single scale from "extremely good example" to "extremely poor example." Although Rosch and Mervis's instructions note that a good example of a category is not necessarily liked, subjects could be influenced by their attitudes while rating items on scales with "good" and "poor" endpoints.

In sum, examination of the relationships of attitude, attribute possession, and familiarity measures with typicality measures should help us better understand the determinants of typicality. Such an effort also presents the possibility of bridging the typicality and attitude literatures.

LEVEL OF CATEGORY

The growing literature on superordinate versus subordinate categories can be related to recent theory

about consumer choice processes to suggest further hypotheses about category structure. For example, several studies suggest that members of more subordinate categories may be more concrete and imageable and may have more common attributes than members of more superordinate categories. Goldberg (1986) found that subjects perceived superordinate categories as having a greater number of attributes than subordinate categories, a finding that he believes results from the perception that superordinate categories include more diverse exemplars, each with different attributes, than subordinate categories. Rosch et al. (1976) also found that subordinate categories were perceived as more concrete and imageable than superordinate categories (although this finding was not confirmed by Goldberg 1986). Furthermore, it is consistent with a variety of viewpoints (Goldberg 1986; Rosch et al. 1976; Sujan and Deklava 1987) that subordinate categories and basic-level categories in particular may have more common attributes across members of the category. Thus, members of basic-level categories are likely to be comparable on more specific sets of attributes than are members of superordinate categories (Mervis and Rosch 1981).

If members of lower-level categories (e.g., different makes of cars) are indeed more concrete and imageable and have more common attributes than members of higher-level categories (e.g., different modes of transportation such as car, airline, walking), then higher-level categories are analogous to "noncomparable alternatives" and lower-level categories are analogous to "comparable alternatives" in the consumer behavior literature (Johnson 1984, 1988). Noncomparable alternatives include specific alternatives from different product categories (e.g., buying a television vs. taking a trip to Hawaii). More generally, product comparability "is the degree to which consumers describe or represent products using the same non-price attributes" (Johnson 1988, p. 303). The use of abstract attributes in choice processes is more likely to occur for noncomparable alternatives or when people do not have available appropriate decision criteria to use in the task (Bettman and Sujan 1987; Johnson 1984). Although Johnson's research is performed with respect to choice processes, similar processes may occur with respect to categorization (e.g., typicality) judgments.

Three hypotheses are explored that focus on the effects of category level on the interrelationship of structure measures. Since higher-level, superordinate categories tend to be collections of more diverse objects than are subordinate categories, category level should interact with the type of measure of goal relevance employed. The attribute-structure measure, based on a set of salient attributes that should apply to all category members, is likely to predict typicality better for more homogenous subordinate categories than for more diverse superordinate categories.

H6: Attribute structure is more positively related to typicality in subordinate than superordinate categories.

By the same logic, the attribute-structure measure should predict attitude better for subordinate than superordinate categories.

H7: Attribute structure is more positively related to attitude in subordinate than superordinate categories.

Barsalou's ideals measure, which measures relevance to goal achievement along a single ideal, will tend to represent more abstract and general attributes that relate to typicality equally well in both superordinate and subordinate categories. For example, the abstract, general ideal "good food" for the superordinate category "restaurants" and the ideal "quick and convenient" for the subordinate category "fast-food restaurants" may both apply equally well to all members of the two categories. However, the larger sets of more specific and concrete attributes used to measure attribute structure might not as obviously apply to all members of a superordinate category as they do to the members of a subordinate category. For example, salient attributes for the evaluation of a restaurant, such as "nice atmosphere," "desirable location," and "friendly people," might be more relevant to the evaluation of a French restaurant than a small ethnic restaurant "find" that might be valued not only for its good food but also for its authentically tacky decor and even its crusty employees. On the other hand, relatively specific attributes such as "food is hot" seem applicable to the evaluation of virtually all fast-food restaurants. The point is that it is less likely that a set of salient attributes will apply as well to all the diverse members of a superordinate category as to the more homogenous members of a subordinate category. Therefore, although somewhat speculative, this reasoning suggests that the ideals measure will predict typicality equally well in superordinate and subordinate categories, but not as well as attribute structure in more subordinate categories.

H8: Ideals are related to typicality equally well for superordinate and subordinate categories but are not related to typicality as well as the attribute structure measure in subordinate categories.

METHODOLOGY

In a laboratory setting, subjects completed a subset of measures of typicality, attitude, familiarity, frequency of instantiation, family resemblance, multiattribute structure, and/or ideals for 16 product categories, eight superordinate and eight subordinate.

Each type of measure was completed by a separate subject group except for familiarity and frequency of

EXHIBIT 1

STIMULI, SALIENT BELIEFS, AND IDEALS

Stimulus categories:

Superordinate categories	*Subordinate categories*
Types of restaurants	Fast-food restaurants
Modes of transportation	Airlines
Types of candy	Candy bars
Places to service your car	Gas stations
Footgear	Athletic shoes
Alcoholic beverages	Beers
Types of reading material	Magazines
Types of music	Rock groups

Members of four example categories:

Types of restaurants	*Fast-food restaurants*	*Modes of transportation*	*Airlines*
Diner	El Pollo Asado	Hitchhiking	Republic
Japanese	Wendy's	Train	People Express
Italian	Taco Bell	Walking	Delta
Pizza	Long John Silver	Elevator	Air Canada
Steak house	Kentucky Fried Chicken	Mule	Southwest
Polynesian	Circle K	Trolley	Pan Am
Pie shop	Dunkin Donuts	Ice skates	Continental
Mexican	Appetito's	Automobile	United
Deli	Carl's Junior	Balloon	Frontier
Seafood	Hardee's	Taxi	PSA
German	McDonald's	Boat	Alaska Air
French	Pioneer Chicken	Helicopter	Northwest
Greek	Church's	Airline	American West
Ribs	Dairy Queen	Motorcyle	Air France
Fast food	Domino's Pizza	Car pool	Braniff

Salient beliefs and ideals, four example categories:

Category	*Salient beliefs and ideals*
Types of restaurants:	SB: Good food; quality service; nice atmosphere; friendly people; desirable location
	I: How good the food is
Fast-food restaurants	SB: Rapid service; food is served hot; unhealthy food; food tastes good; food is greasy
	I: How quick and convenient getting food there is
Modes of transportation	SB: Economical; safe; very comfortable; gets me where I'm going quickly; fun
	I: How likely it will get you to destination on time
Airlines	SB: Low (competitive) prices; friendly service; good reputation; few delays or cancellations; comfortable and clean planes
	I: How reliable the flight schedule is

instantiation, which were completed by the same group. The number of subjects completing each individual measure ranged from 10 to 12. The 16 product categories and lists of category members for four categories are shown in Exhibit 1. Except for the family-resemblance measure described later, each subject completed a measure or set of measures for four product categories (each with 15 members)—two superordinate and two subordinate—assigned so that no subject rated a matched pair of a subordinate and its own superordinate category. The items in each category and the four categories themselves were presented in a random order and its reverse, with half the subjects responding to each order. The same procedure was followed for the other ratings.

Sample

Four hundred sixty-six undergraduate marketing students completed the measures during class time, and an additional 115 undergraduate marketing students participated in pretests, for a total of 581 participants. Subjects did not receive course credit or other incentives for participation.

Stimuli Selection

Sixteen product categories were selected so that (1) subjects would have at least some knowledge of the category and its members, (2) the product categories would include eight subordinate and eight corre-

sponding superordinate categories (e.g., fast-food restaurants vs. types of restaurants), and (3) the members of each category ranged in typicality as reflected by production norms (order of frequency of mention) obtained in pretest data.

Production norms were obtained for 24 categories by asking 20 subjects to name as many category members as they could. Next, another set of 15 pretest subjects rated all items listed in the production norms with respect to whether they were either familiar or not familiar with the category member. All category members that obtained a score of 70 percent or better reporting "familiar" were rank ordered by production norms (i.e., frequency of mention in the original production norm data). Finally, a systematic sampling of 15 of these remaining items was obtained to achieve a range of typicality. The final stimuli included 15 members in each of 16 categories.

The initial distinction between superordinate and subordinate categories was a logical distinction. The subordinate categories were chosen to be product categories such as beer, candy bars, or magazines. The superordinate categories were chosen to be the next higher level of abstraction that included the product category as a type of the class (e.g., alcoholic beverages, type of candy, or type of reading material).

To confirm that this reasoning was correct, we asked another sample of pretest subjects to rate the subordinate and superordinate category names on three dimensions—high versus low number of total attributes, high versus low familiarity, and high versus low imagery—that past studies have related to the hierarchial level of a category (Goldberg 1986; Rosch et al. 1976).

Paralleling Goldberg's findings, our pretest results showed that superordinate categories were rated as having a greater number of attributes (5.4) than subordinate categories (4.5, dependent sample $t(25) = 4.3$, $p < .05$) and were rated as being more meaningful (5.5 vs. 4.8, $t(25) = 4.6$, $p < .05$). In contrast to Goldberg's findings but in conformity with his predictions, the imagery-rating scale discriminated between the superordinate and subordinate categories relatively well. The subordinate categories were rated as being more imageable (5.4) than superordinate categories (4.6, $t(25) = 4.7$, $p < .05$), a finding congruent with past discussions of the relationship between imagery and vividness and Rosch et al.'s (1976) results.

Measures

The study included a comprehensive set of measures of the potential determinants of typicality and attitude in product categories. Global typicality was measured by three different rating scales instead of a single item as in most past studies. Global attitude was measured by a three-item scale. Measures of category structure included two measures of family resemblance, a measure of the degree to which category members possessed salient attributes, a measure of the degree to which category members possessed an ideal (a single salient attribute), a measure of familiarity, and a measure of frequency of instantiation.

Attitude toward the Product. Attitude measures included three 0–10 evaluative semantic differential scales (high quality/low quality, good/bad, and satisfactory/unsatisfactory). The scales were summed for each individual and then averaged across all subjects to derive a measure of global attitude toward the category member (coefficient $\alpha = .979$).

Global Measures of Prototypicality. Global typicality was measured on three scales: exemplar goodness, typicality, and representativeness. Procedures developed previously by Rosch and Mervis (1975) were used to measure exemplar goodness for each of the category members. Subjects rated how good an example of its category each member was on 0–10 scales ranging from "extremely poor example" to "extremely good example." Instructions, in part, read:

> In this study we would like you to . . . rate how good an example of the category each product is on a 0–10 point scale. A 10 means that you feel the product is a very good example of your idea or image of what the category is; a 0 means you feel the product fits very poorly with your image of the category (or is not a member at all). A 5 means you feel the product fits moderately well. Use other numbers of the 0–10 point scale to indicate intermediate judgments.

A brief example was provided for color (red vs. less red) and dog (German Shepherd vs. Pekingese) categories. The instructions and scale for the second global measure of typicality were adapted from Hampton and Gardiner (1983). Subjects rated each category member on a typicality scale ranging from (1) "very atypical" to (5) "very typical." With similar instructions, the third global measure of typicality was a scale of representativeness ranging from 0 (very unrepresentative) to 10 (very representative).

For each of the three global measures of typicality, the same data-collection procedures were used. Each subject rated all members of four of the 16 product categories (a total of 60 products) on one of the three scales. Before correlations were computed, the prototypicality and other measures were averaged for each product stimulus across subjects.

The exemplar-goodness measure of global typicality was highly correlated with both the typicality ($r = .64$, $p < .01$) and representativeness ($r = .78$, $p < .01$) measures, with a coefficient α of .82 across all exemplars ($N = 240$). Furthermore, the goodness-of-example scale had virtually the same correlation with attitude (.51) as the representativeness scale (.50) and correlated higher but not significantly higher with attitude than the typicality scale (.37, $p > .05$). Finally, the typicality measures' average correlation with one

another (.67) was higher than their average correlation with attitude (.46). These results verify that (1) the three measures can be summed as a single measure of global typicality and (2) that the exemplar-goodness scale of global typicality is a better indicant of typicality than of attitude. Thus, the typicality-attitude relationship does not seem to be merely an artifact of measurement procedures.

Family Resemblance. The questionnaire format that provided the data used to develop family-resemblance measures was taken from Rosch and Mervis's (1975) procedures. In our study, each subject listed the attributes of 16 stimuli, one member from each of the 16 categories. Therefore, 15 groups of subjects completed the attribute listings, each with a different set of category members. The stimuli were presented in a random order for half of the subjects and the reverse order for the other half. The measure's format and instructions followed Rosch and Mervis (1975); see also Loken and Ward (1987) for details.

The second measure of family resemblance is based on Tversky's contrast model of similarity judgment, which holds that the similarity of A to B is a function of the common features of A and B minus the distinctive features of each. The measure was computed with the procedures outlined by Tversky (1977, p. 338) and the data collected and evaluated by judges for the Rosch measure. (Tversky collected data for his study following Rosch's procedures.) For every pair of products in a category, we counted the number of attributes that both possessed and the number of attributes that were possessed by one product but not by the other. Each product's number of common and distinctive features was summed across the pairs. Finally, each product's family-resemblance score was computed as its total number of common minus distinctive features.

Multiattribute Structure. Attribute-structure measures consisted of belief rating scales about perceptions of the product's attributes. These attribute dimensions were developed through open-ended pretests with samples from 78 students characteristic of the subject population. In the pretest, subjects were asked to list "the positive and negative attributes, qualities, or characteristics of [the product category] that would increase (or decrease) your chances of purchasing it." The most frequently mentioned attributes were used to form belief statements in the main experiment. This procedure is an adaptation of Fishbein and Ajzen's (1975) model salient-belief technique. The final set of belief statements, shown in Exhibit 1 for four example categories, included from four to six attributes in each category.

Beliefs (i.e., the degree to which a category member possessed each attribute) were measured on likelihood scales from −3 (extremely unlikely) to +3 (extremely likely). Each subject rated all members in four product categories. Attribute-structure scores for each category member were computed by summing across the belief ratings for each subject (and, as noted earlier for all measures, averaging the score across all subjects).

Ideals. For each category, an ideal was selected by asking a pretest sample of subjects to "list your goals or purposes for [purchasing/using] members of the category." The ideal for each category, shown in Exhibit 1 for four example categories, was selected by taking the most frequently mentioned goal or purpose. This pretesting procedure is an addition to Barsalou's technique and provides a more empirical and objective assessment of the ideal in each category. In accordance with Barsalou (1985), a different sample of subjects rated the extent to which category members fulfilled the ideals on scales ranging from 1 (very low amount) to 9 (very high amount).

Familiarity and Frequency of Instantiation. Familiarity was measured on scales ranging from 1 (very familiar) to 9 (not at all familiar). Instructions were adapted from Hampton and Gardiner (1983) and McCloskey (1980): "A very familiar item is one whose meaning is immediately obvious to you, while a less familiar item is one that you may have to think about for a moment." An example was also provided.

Frequency of instantiation was measured by asking the same subjects to rate how frequently they encountered each category member (in stores, advertisements, etc.) as an instance of the category on scales ranging from 1 (very frequently) to 9 (not at all frequently). Instructions noted the difference between this measure and familiarity judgments.

> Do not merely judge how familiar you are with the item. For example, if you were rating instances of the category "places to live" you might think of "castle" as a familiar term to you. But you might rate "castle" as an instance of the category "places to live" . . . less frequently than other types of places like apartments, condominiums, or suburban split-level homes. In summary, don't confuse familiarity with a phrase or word with how often you have encountered an item as a member of a particular category.

These instructions were an attempt to follow Barsalou's (1985) procedure, with adaptations from Hampton and Gardiner (1983). Subjects first completed measures of familiarity for a set of four product categories and were then instructed to rate frequency of instantiation for the same categories. These procedures were designed to increase the likelihood that subjects would discriminate between the tasks of rating familiarity and rating frequency of instantiation.

RESULTS

In correspondence with the study's objectives, analyses focused on three issues: (1) the relative ability of family resemblance, ideals, attribute structure,

TABLE 1

INTERCORRELATIONS: OVERALL, SUPERORDINATE, AND SUBORDINATE CATEGORIES

	Typicality	Family resemblance	Attribute structure	Ideal	Familiarity	Frequency of instantiation
Sixteen product categories (N = 240):						
Family resemblance	.47					
Attribute structure	.48	.19				
Ideal	.56	.30	.40			
Familiarity	.45	.18	.29	.46		
Frequency of instantiation	.56	.26	.39	.55	.74	
Attitudes	.58	.23	.44	.63	.45	.50
Eight superordinate product categories (N = 120):						
Family resemblance	.42					
Attribute structure	.33	.07*				
Ideal	.51	.29	.28			
Familiarity	.40	.10*	.25	.38		
Frequency of instantiation	.56	.18*	.41	.55	.71	
Attitudes	.47	.15*	.30	.55	.31	.45
Eight subordinate product categories (N = 120):						
Family resemblance	.53					
Attribute structure	.67	.34				
Ideal	.64	32	.61			
Familiarity	.51	.28	.34	.60		
Frequency of instantiation	.57	.35	.35	.56	.77	
Attitudes	.70	.32	.63	.76	.59	.55

NOTE.—All correlations significant at $p < .05$ level except for four superordinate correlations indicated by asterisks.

familiarity, and frequency of instantiation to predict global measures of typicality; (2) the relative ability of the variables to predict global measures of attitude; and (3) the effects of level of category (higher- or lower-order) on the predictive ability of the independent variables.

Each measure was averaged for each category member across subjects. Correlational analyses for the measures over all categories, for both subordinate and superordinate categories and for each individual category, shown in Tables 1, 2, and 3, were computed on scores that resulted from subtracting the mean of each variable within each category from the scores on the variable.[2] Regression analyses were also performed with either typicality or attitude as the dependent variables, shown in Table 4. When typicality was the dependent variable, the regression was run either with all six other variables (attitude, ideals, attribute structure, family resemblance, familiarity, and frequency of instantiation) as predictors or with attitude deleted as a predictor to provide better insight into the relative predictive power of ideals versus attribute structure. When attitude was the dependent variable, one set of regressions was run with all other measures as predictors and a second set included all but typicality as predictors. Since we suspected multicollinearity between the measures, we computed the variance inflation factor (VIF) for each measure within each equation. According to Neter, Wasserman, and Kutner (1985), if the maximum VIF is 10 or more, estimates of the regression coefficients due to multicollinearity may be a problem. In our study, the VIF ranged from 1.10 to 2.94, with a mean of 1.94. Although some bias in coefficients may exist, it appears to be within acceptable limits (Ronchetto, Hutt, and Reingen 1989).

Determinants of Typicality

Hypothesis 1 predicted a positive relationship between typicality and family resemblance. Table 2 shows that this hypothesis was supported across all categories (.47, $p < .01$) and across the superordinate (.42, $p < .01$) and subordinate (.53, $p < .01$) categories. As expected, the perception of typicality is related to some extent to the possession of shared attributes. The results of the regression with typicality as a predictor, shown in Table 4, confirm the correlational findings.[3]

[2]Standardized score (z-score) results were comparable to those reported.

[3]We computed an alternative family-resemblance measure based on the original family-resemblance data by using only consensual attributes, defined as those mentioned for a specific product by three or more subjects. Across all categories, the standard measure was correlated significantly with the alternative one (.53, $p < .05$). Overall, the alternative measure was not a significantly better pre-

TABLE 2

CORRELATIONS BETWEEN GLOBAL TYPICALITY AND OTHER MEASURES, INDIVIDUAL AND GROUPED CATEGORIES

Category	Family resemblance	Attribute structure	Ideal	Familiarity	Frequency of instantiation	Attitudes
Types of candy	.19	.33	.34	.29	.45	.20
Candy bars	.65***	.29	.09	.52***	.54***	.00
Alcoholic beverages	−.14	.37	.16	.36	.41	.20
Beers	.61***	.87***	.89***	.88***	.88***	.91***
Modes of transportation	.48*	.22	.80	.59	.74***	.81***
Airlines	.37	.67**	.10	.68***	.72***	.67***
Types of restaurants	.35	.53*	.12	.69***	.80***	.07
Fast-food restaurants	.75***	.62**	.21	.15	.43	.48*
Footgear	.84***	.52**	.53**	.32	.65***	.39
Athletic shoes	.64***	.88***	.93***	.47*	.74**	.92***
Reading material	.43	.25	.35	.47*	.53**	.64***
Magazines	.50*	.90***	.75***	.54**	.38	.58***
Places to service your car	.32	.34	.68***	.17	.09	.24
Gas stations	.56**	.68***	.92***	.65***	.56**	.92***
Styles of music	.64***	.63***	.83***	.82***	.75***	.59**
Rock groups	−.11	.61	.14	.21	.10	.02
Overall (N = 240)	.47***	.51***	.56***	.45***	.56***	.58***
Subordinate categories (N = 120)	.53***	.67***	.64***	.51***	.57***	.70***
Superordinate categories (N = 120)	.42***	.37***	.51***	.40***	.56***	.47***

* $p < .05$.
** $p < .01$.
*** $p < .001$.

Hypotheses 2a and 2b predicted that the common features of category members (as measured by the family-resemblance procedure) should be positively related to typicality, and more positively than distinctive features. To examine these hypotheses, the number of common attributes and the number of distinctive attributes were calculated for each category member by Tversky's (1977, p. 338) procedure and were correlated with family resemblance and global typicality. Across all categories, and for subordinate and superordinate categories, the number of common features significantly predicted ($p < .001$) family resemblance (r's ranged from .90 to .91) and typicality (r's ranged from .44 to .45). In contrast, the number of distinctive features was not significantly related to family resemblance (r's ranged from −.02 to −.17, $p > .05$) and predicted typicality less well than number of common features (across all categories, $r = -.14$, $p < .05$; for superordinate categories, $r = -.07$, $p > .05$; and for subordinate categories, $r = -.25$, $p < .01$). In all, Hypotheses 2a and 2b were supported.

Hypothesis 3a predicted a positive relationship between typicality and frequency of instantiation, and Hypothesis 3b predicted that frequency of instantiation would be more positively related than familiarity to typicality. Across all categories and both levels of categories, Table 2 shows that frequency-of-instantiation measures were related to typicality (confirming Hypothesis 3a), although familiarity was also positively related to typicality. However, the regression results in Table 4 show that the frequency-of-instantiation measure primarily accounts for the relationship. Frequency of instantiation, but not familiarity, was a significant predictor of typicality across all categories, and in both superordinate and subordinate categories.

Finally, as shown in Table 2, the correlation between typicality and attitude computed across all categories was significant ($r = .58$, $p < .01$) and was also significant for both superordinate ($r = .47$, $p < .01$) and subordinate ($r = .70$, $p < .01$) categories. Thus, Hypothesis 4 was confirmed. Interestingly, regressions in Table 4 show that attitude remains a significant predictor of typicality even when a wide variety of potentially mediating factors are included in the equation. Finally, not surprisingly, both the attribute-structure ($r = .48$, $p < .01$) and ideals ($r = .56$, $p < .01$) measures also predicted typicality significantly across all categories (Table 1), which is consistent with Hypothesis 5a. Regression coefficients in Table 4 corroborate these findings.

Determinants of Attitude

In support of Hypothesis 5b, a positive relationship between attitude and attribute structure ($r = .44$, $p < .01$) and between attitude and ideals ($r = .63$, $p < .01$) was found across all categories (Table 3). Fur-

dictor of typicality than the measure calculated by the standard procedure. Across all categories, the alternative measure correlated (.40, $p < .05$) with typicality.

TABLE 3

CORRELATIONS BETWEEN ATTITUDE AND OTHER MEASURES, INDIVIDUAL AND GROUPED CATEGORIES

	Family resemblance	Attribute structure	Ideals	Familiarity	Frequency of instantiation
Types of candy	.10	.67***	.55**	.07	.55**
Candy bars	.01	−.08	.46*	.53**	.41
Alcoholic beverages	−.01	.55**	.71***	.57**	.61**
Beers	.48*	.92***	.88***	.83***	.77***
Modes of transportation	.42	.16	.68***	.69***	.73***
Airlines	.47*	.72***	.12	.15	.35
Types of restaurants	−.31	.68***	.78***	.10	−.09
Fast-food restaurants	.18	.57**	.41	.54**	.62**
Footgear	.26	.51**	.64***	.11	.44
Athletic shoes	.63**	.86***	.83***	.65***	.85***
Reading material	.10	−.05	.65***	.35	.56**
Magazines	.13	.91***	.79***	.59**	.33
Places to service your car	−.09	.08	−.14	−.03	−.15
Gas stations	.69***	.68***	.88***	.62**	.46*
Styles of music	−.01	.66***	.61**	.41	.45*
Rock groups	.09	−.07***	.69***	.80***	.88***
All categories (N = 240)	.23***	.54***	.63***	.45***	.50***
Lower-level categories (N = 120)	.32***	.74***	.76***	.59***	.55***
Higher-level categories (N = 120)	.15*	.38***	.55***	.31***	.45***

* $p < .05$.
** $p < .01$.
*** $p < .001$.

thermore, the correlations of both attribute structure and ideals with attitude were significantly greater ($p < .01$) than the correlation between attitude and family resemblance ($r = .23$), which supports Hypothesis 5c. In accord with these results, the regression weights predicting attitude (Table 4) were significant for ideals and attribute structure and were nonsignificant for family resemblance.

Table 3 also shows that both frequency of instantiation and familiarity were significantly correlated with attitude ($r = .50$ and .45, respectively, $p < .01$) across product categories. However, regression coefficients for both measures in the attitude prediction equations were nonsignificant.

Effects of Category Level

Hypothesis 6 predicted that the attribute-structure measure would relate more positively to typicality in lower-level categories than in higher-level ones. Hypothesis 8 predicted that the ideals measure would relate equally well to typicality in higher- and lower-level categories, but not as well as the attribute-structure measure in lower-level categories. The multiple regression analysis in Table 4 supports both hypotheses. The attribute-structure measure has a significant beta coefficient (.39) in the lower-level brand categories but not in the more superordinate categories (.11). Following procedures recommended by Baron and Kenny (1986) for testing the effect of a dichotomous moderator (category level), we compared the raw regression coefficients for attribute structure in the superordinate and subordinate categories. The coefficients were significantly different ($t = 4.27$, $p < .05$). The ideals measure had significant ($p < .05$) and comparable beta coefficients in each category (.19 vs. .21); the coefficients were not significantly different ($t < 1$). The correlations in Table 3 are also in the pattern predicted by Hypothesis 8. As expected, the attribute-structure measure was correlated more highly with typicality in the lower-level than the higher-level categories ($r = .67$ vs. .33, $z = 3.58$, $p < .01$) while the ideals measure performed similarly at the two levels ($r = .64$ vs. .51, $z = 1.49$, not significant). However, the attribute structure did not perform significantly better than ideals at the subordinate level (.67 vs. .64).

Differences also existed across category levels in the relationship of typicality to attitude and in the prediction of attitude by other measures. Typicality was significantly more highly correlated with attitude in the subordinate than in the superordinate categories ($r = .70$ vs. .47, $z = 2.73$, $p < .01$). If we focus on predictors of attitude, both attribute structure and ideals, but particularly attribute structure, predicted attitude better in the lower-level categories than in the higher-level ones, as predicted by Hypothesis 7 (for attribute structure, $r = .63$ vs. .30, $z = 3.30$, $p < .05$; for ideals, $r = .76$ vs. .55, $z = 2.89$, $p < .05$). Furthermore, the regression coefficients of ideals predicting attitude were significant for both lower- and higher-level categories; the coefficients for attribute structure, in contrast, were significant for lower-level but not higher-level categories. The higher diversity of members of

TABLE 4

MULTIPLE REGRESSION ANALYSES, TYPICALITY AND ATTITUDE

Independent variables	All categories	Lower-level categories	Higher-level categories
Regressions on typicality including attitude in equation:			
Familiarity	.02	−.03	.04
Frequency of instantiation	.22**	.21*	.28*
Ideal	.12*	.06	.13
Attribute structure	.18***	.31***	.09
Family resemblance	.28***	.25***	.29***
Attitude	.24***	.28***	.19*
R^2	.56	.68	.48
Regressions on typicality excluding attitude from equation:			
Familiarity	.05	.02	.04
Frequency of instantiation	.24***	.23*	.32**
Ideal	.23***	.19	.21*
Attribute structure	.22***	.39**	.11
Family resemblance	.29***	.25***	.29***
R^2	.53	.66	.46
Regressions on attitude including typicality in equation:			
Familiarity	.11	.18*	−.01
Frequency of instantiation	.02	−.01	.10
Ideal	.38***	.39***	.38***
Attribute structure	.13*	.17*	.08
Family resemblance	−.06	−.05	−.08
Typicality	.27***	.28**	.23*
R^2	.50	.68	.37
Regressions on attitude excluding typicality from equation:			
Familiarity	.12	.19	.00
Frequency of instantiation	.08	.05	.18
Ideal	.44***	.44***	.43***
Attribute structure	.19***	.28***	.10*
Family resemblance	.02	.02	−.01
R^2	.46	.66	.35

*$p < .05$.
**$p < .01$.
***$p < .001$.

superordinate categories may account for these differences. Particularly for the attribute-structure measure, beliefs measured for subordinate-level categories represented a more specific, cohesive set than the more general set of beliefs for the superordinate-level categories. Therefore, the relationship between attitude and attribute possession at the subordinate level may have been enhanced.

The Typicality-Attitude Relationship: Exploratory Analyses

The relationship of typicality to attitude revealed by the data raises the question of why typicality and attitude are related. Do the other variables in our data set appear to mediate this relationship? Earlier we suggested that more typical products should have more valued attributes and found that attribute structure and ideals were positively related to both typicality and attitude. To explore the possibility that the typicality-attitude relationship might be mediated by the possession of valued attributes, we computed partial correlations between attitude and typicality holding attribute structure and then ideals constant. Given that all pairs of correlations between attitude, typicality, and each of the two measures were significant, this procedure is recommended as a test of mediation by Holbrook and Batra (1987). Holding attribute structure constant significantly reduced the typicality-attitude correlation to $r = .47$ (vs. .58) across all categories, and holding ideals constant reduced the correlation to $r = .36$. These results suggest that the typicality-attitude relationship to some extent may be mediated by the tendency of more typical products to possess more valued attributes. We also suggested the possibility that familiarity may mediate the typicality-attitude relationship. Partialing out frequency of instantiation reduced this relationship to $r = .40$. Partialing out familiarity as measured by ratings of meaningfulness reduced the correlation to a lesser extent to $r = .45$. These exploratory analyses provide some initial insight into the neglected question of why typicality and preference are related in product categories.

The regression results in Table 4 further indicate that typicality and/or attitude may directly influence one another, independently of the proposed determinants. Attitude is a significant predictor in the typicality regression equation and typicality is a significant predictor in the attitude regression equation, and increments in R^2 from the appropriately nested models (including attitude vs. not in the typicality equation; including typicality vs. not in the attitude equation) are statistically significant for four of the six differences in R^2 ($p < .05$). This suggests that attitude has a direct impact on typicality (or vice versa), or that there exists an additional determinant not included in the models, or that the more specific measures have greater measurement error. However, it should also be noted that the differences in R^2 are quite small, so the direct effects between the two variables appear to be minimal.

DISCUSSION

Determinants of Typicality

Results showed evidence that several variables may be determinants of typicality. Across all categories, and for both category levels, all six variables tested were significantly related to typicality. Comparisons across the six measures indicate that, across all categories, (1) the three "evaluative" constructs (i.e., attitude, ideals, and attribute structure) were significant predictors of typicality, (2) family resemblance also

was related to typicality, and (3) frequency of instantiation was more strongly correlated than the meaningfulness measure of familiarity with typicality. These same results held for subordinate-level categories, and the three evaluative measures were particularly strong predictors. However, for superordinate categories, almost all measures, but particularly attribute structure, performed more poorly.

The Typicality-Attitude Relationship

Our study corroborates findings from prior research that typicality is related to product preference, but goes further by providing a tentative explanation for this relationship. The results of the correlational and regression analyses support arguments that the attribute structure measure and the ideals measure may be mediators of the typicality-attitude relationship. This raises the question of why more typical products, particularly in the context of a lower-level brand category, have more valued attributes. One explanation, as noted earlier, is that brand categories evolve around share leaders that tend to have attributes valued by larger numbers of consumers. Entrants to a category tend to copy the major benefits of the leader but add differences to differentiate themselves and/or to capture smaller market segments. Gradually, the category leaders come to have attributes that are widely shared by other category members. By virtue of their shared attributes and their greater frequency of instantiation as category members (through advertising and so on), brand leaders also may tend to be perceived as more typical category members. This argument probably best applies to categories in which the most preferred products tend to have the largest market share (e.g., fast-food restaurants). In categories in which prestige or rarity are important purchase goals, more preferred products might be less typical (e.g., a Ferrari in the sports car category) instead of more typical. Thus, the proposed attribute-structure measure, developed from multiattribute attitude theory, provides a link between this theory and empirical results showing a typicality-preference relationship.[4]

Effects of Category Level

At the superordinate level, the ideals measure was more positively related to typicality than was the attribute-structure measure, whereas at the subordinate level both ideals and attribute structure predicted typicality. Perhaps the attribute-structure measure did not adequately capture the "salient" dimensions of superordinate categories. Furthermore, the overall correlations between global attitude, typicality, and other measures tended to be lower in the superordinate categories than in the subordinate categories. One possible explanation for these category-level differences is that, like noncomparable alternatives, the choice of a superordinate product is related more to its ability to facilitate fulfillment of a more general goal and less to its specific attributes. However, correlational data showed that, although ideals predicted typicality better than attribute structure in superordinate categories, ideals still were somewhat (not significantly) more highly related to typicality in subordinate than superordinate categories. This finding was inconsistent with our expectations and appears inconsistent with Barsalou's data on ad hoc categories. One reason may be that, even for superordinate product categories, subjects may have found it difficult to describe diverse objects with respect to a common goal.

Goal-derived versus Taxonomic Categories

This study's results also provide insight into whether product categories are more like taxonomic or goal-derived categories. In earlier research, Barsalou (1985) predicted and found that, in taxonomic categories, a surrogate measure of family resemblance (central tendency) predicted typicality better than frequency of instantiation or ideals (relevance to goal achievement). But, in goal-derived categories, both ideals and frequency of instantiation were the better predictors. In our case, both goal-derived measures (ideals, attribute structure) and feature-similarity-oriented measures (family resemblance) significantly predicted typicality across all product categories. Therefore, product categories would seem to have characteristics of both goal-derived and taxonomic categories. This suggestion appears to add to, and perhaps contradicts, previous thought about the evolution of goal-derived categories. In particular, Barsalou has argued that goal-derived categories are formed ad hoc with items that are initially unassociated in memory and have few "natural" physical similarities. As ad hoc categories become firmly established in memory (perhaps through frequent use), they will become taxonomic (Barsalou 1985). Our findings suggest that categories, in particular product categories, may become firmly established in memory (and hence taxonomic) but also retain their goal-derived properties (cf. Barsalou and Ross 1986).

Methodological Issues

The study contributes several methodological findings to the categorization literature. First, Rosch and Mervis's (1975) exemplar-goodness scale has probably been used more than any other to measure

[4]A possible shortcoming to either the attribute structure or ideals approach is that the salient attributes underlying one category member may differ from the salient attributes underlying another category member, leading to a potential loss in prediction (cf. Fishbein and Ajzen 1975). This problem may have occurred in the case of several superordinate categories in our research.

typicality, but the scale's endpoints (good example/bad example) raise the threat that subjects' responses might reflect their attitude toward an item as well as their perception of its typicality. Our results argue that, for the categories described here, subjects respond to the scale as a typicality and not an attitude measure. Furthermore, the strong positive correlations among our three typicality measures, each administered to separate groups of subjects, suggest that the results of prior studies using different measures are largely comparable.

Second, the study reviewed the use of meaningfulness and frequency of instantiation as measures of familiarity, found conflicting results, and then assessed their relation on a more comprehensive set of category-structure measures than employed in previous research. The results revealed differences predicted by theory between the measures in their relation to other constructs. Moreover, the results were relevant to another issue. Barsalou (1985) suggested that the crucial difference between frequency of instantiation and meaningfulness ratings was whether the stimuli were presented in blocked or unblocked fashion. In the present study, all stimuli were presented unblocked, but differences between the measures appeared nevertheless.

Third, a review of two attribute-oriented measures of category structure—the family resemblance and ideals measures—suggests that each could be improved (Loken and Ward 1987). The study further tested the multiattribute structure measure, which provides insight similar to the other two measures and avoids certain of their limitations. In the present research, ideals tended to be more positively related than attribute structure to typicality. This result was unexpected, since the attribute-structure measure included a larger number of attribute scales. Perhaps the difference occurred because the ideals measure was more goal related (than product or exemplar oriented), or alternatively because the ideals measure represents a more global factor underlying typicality judgments.

Finally, a second measure of family resemblance in which the number of distinctive features was subtracted from the number of common features (Tversky 1977) was examined.

CONCLUSIONS

These findings contribute in several ways to the consumer categorization literature. One set of these contributions is methodological. For example, our findings were made in the context of a more comprehensive set of measures than in past studies. We measured typicality using a three-item scale instead of using a single-item scale as prior studies have. To help explain the role of goals in structuring categories, we employed not only Barsalou's (1985) ideals measure but also measures of attitude and attribute structure. We also computed family-resemblance scores instead of using a surrogate measure such as average similarity (Barsalou 1985). Furthermore, we used the same attribute lists to compute a measure of category membership based on Tversky's work. Also, we compared two approaches to measuring familiarity. Finally, our stimuli included eight superordinate and eight subordinate categories (from candy to rock groups), a more comprehensive set of categories than prior consumer studies have employed.

Another set of contributions is theoretical. For example, a primary contribution of the present research is a better understanding of the determinants of typicality. Our data are consistent with the conclusion that product categories are structured by both family resemblance and valued goals or attributes. As in prior research, frequency of instantiation was a better predictor than familiarity of typicality. Ideals were related to typicality for both lower and higher (more abstract) categories, whereas attribute structure predicted typicality well only in lower-level categories. Thus, the study confirms prior findings from the psychology literature in a consumer context and goes beyond these to provide insight into understanding the typicality-attitude relationship and differences in the factors mediating the structure of superordinate versus subordinate categories.

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