Goal-oriented Experiences and the Development of Knowledge

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This research investigates the learning that occurs throughout several information acquisition and choice experiences. The effects of three factors that may naturally vary in consumer experiences are studied: a consumer's goals, how much the consumer knows about the product's features prior to information acquisition and choice, and the content of feedback received after choice. Results show that the information consumers learn is organized in memory around the goal(s) that drives the experiences. Further, higher levels of prior feature knowledge result in more accurate knowledge after experience, but, contrary to predictions, subjects with no prior feature knowledge are quite adept at focusing on their goal in the choice process and at learning goal-appropriate information. The presence of feedback and its consistency with a consumer's goal are also shown to affect the goal orientation and organization of brand and feature knowledge gained during choice experiences.

Consumer researchers recognize that consumers' knowledge about a product category affects their purchase decision processes by influencing how much information to search for (Alba and Hutchinson 1987; Brucks 1985), which brands should be searched (Biehal and Chakravarti 1986; Brucks 1985), and what features should be examined (Holbrook and Maier 1978). Given that the decision process is sensitive to a consumer's knowledge, it seems reasonable to expect that our investigation of how knowledge affects decision processes might be furthered by understanding knowledge content and its organization. One way to investigate knowledge is to study it cross-sectionally, that is, to compare novices' knowledge to that of experts; another way is to investigate its within-subject formation over time and the factors that influence that formation. This longitudinal approach also provides insight to public policy makers and marketers regarding more and less effective means of influencing learning (Hoch and Deighton 1989).

Many factors could influence the actions performed in making a purchase decision and what is learned from that experience. One important factor may be a consumer's goals, that is, the benefits for which s/he searches (Park and Smith 1989). For our purposes, goals can be conceived of as abstract attributes that the brands within a product category possess to varying degrees. For example, one might want to buy an economical car or an easy-to-use VCR. The major research issue of interest in this article is how and to what extent a consumer's goal serves to develop and organize the knowledge formed through a series of goal-directed consumer experiences.

The use of goals as a basis for examining consumer behavior is not new. However, goals have rarely been controlled in examining learning in consumer research (see Meyer [1987] for an exception). Instead, the typical procedure is, for example, information acquisition and choice studies is to direct subjects to pick the best alternative and to use their information acquisition and the outcomes (e.g., choice and recall) as the dependent measures. Unfortunately, such an approach leaves the researcher unable to fully explain subjects' behavior and resulting knowledge in terms of their initial motivations for information acquisition and choice.

Examination of consumer learning as consumers acquire information has been limited (see Hoch and Deighton 1989; Johnson and Russo 1984; Meyer 1987; Moore and Lehmann 1980; also see Mazumdar and Monroe [1990] for an examination of the effect of intentions to learn price on price encoding). These studies do not manipulate goals, nor do they use the full range of the measures of associative and categorical knowledge available in the cognitive psychology literature. Further, only Meyer (1987) and Moore and Lehmann (1980) construct learning experiences with several trials. All

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three of these elements (manipulated goals, a detailed examination of several cognitive measures of the content and organization of the information learned, and multiple learning experiences within the same product category) are incorporated into our study of the effects of goals on consumer choice behavior and subsequent learning. We are particularly interested in the early stages of learning about a product category (i.e., a novice's knowledge development). However, the basic principles of learning in an associative network, that is, the addition and organization (based on goals) of concepts and relationships, apply to later stages of consumers' learning as well.

CONCEPTUAL FOUNDATIONS

This research focuses on certain characteristics of the knowledge that develops from one class of purchase experiences: problem-solving experiences motivated by the pursuit of a particular goal. We assume that knowledge is associative (Anderson 1983) and that learning in an associative network is based on the acquisition of new concepts, relationships, and patterns of relationships (Chi and Ceci 1987). Consumer knowledge is examined as a function of the associations that are formed in memory among the consumer's goal, the product features that are related to the achievement of that goal, and the brands that are available.

Goals are abstract benefits sought by the consumer that are available through the features of a product class that offer fulfillment of those goals. For example, the goal of automobile safety would be available through product features such as size or the presence of air bags. We do not consider higher-order goals such as why the consumer wants safety or the value that a consumer gets from safety. Goals are therefore defined at the level of the product class and can be operationalized without regard to individual differences in goal definition. The foundation used here is similar to the means-ends chain model (Gutman 1982) in that both assume that product features are sought for the purpose of achieving some goal or valued state and that the features that are relevant in terms of a consumer's goals relate to attributes by which specific products and brands are differentiated (see Zeithaml [1988] for further discussion of the relationship of benefit and perceived value).

Product features are attributes that are concrete and objectively stated. For an automobile, these might be number of doors, size of engine, or gas mileage. Each feature may take on several levels, called feature values. The values of a particular feature positively or negatively indicate to various degrees the fulfillment of the goal(s) to which the feature is relevant. These associations between the goal and the features, called feature-to-goal associations, may contain two types of knowledge. First, feature-to-goal associations indicate the relevancy of the feature for the goal (e.g., engine size is relevant to economy). Second, the feature-to-goal associations may incorporate knowledge of which feature values indicate goal fulfillment, which do not, and why (e.g., engines come in four-, six-, and eight-cylinder sizes; the smaller engines are more economical because they use less gas).

Each brand within a category possesses some value for each feature, including the absence of the feature. These brand-to-feature associations allow the brands to be evaluated, on the basis of their feature values, in terms of the degree to which they satisfy a goal. A brand-to-feature association could be, for example, that the Toyota Tercel has a four-cylinder engine. In addition, brand-to-goal associations can be formed that contain the knowledge of how a particular brand fares in terms of a certain goal. In our example, that association is that the Toyota Tercel is economical (because it has a small engine). These three types of associations, feature-to-goal, brand-to-goal, and brand-to-feature, form the basis of organized and useful product knowledge structures and serve as the primary focus of our investigation.

THEORETICAL PROPOSITIONS

Goals, Information Acquisition, and Learning

A widely held but empirically unchallenged premise of consumer behavior is that goals provide the primary motivating and directing factor for consumer information acquisition, information encoding, and choice (Bettman 1979). Related research exists (Holbrook and Maier 1978; Moore and Lehmann 1980; Ratneshwar, Mick, and Reitinger 1980), but it has not directly investigated the antecedent role of consumer goals. Research in other domains suggests that the presence of an organizational theme, such as a goal, serves to direct attention to information that is relevant or important to that theme or goal (O'Brien and Myers 1987). Further, information selectivity seems to operate during observation and encoding rather than retrospectively (van den Brock 1990). While it is generally assumed that consumers have purpose in information acquisition and choice, the importance of the role of goals necessitates the testing of this assumption using goals and features as defined above. In addition, because we use a conceptual context in which consumers possess no prior knowledge of the product category, the ability of consumers to identify relevant feature and brand information is an issue in and of itself. In this situation, in the absence of (prior) specific feature or brand knowledge to help direct information acquisition, we believe it is the simple presence of a goal that stimulates the consumer to attempt to figure out or infer, on the basis of general common knowledge, which features might be relevant to the goal and therefore worthy of investigation, and which might not. Thus, we propose the following:
PROPOSITION 1. A consumer's goal directs his/her information acquisition toward goal-relevant feature information.

Goal-oriented Memory Organization and Knowledge Development

Researchers in various domains tend to agree that knowledge structures are held together and organized by higher-order principles or meanings that underlie the groupings of information (e.g., Chi, Glaser, and Rees 1982; Hutchinson 1983; Larkin 1979). An underlying theme or principle, such as a goal, works by providing a ready structure by which to determine information relevance and on which to "attach" incoming information (Ehrlich and Johnson-Laird 1982). The evidence suggests that incoming relevant information is encoded and organized around the underlying theme such that the theme provides an aid to later recall (see, e.g., Lichtenstein and Brewer 1980; Pichert and Anderson 1977; see also Alba [1983] for a demonstration of some organization effects in consumer behavior). To the extent that a product goal constitutes a perceptual theme for processing incoming product information, the ability to remember this information should be influenced by the relevance of the information to the consumer's goal. Otherwise, we would expect to see no difference in the relative amounts of goal-relevant and goal-irrelevant product information in memory.

PROPOSITION 2. Consumers will remember more goal-relevant brand and feature information than goal-irrelevant information.

Categorical Knowledge Development

Consumer knowledge and its representation can be reasonably formulated in terms of several general schemes, including category structures (Alba and Hutchinson 1987; Loken and Ward 1990). Barsalou (1983, 1985) has shown that, for at least some categories, items are category members not just because they are similar to each other (Rosch et al. 1976) but because of their connections to a goal. Consumer researchers have also demonstrated that fully developed knowledge of a product category has a graded structure; that is, a person knows how the constituent brands vary in terms of their degrees of goal satisfaction (Loken and Ward 1990; Ratneshwar and Shocker 1991).

The possible role of goal-directed behaviors in the development of goal-based categorical structures is rather straightforward. In a choice situation, a goal would form a natural theme for the interpretation and organization of incoming information as described above. Although we expect consumer goals to affect the processing of brand and feature information regardless of expertise, the major issue here is the degree to which consumers who know nothing or very little about a specific product category will develop an organization of brands corresponding to the brands' appropriateness for the goal used as opposed to goals not used.

PROPOSITION 3. Brand knowledge gained from goal-oriented learning experiences will be organized according to the appropriateness of the brands for the goals under which they were learned.

Propositions 1–3 isolate the role and anticipated effects of goals on the development and structure of knowledge about a product category gained through an information acquisition effort designed to fulfill a particular goal. As noted earlier, we assume the consumer begins with a complete lack of knowledge regarding the product class in question. However, emerging from any consumer experience is knowledge regarding the goal-fulfilling capabilities of a chosen brand, which then serves as input to subsequent experiences. Consequently, the starting point of this research loses its relevance once an experience occurs. The conceptual usefulness of our approach is limited if it cannot capture the effects of two factors common to a goal-oriented consumer experience: prior knowledge and postchoice feedback.

Prior Knowledge

One factor that may moderate the development of goal-oriented knowledge structures through consumer experiences is prior knowledge, particularly functional knowledge. Functional knowledge is the knowledge of how and why product features are relevant to the achievement of a particular goal. It lends meaning to the associations between goals and product features. For example, the feature of automobile engine size may be connected with the goal of buying an economical car. The functional knowledge that lends meaning to this connection is the knowledge that a larger engine uses more gas and therefore is less economical. Note that a consumer may know that a connection exists between a goal and a particular feature (e.g., because of word of mouth) without necessarily knowing why and how.

Functional knowledge has been shown to direct information acquisition toward more relevant features in several domains (e.g., physics and mechanical systems; see Chi et al. 1982). The role of functional knowledge in consumer tasks has not previously been directly investigated, but several studies show that higher-knowledge subjects may be better able to direct their search (Brucks 1985; Johnson and Russo 1984; Rao and Monroe 1988). In our work, directing the search is defined in terms of the product goal(s) of the consumer, where some features and brands are relevant and some irrelevant.

A consumer's functional knowledge is expected to help the consumer identify relevant features and use them to evaluate brands. The outcome will be more appropriate choices with respect to a goal (choices that deliver the benefit sought). Making appropriate choices is therefore one measure of what is being learned.
PROPOSITION 4. The appropriateness of the choice, in terms of the consumer's goal, increases with functional knowledge.

Research on reading and comprehension processes shows that when two concepts are associated in a meaningful way the relationship is more easily learned and remembered (O'Brien and Myers 1987; van den Broek 1990). A consumer with functional knowledge recognizes a causal connection from a feature to a goal, which makes it easier to learn and remember the feature-to-goal association. Functional knowledge thereby strengthens the linkages from the goals to the features, and stronger feature-to-goal associations would assist in the formation of brand-to-goal linkages. This leads to the following:

PROPOSITION 5. Functional knowledge facilitates and strengthens goal-relevant interpretation of and memory for brand information.

Feedback

One mechanism by which associations between goals, brands, and features might be learned is through feedback after a purchase (Millward 1980). Direct experience with the chosen brand is likely to lead to evaluation of the brand with regard to purchase goal(s). Essentially, feedback through experience may be seen as the testing of the "hypotheses" developed about the brand during information acquisition and the decision process (Hoch and Deighton 1989). Feedback regarding the chosen brand's degree of goal fulfillment may provide valuable information by which those hypotheses may be tested and the brand-to-goal associations either modified or strengthened. However, as noted by Hoch and Deighton (1989), the impact of feedback on the brand-to-goal associations (as with hypothesis confirmation or disconfirmation) is likely to depend somewhat on the degree of ambiguity of the experience.

In providing information on brand-to-goal associations to the consumer, unambiguous feedback relating to a consumer's goal is likely to increase brand knowledge accuracy for the chosen brand(s). To the extent that one brand-to-goal association gained from information acquisition and feedback provides a basis against which to compare other brands, feedback should also facilitate learning brand-to-goal associations for other brands. In addition, the brand-to-goal associations formed from feedback may also be used by consumers to check the degree to which their evaluations of feature values were correct or not and to form new feature-to-goal associations. Therefore, feedback is also expected to strengthen feature-to-goal associations.

Feedback could consist of information relevant to the consumer's main goal; it could also include information relevant to a second goal. Consider the case of the person who buys a car for its economy. As the consumer drives the car, feedback relevant to other goals, such as the car's handling, will be forthcoming. By introducing these additional feature, brand, and goal associations that are unconnected to the original goal, this feedback likely will influence the structure and organization of the consumer's knowledge. These additional associations may make it more difficult for a person to independently access or retrieve previously learned information and thereby lessen the degree to which knowledge is evidenced (i.e., in free recall of product information) in terms of the original goal (retroactive interference; see Tulving and Psotka 1971). In addition, the reorienting of knowledge structure toward another goal may have effects on the focus of later information acquisition, further influencing the goal orientation of knowledge. The extent of the effects that irrelevant feedback has on the goal orientation of a consumer's knowledge base is evidence for the importance of feedback in the formation and modification of brands and feature associations in memory. We propose the following:

PROPOSITION 6. Feedback on the appropriateness of a brand for a particular goal helps to build brand-to-goal links in memory and, to a lesser extent, feature-to-goal links. Relevant feedback therefore increases the goal-oriented organization of brands and features relative to the absence of feedback and relative to irrelevant feedback.

Of the set of propositions offered above, 1–3 isolate the effects of goals on knowledge development and therefore serve as the foundation of the goal-based framework of consumer knowledge development. As such, they are tested in the first study. The effects of prior knowledge and feedback (Propositions 4–6) are tested in the second study. Common to both studies is a core set of procedures designed to activate and simulate the process by which consumers acquire information with a particular goal in mind. We first outline this core set of procedures and then present the specific nature and results of each study.

CORE METHOD
Stimulus Design

Certain criteria guided the choice of a product category for the experiments. To avoid prior knowledge confounds, we required a product category (1) for which a large pool of extreme novices is available and (2) for which there is a low level of passive learning that occurs in normal life, that is, few television commercials and a relatively small consumer base to reduce word of mouth and the number of informational encounters with the product category. We also required a product category (3) for which expertise required some degree of functional knowledge, (4) that encompassed multiple alternative goals, and (5) that had identifiable feature-to-goal mapping. After screening candidate product categories on the basis of the first three of these criteria, we mapped product goals onto concrete features and
brands for two categories that remained (boats and electric guitars) through questioning of experts and examination of trade literature. Electric guitars best fit the criteria listed above and were chosen for the experiments.

Musical versatility (the range and types of music that can be played) and comfort (in carrying and playing the guitar) are two goals that could be sought by buyers of electric guitars. Both are central to playing a guitar, and the degree to which a particular guitar satisfies either goal can be determined by examining several concrete features. Nine features important in guitar choice arose out of discussions with our experts. Three of these features are relevant to satisfying the comfort goal, three are relevant to the versatility goal, two are relevant to both goals, and one is not relevant to either goal. Eight brands were then constructed (by the authors) from these features to represent a continuum of goal satisfaction on each of the two goals in the product category (see Table 1). The ordering of the brands in terms of their level of goal satisfaction was determined by assignment of feature values. For example, the most versatile values of the features relevant to choosing a versatile guitar were identified and then assigned to the most versatile brand (e.g., the Charvel has a locking tremolo bridge with fine tuners, which is very versatile, as compared to a non-tremolo bridge without fine tuners, which is not versatile at all). The goal satisfaction rankings of these brands were then verified by our experts. For each goal, there are four appropriate brand alternatives and four inappropriate brand alternatives. Note that the level of goal satisfaction for the versatile goal is negatively but not perfectly correlated with the level of goal satisfaction for the comfort goal, thereby providing two compromise brands that perform well on both goals.

Experimental Scenario and Procedure

The main experimental task for the studies was a series of four information acquisition and choice trials. On each trial, the subject was given a 6 (brand) × 9 (feature) information matrix and instructed to acquire information and choose a brand on the basis of the provided goal. The matrix format was chosen for presentation because it puts few constraints on the behavior of the subject (Bettman and Kakkar 1977). The number of brands (eight total, six seen on each trial) allows for a wide range of goal appropriateness in choice for each goal condition while not overloading the subject with a large choice set, so that some brand learning is likely to occur. The presentation of brands across the four trials was rotated such that each brand was seen a total of three times.

Subjects (study 1: n = 52; study 2: n = 70) were undergraduate marketing students who participated as a course requirement. At each session, subjects were first asked to read information provided as a form of knowledge induction. The basic knowledge condition consisted of a listing of the features of electric guitars that they were to see and brief definitions of those features. For example, for the fingerboard this information reads: “There are several types of fingerboard materials, including Indian rosewood, ebony, and maple. This is simply the material that the fingerboard is made of.” This information gives the subjects an initial base from which to build associations in knowledge, much as a consumer would have in a real buying situation.

After the knowledge induction, subjects were asked to read a scenario that described “Dan” and depicted his need for a new electric guitar (see Appendix). From this goal manipulation, the type of guitar that Dan needed was to become the subject’s goal. Results for the two studies showed that 89 percent of the subjects inferred the correct goal(s); those that did not were eliminated from the analyses. Following the goal manipulation and the manipulation check, subjects were given a five-point self-rating scale for familiarity with electric guitars (subjects who rated themselves as familiar or very familiar were eliminated from the analyses) and introduced to the computer-controlled phase of the experiment. In this phase each subject was given instructions regarding the use of the computer, the format of the information acquisition and choice task, and the reward structure for the task. This reward structure is...
was designed to simulate the time and effort constraints and the desire to buy an appropriate brand that occur in "real life." Each subject was told that each piece of acquired information reduced his or her chance at a prize, but that the "goodness of the choice" (the chosen brand's goal appropriateness) increased the chance at a prize. Subjects were, in fact, all paid the same amount of money at the completion of the study.

The instructions for the main task told the subject to acquire information and choose the best brand, given the goal. The time limit on this task, determined in pretesting so that only 15 percent of the subjects reached it, was 5.5 minutes. If a subject reached the time limit, the computer automatically advanced to the next screen. After each choice, the subject was provided with feedback on the quality of his/her choice in terms of the provided goal (in study 2 the presence and type of feedback was manipulated, but in study 1 all subjects received feedback). The computer recorded the information acquisition content and order, the goal relevancy of each feature acquired, and the choice for each trial. After the series of trials, each subject completed a self-paced recall task, a sorting task, and a second packet of measures designed to tap various characteristics of knowledge content and organization. Measures are described in detail below.

**STUDY 1: INDEPENDENT VARIABLES AND ANALYSIS FORMAT**

The presence of the comfort goal and the presence of the versatility goal were crossed between subjects such that there were four levels of the independent variable goal factor in study 1. Subjects were to find (1) a comfortable guitar, (2) a musically versatile guitar, (3) a comfortable and also musically versatile guitar (the "both goals" cell), or (4) an electric guitar (the "no goal" cell). There were 13 subjects in each cell. Two subjects were eliminated on the basis of the familiarity screening and six on the basis of the goal manipulation screening described above, which resulted in cell sizes of 10-12.

Our primary theoretical interest lies in distinguishing knowledge developed under one goal from that developed under another goal, with a focus on differences in the acquisition of information and in the amount and organization of comfort- and versatility-relevant information learned from the experiences. As a result, most of the dependent variables are set up as repeated measures with two levels: comfort-related items and versatility-related items. For example, the number of comfort items in the recall protocol form one level of the number of items recalled, and the number of versatility items in the recall protocol form the other level.

The same set of brand and feature information was available for each subject. Differences in how the information was acquired and remembered should then be related to the differences in goal perspective between subjects, who would be expected to have different views about which information was relevant and which was not. Expected results are based on the comparison between the comfort-goal subjects and the versatility-goal subjects for each dependent measure. As a simple function of the design (using repeated measures), the relevant comparisons take the form of interactions. When we state that we expect to see differences between goal groups for a particular measure (let us use recall for an example), we expect to see comfort subjects recall more comfort-related information than versatility-related information, we expect versatility subjects to recall more versatility-related information than comfort-related information, we expect comfort subjects to recall more versatility-related information than do the versatility subjects, and we expect versatility subjects to recall more versatility-related information than do the comfort subjects. This expectation will be referred to as the goal relevancy (within subject) by comfort versus versatility (between-subjects contrast) interaction. For a graphical representation of the general hypothesis, see Figure 1.

Students in the both-goals condition are expected to acquire information and knowledge that reflect both goals. The no-goal condition is used as a control group and will be discussed only where it is useful to help explain the pattern of results that occurred for the other three groups.

Study 1 was designed to test Propositions 1-3. Operational hypotheses for each of these propositions are reviewed below.

Proposition 1 states that "a consumer's goal directs his/her information acquisition toward goal-relevant feature information." In other words, subjects who desire to acquire a guitar that is comfortable are expected to mainly acquire information about features related...
to comfort, and subjects who desire to acquire a guitar that is versatile will mainly acquire information about features related to versatility. Our primary dependent measure is efficiency, defined as the degree to which subjects concentrate their search on goal-relevant features. Operationally, it is the number of goal-relevant features examined as a proportion of the total number of features examined; its range is from zero to one. Efficiency is calculated separately for each goal, yielding the two levels of the within-subject measure of efficiency (efficiency for comfort, efficiency for versatility). From Proposition 1, we hypothesize an interaction whereby comfort subjects are most efficient with regard to acquiring comfort information (and least efficient for versatility information) and versatility subjects are most efficient with regard to acquiring versatility information (and least efficient for comfort information).

Proposition 2 addresses the content of memory, particularly the relative amounts of goal-relevant and irrelevant information that are acquired during goal-directed experiences. Content of knowledge includes not only the number and identity of items in memory, but also the associations of those items with category goals (eventual expertise requires knowing not only the features and brands, but also how they may help or hinder one in achieving a particular goal). Our primary dependent measures therefore include several recall measures (for amount) and a feature importance measure to tap the associations of features with goals.

Our hypothesis for recall follows the same interaction form as described for efficiency in Proposition 1; for example, we expect comfort subjects to recall more comfort-relevant features and brands than versatility-relevant features and brands. For feature importance ratings, we argue that the degree to which subjects show goal-congruent feature importance ratings indicates the strength and goal relevance of the feature-to-goal associations formed in memory. Thus, we hypothesize that comfort subjects' feature importance ratings will be highest for comfort-relevant features and lowest for versatility-relevant features; we expect the opposite pattern for the versatility subjects.

Proposition 3 concerns the organization of retained information, particularly brand information. It suggests that goals become the organizing mechanism for brand knowledge and that the result is a goal-directed brand categorization scheme. Several measures are used to examine this proposition, including recall clustering, brand sorting, and brand goal fulfillment ratings.

The use of recall measures to look at memory organization is based on the increased accessibility of objects associated with a retrieval structure in memory. With the assumption of an associative model of memory that assumes spreading activation, relatedness or grouping of concepts in memory is reflected in the clustering or grouping of concepts in free recall (Chi and Ceci 1987; Peleggino and Hubert 1982). To the extent that a person's goal during information acquisition and choice serves to organize the information learned, we expect to see increased goal-based clustering. Our comparison is the clustering obtained under one goal direction versus the clustering obtained under a different goal direction. We hypothesize an interaction whereby comfort subjects are expected to show more comfort clustering than versatility clustering (and more comfort clustering than versatility subjects show), and versatility subjects are expected to show the opposite pattern.

Sorting tasks are quite common in research when the object is to uncover the dimensions used to distinguish among and group objects (see Chi and Ceci 1987; Rosch et al. 1976). The brand-sorting task thus allows us to look at the degree to which the eight brands are organized around the manipulated goal. The rationale and the hypothesis follow that outlined above for recall clustering. Here, though, the criterion is one of accuracy of sorting based on our objective classification of the brands in terms of their goal fulfillment.

Another measure of the organization of brands by a goal is the degree to which the brands' appropriateness for the goal is known, measured by what has been termed goal fulfillment ratings (Barsalou 1983, 1985; Loken and Ward 1990). Each brand used in this study was constructed to represent a certain degree of goal fulfillment in terms of comfort and versatility, and the objective rankings for the brands for these two different goals are negatively correlated. For example, Wasbourn is very good for comfort, but very bad for versatility. When subjects are asked to rate each brand for its degree of goal fulfillment, the ratings should reflect their goal orientation. Since they are not given a goal orientation at the time of rating, they must rely on memory, which we of course expect to be oriented on the basis of the goal that directed learning. Thus, we hypothesize that the comfort subjects' goal fulfillment ratings will be highest for comfort-relevant brands and lowest for versatility-relevant brands; we expect the opposite pattern for the versatility-relevant subjects.

**RESULTS OF STUDY 1**

**Proposition 1: Information Acquisition Goal Directedness**

As stated above, goal directedness here takes the form of information acquisition efficiency. Note that efficiency for a particular trial can be calculated only for those subjects who collect at least one piece of information in that trial. Thus, degrees of freedom differ by trial.

The results show an impact of the nature of the goal on the content of acquired information; goal-relevant information dominates the content of the feature information acquired. In trial 1 the goal relevance by comfort versus versatility interaction was significant ($F(1,33) = 5.6, p = .023, \omega^2 = .10$), and its pattern conformed to expectations (see Fig. 2). While this pattern
of means continued in subsequent trials, it did not achieve significance again. In information acquisition by brand, the comfort and the versatility groups concentrated on the comfort brands and the versatility brands, respectively, as was expected (see Fig. 3; \( F(1,129) = 13.48, p < .001, \omega^2 = .08 \)).

Overall, the results do not completely support Proposition 1. Although information acquisition by brand is clearly goal directed, only the first information acquisition trial shows the expected significant interaction for features. This is contrary to our expectations that, if subjects were learning over trials, they would improve in information selectivity over trials. There are several possible reasons for these results. Among these is the explanation that there may be a “distracting” influence of having nonrelevant information available. In other words, even though consumers are goal directed in information acquisition, the mere presence of nonrelevant information may lead them to believe that the “extra” information needs to be checked out for completeness or to reduce the risk incurred by not examining all information. These effects may be especially likely given the extremely low levels of knowledge with which these subjects begin. Given that information acquisition is not purely goal relevant, the content of the information retained in memory, which is the focus of Proposition 2, is of even greater interest.

**Proposition 2: Memory Content**

Recall. In the free recall task, subjects were asked to recall everything they knew about the product category. Several elements were coded in recall. Each concept elicited was first coded for goal relevancy. For example, the mention of “fingerboard” was coded as comfort relevant and the mention of “humbucker pickups” was coded as versatility relevant (see Table 1). Then, a tally was made of the number of comfort- and versatility-relevant brands, the number of comfort- and versatility-relevant features, the number of goal-brand links for each of the two goals (e.g., “the Washburn guitar is comfortable”), and the number of goal-feature links for each of the two goals (e.g., “the pickup selector switch increases versatility”). The reliability of the recall coding was verified by having a subset of the subjects’ recall protocols coded by a second coder who was blind to the hypotheses. Inter-rater reliability was 81.2 percent. No pattern was evident in the disagreements, which were then resolved by discussion.

For three of the four recall categories analyzed (Table 2), the hypothesized interaction (see Fig. 1) was significant. The expected interaction was significant for the number of features (\( F(1,40) = 26.33, p < .001, \omega^2 = .34 \)), the number of feature-to-goal associations (\( F(1,40) = 22.71, p < .001, \omega^2 = .34 \)), and the number of brands (\( F(1,40) = 5.33, p = .026, \omega^2 = .09 \)). The means show that comfort-goal subjects and both-goal subjects made brand-to-goal associations for both the comfort and the versatility goals. Versatility-goal subjects made brand-to-goal associations only for the versatility goal. As might be expected, the no-goal subjects made limited feature-to-goal associations and no brand-to-goal associations at all. Further, the results for the both-goals subjects show about equal amounts of recall for comfort- and versatility-relevant items. These results support Proposition 2 and, given the relatively limited memory content of the no-goal subjects, show the effect of the presence of a specific goal for novices.

**Feature Importance Ratings.** To measure feature knowledge, subjects rated each feature’s importance in purchasing an electric guitar on a nine-point scale with 1 being not important at all and 9 being very important.
The results from the feature importance ratings support Proposition 2 (Table 2); subjects are learning about features in terms of their goal as opposed to other goals. The analysis of the feature importance ratings grouped by goal relevancy (note that the feature importance analyses and the later goal fulfillment ratings analyses use all four levels of the within-subject goal-relevancy factor) shows the expected significant interaction ($F(3,120) = 7.03, p < .001, \omega^2 = .10$). Inspection of these means shows the ordering of the ratings is as predicted: the comfort-goal subjects' ratings, from highest to lowest, are for the comfort-only features, the both-relevant features, the neither feature, and then the versatility-only features. The versatility-goal subjects' ratings, from highest to lowest, are for the versatility-only features, the both-relevant features, the comfort-only features, and then the neither feature.

The feature importance ratings of the both-goals subjects reflect both the comfort and the versatility goal. These subjects' ratings are highest for the versatility features and the comfort features and lower for the other features. The pattern of means suggests that these subjects were able to determine which features are appropriate, but, since there are so many features, their importance ratings are discounted relative to the ratings by the single-goal groups: they are not as extreme as the ratings by the single-goal groups. Both-goals subjects may simply have been looking at more of the features to make their choices, as one might expect.

It was suggested in the literature review that the prominence of goal-relevancy in memory, which the results for Proposition 2 support, might occur through selectivity in information collection and also through the differential strength of the associative links formed in memory between the relevant and irrelevant information collected and the goal that motivated the purchase episode (stronger links should form between the goal and relevant information than between the goal and irrelevant information). The pattern of results for Propositions 1 and 2 show that both of these mechanisms may be at work. Goal-based selectivity was shown to exist in information acquisition; however, this selectivity was not strong throughout the four trials. Since subjects acquired nonnegligible amounts of nonrelevant feature information, there must also have been some differences in storage by relevancy in order for subjects to show the strong goal orientation in the memory results discussed above.

Proposition 3: Memory Organization

Recall Clustering. Several clustering measures, derived from the number of successive elements recalled from the same group, exist. As recommended by Murphy (1979), the clustering measure used here is the modified ratio of repetition, defined as the ratio of repetitions to the maximum possible number of repetitions, where repetitions are the number of times two items from the same category are mentioned together. The comfort goal and the versatility goal were used to define two categories of feature and brand items in recall, and values for the modified ratio of repetition (MRR) were computed for each subject (see Table 3). The relevant interaction is significant ($F(1,36) = 4.53, p = .041, \omega^2$
TABLE 3
PROPOSITION 3: ORGANIZATION OF MEMORY

<table>
<thead>
<tr>
<th>Measure</th>
<th>Comfort</th>
<th>Versatility</th>
<th>Both goals</th>
<th>No goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall clustering (MRR)*</td>
<td>.84 (1)</td>
<td>.55 (1.3)</td>
<td>.53 (3)</td>
<td>.55 (3)</td>
</tr>
<tr>
<td>Versatility</td>
<td>.62 (3)</td>
<td>.74 (2)</td>
<td>.67 (2)</td>
<td>.72 (3)</td>
</tr>
<tr>
<td>Brand-sorting accuracy*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comfort</td>
<td>2.46 (1.4)</td>
<td>3.10 (1.5)</td>
<td>2.67 (1.0)</td>
<td>2.17 (1.1)</td>
</tr>
<tr>
<td>Versatility</td>
<td>3.18 (2.6)</td>
<td>2.60 (1.4)</td>
<td>2.83 (0.9)</td>
<td>2.92 (7.1)</td>
</tr>
<tr>
<td>Goal fulfillment ratings by brand group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comfort brands</td>
<td>13.8 (3.4)</td>
<td>6.4 (2.3)</td>
<td>8.5 (2.3)</td>
<td>8.5 (3.0)</td>
</tr>
<tr>
<td>Versatility brands</td>
<td>6.8 (3.4)</td>
<td>14.1 (2.8)</td>
<td>9.8 (3.9)</td>
<td>15.2 (2.2)</td>
</tr>
<tr>
<td>Compromise brands</td>
<td>11.7 (3.2)</td>
<td>11.0 (2.2)</td>
<td>12.2 (2.3)</td>
<td>9.8 (2.7)</td>
</tr>
<tr>
<td>Neither brands</td>
<td>8.1 (4.0)</td>
<td>9.1 (3.2)</td>
<td>9.5 (2.1)</td>
<td>9.9 (2.8)</td>
</tr>
</tbody>
</table>

NOTE.—Numbers in parentheses are SDs.

*a*The MRR has a range of 0–1.

*b*Brand-sorting accuracy numbers range from 0 to 4; lower numbers indicate more accuracy.

*c*Goal fulfillment ratings are measured on a 1–9 scale for each brand; this table shows the sum of the ratings for the brands relevant to a particular goal (i.e., Washburn + Henson for the comfort brands).

= .08), showing subjects grouping items by goal in memory and supporting Proposition 3.

**Brand Sorting.** The instructions for brand sorting, adapted from Loken and Ward (1990), simply ask the subject to put the brands into groups in any way s/he wishes. The analysis of the sorting data focuses on the accuracy of the sorts, which is measured by counting the number of brands that would have to be moved for the sort to correspond first to a perfect comfort-based sort, and then to a perfect versatility-based sort (with lower numbers indicating greater accuracy). Thus, there is a measure of accuracy with respect to comfort and a measure of accuracy with respect to versatility for each subject.

The results for sorting accuracy (Table 3) show a pattern consistent with Proposition 3. The relevant interaction is significant at p < .06 (F(1,40) = 3.81, 
\[ \bar{\alpha} = .06 \]). Furthermore, the both-goals subjects were fairly accurate with respect to both goals, as expected.

**Goal Fulfillment Ratings.** To measure the degree to which the brands' appropriateness for the goal is known, we used goal fulfillment ratings, (i.e., “rate the degree to which the brand fulfilled your purchasing goals”), which are measured on a nine-point scale where 1 indicates a very low level of fulfillment and 9 indicates a very high level of fulfillment. There are no explicit instructions to consider a particular goal in these ratings. In this way, the degree to which subjects have formed accurate evaluations of the brands—that is, the degree to which subjects have begun to learn the graded structure of a category in terms of their goal (in which brands are ranked in terms of their goal fulfillment; Barsalou 1985)—can be assessed.

The eight brands of guitars may be put into four groups of two brands each, based on the appropriateness of the brands to the two goals of comfort and versatility (see Table 1). The Washburn and Henson are appropriate only for the comfort goal. The Squier and Charvel are appropriate only for the versatility goal. The Dimarzio and the Duncan are appropriate for both goals and are called the compromise brands. The Seymour and Kramer are brands appropriate for neither goal and are referred to as the neither brands. For analyses of the goal fulfillment ratings, these four groups form the four levels of a within-subject factor of goal relevancy; brand ratings are summed within these groups for the analysis (making the range of values 2–18).

The results support Proposition 3: a significant interaction of goal relevancy with the contrast between the comfort- and the versatility-goal cells obtains (F(3,120) = 21.28, p < .001, \[ \bar{\alpha}^2 = .25 \]). The means (Table 3) show an ordering of ratings consistent with Proposition 3: comfort subjects' fulfillment ratings from highest to lowest are for comfort brands, compromise brands, neither brands, and versatility brands; versatility subjects' ratings from highest to lowest are for versatility brands, compromise brands, neither brands, and then comfort brands. As expected, the both-goals subjects' ratings are highest for the compromise brands, with the other three groups rated about equally.

**Study 1: Summary**

The basic proposition that goals direct the content and organization of knowledge development through information acquisition and choice tasks was supported, both for the single-goal subjects and for the both-goals subjects. The results offer evidence that both feature knowledge and brand knowledge were learned in terms of the goal that directed the processing; in effect, goal-derived categories were formed on the basis of feature-
to-goal associations and brand-to-goal associations. This formation occurred even though the goal orientation of the information acquisition is diluted as the subject progresses through the four trials. Thus, screening of feature information seems to occur both during information acquisition and during information interpretation and storage.

The pattern of results for Propositions 2 and 3 indicate that feature knowledge may be acquired more easily and held more strongly, in terms of goals, than brand knowledge. That is, brand-to-feature connections and feature-to-goal connections may come, in some sense, before the brand-to-goal connections. Our results do not allow us to determine whether this is due to the possible inferential nature of the brand-to-goal link or is a function of the matrix format of the information display board.

STUDY 2

Study 2 examines the moderating roles of prior knowledge and feedback in the formation of goal-based associations in memory. Prior knowledge is believed to improve the efficiency and appropriateness of the decision process and therefore the strength of the goal orientation of the knowledge developed. Feedback after choice is believed to affect the goal orientation of knowledge through its role as a source of new goal-oriented knowledge and as a guide for future information acquisition and choice.

Subjects for study 2 were drawn from the same pool as that used for study 1 and were screened in the same way. Cell sizes of 14 were used for each of the conditions. Three subjects were eliminated from the analyses on the basis of the unfamiliarity screening and seven were eliminated on the basis of the goal manipulation screening, leaving 10 to 13 per cell. Please note also that only subjects in the no-feedback conditions were used in the analyses of prior knowledge effects.

In general, the analyses were performed with the same within-subject goal-relevancy factor as in study 1 and with knowledge or feedback serving as the between-subjects factor. While in study 2 every subject goes through four trials with the goal of finding a comfortable guitar, the within-subject factor, with a comfort level and a versatility level, is retained. The reason is that, when accuracy and completeness of memory in accordanve with one goal perspective is of interest, the accuracy and completeness of memory in accordance with a different goal often provides additional information about the behavior of the subject. Proposition 4 is tested by analyzing choice behavior over the four trials across the prior knowledge groups. Proposition 5 is tested by examining the strength of feature-to-goal and brand-to-goal associations across prior knowledge groups. Finally, the effects of feedback on knowledge development (Proposition 6) are examined using many of the same memory measures used in study 1.

Prior Knowledge

In this study prior knowledge was manipulated at the knowledge induction point of the core procedure described earlier. There were three knowledge conditions: functional knowledge ($n = 12$), feature knowledge ($n = 13$), and brand knowledge ($n = 13$).

Functional Knowledge condition. This contains functional information for each feature that includes the goal relevancy of the feature and the relative valuations of the feature levels in terms of the goals. For the fingerboard, this would read, "The fingerboard materials are important for playing comfort. In general, the smoother the fingerboard, the easier it is to do fast and smooth fingering. Indian rosewood is the smoothest of the common fingerboard materials, ebony is the next smoothest, and maple has rougher surfaces."

Feature Knowledge Condition. This is the same knowledge induction used in study 1, where only definitions of features were provided. For the fingerboard, this would read, "There are several types of fingerboard materials, including Indian rosewood, ebony, and maple. This is simply the material that the fingerboard is made of." This differs from the functional knowledge induction in two ways: first, in the functional knowledge condition the fingerboard feature is explicitly linked to the comfort goal, and, second, an explanation of how and why different feature values are more or less comfortable is provided.

Brand Knowledge. Only a list of brand names with no reference to features is provided.

Proposition Four: Prior Knowledge and Choice

Appropriateness of the subjects' choices is used here as an indication of the degree to which they have learned the goal appropriateness of the different brands. We expect to see more goal-appropriate choices from the functional knowledge subjects, and we would expect choices to improve over the four trials. The results (see Fig. 4) partially support Proposition 4. While the main effect of knowledge on choice appropriateness is not significant ($F(2,35) = 1.498, p > .10$), the functional knowledge subjects outperform the feature knowledge subjects (contrast, $F(1,35) = 2.996, p = .092, \omega^2 = .05$). Further, there are differences in the knowledge groups over the four trials. Relative to the feature knowledge subjects' choices over the four trials, choices improved for the functional subjects (linear trend for trial by the feature vs. functional knowledge contrast, $F(1,35) = 6.195, p = .018, \omega^2 = .18$; knowledge by trial, $F(6,105) = 2.693, p = .018, \omega^2 = .08$; feature vs. functional contrast by trial, $F(1,105) = 10.28, p = .002, \omega^2 = .07$). However, the main effect of trial is not significant.

There is only partial support for Proposition 4, but the marginally better performance of the functional
knowledge subjects indicates that there may be some value, in terms of making appropriate choices, to functional knowledge.

Proposition 5: Prior Knowledge and Goal-oriented Learning

Proposition 5 states that functional knowledge should facilitate and strengthen goal-relevant interpretation of and memory for brand information. We test this proposition by examining feature importance ratings and goal fulfillment ratings. We expect higher knowledge levels for the functional knowledge subjects than for the feature knowledge subjects and the brand knowledge subjects. Again, since all the subjects had the goal of finding a comfortable guitar, we hypothesize that the functional knowledge subjects will show the most accuracy by having the highest ratings for comfort-relevant features and brands. Brand knowledge subjects, on the other hand, are hypothesized to show the lowest accuracy with the lowest ratings for comfort-relevant features and brands and the highest ratings for versatility-relevant features and brands.

Feature Importance. The results show that the functional knowledge manipulation leads to more accurate feature evaluations and improved feature knowledge. In support of Proposition 5, the functional knowledge subjects rate the comfort-only features higher than the feature knowledge group does (see Fig. 5; feature vs. functional knowledge contrast by goal relevancy, $F(1,105) = 5.46$, $p = .021$, $\omega^2 = .03$), although the knowledge by goal relevancy interaction is not significant ($F(6,105) = 1.80$, $p = .106$, $\omega^2 = .03$). The analysis further shows that all subjects rate comfort features more highly than versatility features (goal relevancy, $F(3,105) = 16.59$, $p < .001$, $\omega^2 = .28$). These results show that processing with a particular goal in mind serves to strengthen the associations of features and brands with that goal compared to associations with another goal, for all three levels of prior knowledge.

It is interesting that both the feature knowledge subjects and the functional knowledge subjects tended to overstate the importance of the versatility-only features relative to the brand knowledge subjects (brand vs. others contrast by goal relevancy, $F(1,105) = 5.33$, $p = .023$, $\omega^2 = .03$). This result and the choice results lead us to speculate that the exposure of the functional and the feature groups to versatility-relevant information in the knowledge manipulation, and their subsequent acquisition of versatility information, increased their
knowledge of and ratings for versatility-relevant features. Also, the brand knowledge subjects tended to rate all noncomfort items as less important than other groups rated them. This finding suggests a more focused approach to feature importance where the brand knowledge subjects were better able to focus on relevant information since they had not earlier been exposed to versatility-feature information.

Goal Fulfillment Ratings. The results for brand-to-goal associations show mixed support for Proposition 5. There are advantages for the functional knowledge subjects with regard to making more accurate evaluations of brand appropriateness relative to the goal under which the processing occurred, but the effects are not significant. Also, the brand knowledge subjects are more accurate than the feature knowledge subjects. For these analyses, the brands are combined according to goal relevance (see Fig. 5).

The results show a significant main effect for knowledge ($F(2,35) = 2.44, p = .10, \omega^2 = .07$), of which most of the variance comes from the contrast of brand knowledge and the other knowledge groups ($F(1,35) = 4.867, p = .034, \omega^2 = .09$). The interaction of knowledge and goal relevance is not significant ($F(6,105) = 1.227, p = .298$); all knowledge groups show the same pattern of rating the comfort brands highest and the noncomfort brands lowest. However, the interaction of goal relevance and the contrast between feature and functional knowledge is significant ($F(1,105) = 6.374, p = .013, \omega^2 = .03$), indicating better rating accuracy. Functional knowledge subjects rate the noncomfort brands lower than the other two knowledge groups; they also rate the two brands relevant only to comfort higher than the other two knowledge groups do. The feature knowledge subjects show the lowest rating of all goal groups for the two brands relevant only to comfort, which may indicate an inhibiting effect of having prior feature knowledge relevant to another goal. These results, then, do show that the functional knowledge group is more accurate for brand information, as predicted by Proposition 5.

Prior Knowledge: Summary

Propositions 4 and 5 predicted that the functional knowledge subjects would be better at making choices and would learn more than the feature knowledge subjects, who in turn would outperform the brand knowledge subjects. These propositions are partially supported by the results, since the functional knowledge subjects do better than the feature knowledge subjects. Thus, the research supports the notion that more functional knowledge in a product category (one element of expertise, although we certainly are not claiming to have created expertise by simply providing this information) assists a consumer in decision making and in knowledge development. However, in most cases, the brand knowledge subjects do just as well as the functional knowledge subjects—and much better than the feature knowledge subjects—so that support is attenuated. The pattern of results suggests that the feature knowledge subjects are paying attention to, and using, irrelevant versatility information. In contrast, the brand knowledge subjects seem to be clearly focused on the relevant comfort information, with much less attention paid to and knowledge of versatility information than the other two groups.

In terms of the process of developing knowledge, the overall pattern of results suggests that there is some distracting or inhibiting effect of having prior knowledge (feature knowledge) that is relevant to goals other than the goal that is the immediate focus. At the same time, it is evident that there is a facilitating effect of having functional knowledge that explains the meaning of this feature information in terms of product category goals. It is likely that the magnitude of the inhibiting effect of irrelevant information would be greatest among consumers with the lowest levels of knowledge and would decrease as expertise developed over time, as true experts have been shown to readily ignore irrelevant information (see Alba and Hutchinson [1987]). Paradoxically (but see Keller and Staelin [1987]), the task may be even clearer for subjects with the least amount of prior knowledge (i.e., the brand knowledge subjects), compared to subjects with some information but not expertise, in simple tasks such as this, since there is less perceived need to process information that is not immediately and obviously relevant.

Feedback

Nested within the feature knowledge cell of study 2 was a manipulation of feedback. After making each of their choices, subjects in feedback conditions were provided information listing the chosen brand's features and a statement as to how well the brand satisfied a goal. The feedback variable had three levels: goal-consistent feedback (related to the comfort goal; $N = 10$), no feedback ($N = 13$), and goal-inconsistent feedback (related not to the comfort goal but to the versatility goal; $N = 12$). For example, the goal-relevant consistent feedback statement for the most comfortable brand available was "The Washburn has an ash body with an arched front, beveled edges, and a contoured back. It has one humbucker, a non-tremolo bridge with fine tuners, and a 24.75" set-in neck. It does not have a coil tap switch or a pickup selector switch, and its fingerboard is made from Indian Rosewood. The Washburn is very comfortable to play." The goal-inconsistent feedback conditions received the same feature information, but the brand statement was "The Washburn is not very versatile." The no-feedback condition received the feature information for the chosen brand but received no brand statement. The comparisons of interest isolate the effect of having feedback and the effect of the goal orientation of the feedback.
TABLE 4
FEEDBACK RESULTS

<table>
<thead>
<tr>
<th>Measures</th>
<th>Feedback condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consistent</td>
</tr>
<tr>
<td>Recall:</td>
<td></td>
</tr>
<tr>
<td>Total number of comfort items</td>
<td>13.80 (6.3)</td>
</tr>
<tr>
<td>Total number of versatility items</td>
<td>6.40 (4.8)</td>
</tr>
<tr>
<td>Number of different comfort brands</td>
<td>1.40 (1.7)</td>
</tr>
<tr>
<td>Number of different versatility brands</td>
<td>1.00 (1.3)</td>
</tr>
<tr>
<td>Total number of comfort brands</td>
<td>4.20 (2.5)</td>
</tr>
<tr>
<td>Total number of versatility brands</td>
<td>2.10 (3.5)</td>
</tr>
<tr>
<td>Number of comfort features</td>
<td>10.40 (4.5)</td>
</tr>
<tr>
<td>Number of versatility features</td>
<td>4.80 (2.6)</td>
</tr>
<tr>
<td>Number of comfort brand-to-goal associations</td>
<td>.90 (1.3)</td>
</tr>
<tr>
<td>Number of versatility brand-to-goal associations</td>
<td>.80 (2.5)</td>
</tr>
<tr>
<td>Goal fulfillment ratings by brand group*</td>
<td></td>
</tr>
<tr>
<td>Comfort brands</td>
<td>13.7 (3.4)</td>
</tr>
<tr>
<td>Versatility brands</td>
<td>6.7 (2.4)</td>
</tr>
<tr>
<td>Compromise brands</td>
<td>11.7 (3.2)</td>
</tr>
<tr>
<td>Neither brands</td>
<td>8.1 (4.0)</td>
</tr>
<tr>
<td>Brand-sorting accuracy*</td>
<td></td>
</tr>
<tr>
<td>Comfort</td>
<td>2.50 (1.4)</td>
</tr>
<tr>
<td>Versatility</td>
<td>3.30 (1.0)</td>
</tr>
</tbody>
</table>

Note.—Numbers in parentheses are SDs.
*Goal fulfillment ratings are measured on a 1–9 scale for each brand; this table shows the sum of the ratings for the brands relevant to a particular goal (i.e., Watson & Henson for the comfort brand).

Proposition 6: Feedback Effects

Recall. The main effect of feedback, showing higher levels of recall for the consistent-feedback subjects (Table 4), is significant for the total number of items by goal ($F(2,32) = 4.091, p = .026, \omega^2 = .15$), the number of different brands ($F(2,32) = 3.094, p = .059, \omega^2 = .11$), and the total number of brands ($F(2,32) = 3.742, p = .035, \omega^2 = .14$). It is not significant for the total number of features or for the number of brand-to-goal connections.

The comparison of the no-feedback condition to the consistent-feedback condition (testing the simple influence of the presence of feedback) is significant for the number of brands mentioned ($F(1,32) = 6.866, p = .013, \omega^2 = .14$), the number of different brands mentioned ($F(1,32) = 5.499, p = .027, \omega^2 = .11$), and the number of items ($F(1,32) = 7.265, p = .011, \omega^2 = .15$). These results support the view that feedback enhances the goal orientation of memory.

The interaction of feedback and goal relevance, showing higher proportions of comfort items for the consistent-feedback subjects and higher proportions of versatility items for the inconsistent-feedback subjects (to further test the effect of the goal orientation of feedback), is significant for the number of items ($F(2,32) = 2.943, p = .067, \omega^2 = .07$), the number of different brands ($F(2,32) = 2.439, p = .103, \omega^2 = .07$), and the number of features ($F(2,32) = 2.634, p = .087, \omega^2 = .04$). While the pattern of means is appropriate, it is not significant for the number of brands and the number of goal-to-brand connections. These results offer additional, albeit limited, support for the predictions regarding the effect of feedback on the formation of goal-oriented knowledge content.

Feedback Effects on Goal Fulfillment Ratings. Feedback consistency is a strong factor in forming goal-oriented evaluations and organization of brands. The analysis with the brands grouped according to goal relevance (Table 4) shows that there is a significant difference in rating accuracy (i.e., rating comfort brands high and versatility brands low; feedback by goal relevance, $F(6,96) = 10.52, p < .001, \omega^2 = .32$) between the feedback conditions. This difference stems primarily from the contrast of the consistent-feedback condition with the inconsistent-feedback condition ($F(1,96) = 53.95, p < .001, \omega^2 = .30$). However, also note that the consistent-feedback subjects are better than the no-feedback subjects at rating the brands appropriately (no-feedback vs. consistent-feedback contrast by goal relevance, $F(1,96) = 3.734, p = .056, \omega^2 = .02$), indicating an effect of the simple presence of feedback. Examination of the means shows that, as expected, the consistent-feedback subjects are the most accurate of the three groups in terms of comfort ratings, while the inconsistent-feedback subjects are likely to rate the brands more in accordance with the versatility goal—the goal orientation of their feedback.
Feedback Effects on Sorting. The sorting accuracy analysis (Table 4) lends support to the hypothesis that the goal orientation of feedback affects the brand-to-goal associations that are formed to the extent that the brands are then organized in terms of the goal referred to in the feedback. The consistent-feedback subjects are most accurate with regard to comfort, and the inconsistent feedback subjects are most accurate with regard to versatility (i.e., least accurate for comfort: feedback by goal relevancy, \( F(2,30) = 3.84, p = .033, \omega^2 = .15 \)). The no-feedback subjects show the same pattern of accuracy as the consistent-feedback subjects.

Feedback: Summary

In sum, Proposition 6 is supported. The consistent-feedback subjects remember more overall than the other subjects, and they remember more comfort-related information than the other subjects. Also, the inconsistent-feedback subjects' recall has proportionally more versatility-relevant items than does the consistent-feedback subjects' recall. The results show that both the presence of feedback and the goal orientation of feedback affect the amount of total recall and the recall of brand information in particular. The analysis of the goal fulfillment ratings and the sorting task shows that subjects' evaluations of and organization of brands in memory are affected by the goal orientation of feedback, but that the simple presence of feedback does not seem to have much influence on organization. It is important that these effects manifest themselves even though there are no significant differences in information acquisition efficiency (in terms of comfort) by feedback condition. Thus, the results can be ascribed to the interpretation of information and not simply the acquisition of information.

Hoch and Deighton's (1989) model suggests that, where feedback is ambiguous, prior expectations are likely to be strengthened and feedback may have little independent effect on brand knowledge accuracy. The effect of consistent feedback relative to the absence of feedback may therefore depend on how much information feedback unambiguously provides relative to prior expectations. In this study, the subject's "experience" in the form of the feedback sentence (e.g., "The Seymour is moderately comfortable") is relatively ambiguous in the sense that it is difficult to interpret in the absolute; further, for these low-knowledge subjects, it is also difficult to interpret in terms of previously learned reference points. The results here indicate that consistent feedback may have strengthened associations that were previously held but that it probably did not add much in the way that those associations were organized. In other words, the relation of a brand to a goal was clear in the feedback, but information regarding the relative goal fulfillment of the brand may not have been unambiguously conveyed. Hoch and Deighton's model also suggests that feedback that is unambiguous is more likely to have an impact on beliefs. Thus, the influence of the inconsistent feedback information, since it was so clearly not related to the subject's given goal, can be readily explained.

DISCUSSION AND CONCLUSIONS

This research focuses on the effects of common consumer experiences on the development of knowledge. Overall, the research has shown several links between experiences and knowledge by demonstrating the effects of three factors on the amount and organization of knowledge that a consumer takes away from these experiences.

The conceptual notions posit that the organization of brand and feature knowledge around product goals received significant support. Study 1 revealed this support through several different measures of the amount and organization of knowledge. Study 1 also showed that, when a subject processed under two goals, knowledge reflected both goals. These results are consistent with and complement cross-sectional work on fully developed knowledge structures showing a product category to be comprised of knowledge from multiple perspectives (Ratneshwar and Shocker 1991). Finally, in the absence of a goal, knowledge could not be clearly characterized in terms of any one goal orientation.

These findings, when considered in the context of the procedural nature of study 1, point to an intriguing conclusion. Goal-based subjects without any prior functional knowledge were able to efficiently and effectively focus on and learn goal-relevant features and brands, and this goal-based learning led to more structured knowledge than that possessed by no-goals subjects. Therefore, the mere presence of a goal for a choice situation confronted by a complete novice serves to help consumers to acquire, process, and learn goal-relevant information.

Study 2 showed that prior feature knowledge affected choice behavior and resulting knowledge through feature-to-goal associations. Study 2 also showed the reinforcing effects of feedback on goal-driven knowledge development, working largely through the brand-to-goal associations. These results can be interpreted as evidence that goals serve to moderate and focus the effects of prior knowledge and feedback. In other words, we argue that the associations that may be built or reinforced by prior feature information and feedback are filtered into knowledge partly on the basis of their relation to the goal criterion.

The role of goals, as outlined above, thus takes on the nature of a framing effect in that goals serve to structure choice tasks and become the standard by which feedback and other information is judged. (See Bettman and Sujan [1987] for a demonstration of framing a decision problem by making certain decision criteria salient to novice consumers.) The goal used as
a choice frame also serves to outline the structure of acquired knowledge. From a substantive standpoint it is heartening to know that subjects with no prior conceptions and no feedback on the goal appropriateness of their choices were able to make intelligent, goal-consistent choices. It appears that the existence of goals helps to improve consumers' abilities to effectively judge brands in a product category being encountered for the first time. Therefore, both marketers and consumer advocates should go beyond their focus on encouraging consumers to carefully consider the attribute levels for a brand. They should first emphasize the importance of developing product category goals as the fundamental basis from which brand evaluation efforts should proceed. These findings also suggest, in addition, that advertisers need not hesitate in offering information on brand features even to low-knowledge consumers with a goal.

LIMITATIONS AND FUTURE RESEARCH

The current work, of course, has several limitations. Foremost among the issues are the product category choice, the choice of product goals, and the paradigm for information acquisition that was used. These limitations provide the direction for future research to extend the findings of this project. It is expected that the key concepts studied here—the feature-to-goal associations, the brand-to-goal associations, and so on—and their formation, readily apply to other goals and product categories. However, the strength with which those associations can be formed, and the ease with which they are learned, may vary considerably. For example, in this research, it appears that it was easier to evaluate brands in terms of the versatility goal than the comfort goal. The distinction between search and experience attributes (Nelson 1970) may help to account for the differential results for comfort and versatility. Learning about an experience attribute, in this case comfort, is likely to result in more accurate knowledge when it is experientially based. The rather pallid information offered here (relative to actual experience) may have been sufficient for learning about a search attribute (versatility may be more of a search attribute than comfort) but would likely not reduce ambiguity enough to have as large an impact on learning about an experience attribute (comfort).1

It is important that products and goals of varying complexity and relatedness to prior general world knowledge be investigated to determine the generalizability of these results. Still, it must be recognized that this research takes as a starting point the virtual absence of existing knowledge about the product category in question. There is no reason to believe that goals would somehow operate differently in other product categories where knowledge is absent. The role of goals in framing and shaping this knowledge structure should correspond to that observed here, while the effects of product category should be restricted to the nature of the goal, product features, and the internal complexity of the knowledge structure that develops.

The information acquisition paradigm used here, though less constraining in format than others (e.g., that of Bettman and Kakkar [1977]), nonetheless provides a great deal of problem structure for the novice consumer. In particular, the listing of feature names immediately gives a novice a window into the product category world that would not typically be as clear in a real-world product assessment or buying situation. The strength of the information display board approach used here is the control and tracking ability that it provides the researcher. The weakness is, of course, the provision of a semistructured representation of the product category to a novice consumer and the resulting inability to track the problem representation stage of the problem-solving process. Future research should see the use of environments with progressively "looser" structures in order to investigate the effects of environmentally supplied constraints versus those of consumer-supplied constraints in problem structuring.

The use of complete novices in this research afforded the opportunity to observe more dramatic effects on the development and organization of knowledge than would the use of subjects with more knowledge. Our expectation is that experts would reveal similar but more subtle patterns of findings for information acquisition and learning. While we urge the pursuit of these issues with experts to confirm or deny our expectations, we caution that different procedures might be necessary to detect the marginal changes in knowledge that occur with experts—for example, more finely grained recall protocol coding, reaction time measures, and so on.

Finally, there is a theoretical aspect that could not be investigated within the scope of the current project but is an obvious candidate for future work. It may be time to turn the experience-knowledge connection back around, so that the behaviors (information acquisition, choice, judgment) of subjects whose knowledge has been developed under certain conditions (goal, feedback, etc.) is examined. This would be particularly interesting in terms of the problem-solving and evaluation strategies that subjects take when confronted with situations either very much the same as or radically different from what was previously seen.

APPENDIX

Goal Manipulations

*Comfort Goal Scenario*

Please read the following scenario:

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1We thank one of the reviewers for suggesting this explanation.
Dan has decided to buy a new electric guitar. His old guitar just doesn’t feel right. Dan plays in a band, and sometimes he has to carry the guitar around next to his body for hours at a time. His old guitar isn’t comfortable enough for that. Plus, some of the songs he plays require intricate and fast fingerings, at any or all points on the fingerboard, and he wants to be able to play the guitar without “fighting” it. Your goal is to find him a guitar that will meet his needs.

Versatility Goal Scenario

Please read the following scenario:

Dan has decided to buy a new electric guitar. His old guitar just doesn’t do everything he wants it to do. Dan plays in a band, and he likes to do a variety of types of songs with lots of different guitar sounds in them. Some go real high and real low on the musical scale, too. Dan knows that one guitar can never be everything to all people or to all songs (for example, a good jazz guitar is different from a good heavy metal guitar), but he hopes to find one guitar that will be flexible enough so that he can do all the songs and sounds that he wants to do. Your goal is to find him a guitar that will meet his needs.

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REFERENCES


