

Decision Ambiguity and Incumbent Brand Advantage

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This article examines the role of decision ambiguity in judgments that consumers make about an incumbent (the brand a consumer currently uses) versus an attack brand (a new, superior competitor). It is hypothesized that decision ambiguity creates an advantage for the incumbent. A conceptualization of decision ambiguity is offered. In three experiments, factors that can cause decision ambiguity are manipulated and their effects on preference for the incumbent are investigated. The results underscore the role of decision ambiguity in incumbent brand advantage. In two other experiments, boundary conditions are examined.

This research focuses on the advantages of incumbency. The term *incumbent* refers to the brand that a consumer first chooses in a product category. A brand may achieve incumbent status by being the first brand chosen by consumers entering a mature product class or by being a pioneer in a new product class. An incumbency advantage occurs when consumers prefer the incumbent to an objectively superior but later-encountered competitor (referred to as the *attack brand*). The objectives of this research are to examine conditions under which an incumbent advantage obtains and to conduct an exploratory investigation of the psychological processes that underlie it.

Research in marketing has not been specific about either the processes or the conditions that result in an incumbency advantage. Although research on the related topic of brand loyalty has emphasized the role of emotional commitment or ego involvement in repeat purchase behavior (e.g., Jacoby 1971; Jacoby and Chestnut 1978), other psychological processes are surely operative. On the basis of behavioral decision theory research, I propose a framework that offers a different explanation for consumer repeat purchase behavior. In addition, this framework offers an explanation of the pioneering advantage that is consistent with, but independent of, prior research (e.g., Carpenter and Nakamoto 1989; Kardes and Kalyanaram 1992; Schmalensee 1982).

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With a few notable exceptions in the domain of the pioneering advantage (Carpenter and Nakamoto 1989; Kardes and Kalyanaram 1992; Kardes et al. 1993), research in marketing has not provided a psychological account of the incumbency advantage. However, behavioral decision theory research offers some suggestions. For example, Samuelson and Zeckhauser (1988) showed that people prefer a previously chosen option over others. This pervasive tendency labeled the "status quo bias" has been demonstrated across a range of decisions. Samuelson and Zeckhauser (1988) invoked a variety of psychological mechanisms to explain the phenomenon, including commitment induced by sunk costs, regret avoidance, cognitive misperception, and feeling of control. However, Samuelson and Zeckhauser (1988) were silent with respect to conditions that would make such biases present, absent, or even reversed (cf. Biehal and Chakravarti 1983). The present research identifies the decision characteristics that can increase or decrease the likelihood of the status quo bias. The central premise of this research is that the incumbency advantage will vary as a function of the level of ambiguity in the decision environment.

DECISION AMBIGUITY

Ellsberg (1961) defined ambiguity as a "quality depending on the amount, type, and reliability and unanimity of information" (p. 657). Further, he identified "objectively" ambiguous situations as those in which "available information is scanty or obviously unreliable or highly conflicting; or where expressed expectations of different individuals differ widely" (pp. 660-661). This broad definition is consistent with recent conceptualizations that describe ambiguity as being caused by missing information that is relevant and could be known (e.g., Frisch and Baron [1988]; Heath and Tversky

[1991]; see Camerer and Weber [1992] for a review).¹ In this article, Ellsberg's (1961) conceptualization of ambiguity is adopted and is operationalized as non-comparability among competing options in terms of the amount and type of decision-relevant information available.

In our experiments, the manipulations of ambiguity pertain to several factors in the decision context that can cause biases in product comparisons. Because several streams of research guided our multiple manipulations, it is useful to consider how these several devices can all create ambiguity. Hoch and Deighton (1989) identified a number of potential sources of ambiguity (see also Ha and Hoch 1989; Hoch and Ha 1986). First, ambiguity can occur with respect to product characteristics. For example, in certain product categories, experience per se is not revealing because it may create multiple interpretations of product quality. Second, independently of product characteristics, ambiguity may result from the decision environment. In the present context, the amount and type of information available in the decision context can make it difficult to compare the attack brand to the incumbent. For example, imperfect memory can lead to decision ambiguity, because it hinders brand comparison on an attribute-by-attribute basis (Alba, Hutchinson, and Lynch 1991). Further, even when memory is perfect, competing brands may possess nonoverlapping attributes. For example, one brand of skin lotion may emphasize vitamin E as its key moisturizing ingredient, while a second emphasizes aloe vera, thereby causing a lack of dimensional comparability (Slovic and MacPhillamy 1974; Tversky 1972).

In the present series of studies, a base level of ambiguity was created by asking novices to evaluate a product category (skin lotion) that is inherently ambiguous with respect to product performance at least in the short term (Hoch and Ha 1986). Additional decision context factors were varied across experiments to induce higher levels of ambiguity. Specifically, in experiments 1, 2, and 4, subjects were required to retrieve information about the incumbent at the time the attack brand was introduced and then compare this information with readily available attribute information about the attack brand. In experiments 3 and 5 the competing brands were described in terms of nonoverlapping attributes. In all the experiments, noncomparability was induced in some conditions in which subjects had an extensive experience with the incumbent. Experiments 1, 2, and 4 also created noncomparability

¹Hoch and Deighton (1989) offer a more sophisticated conceptualization of ambiguity. They define ambiguity as a potential for multiple interpretations of product quality. This definition distinguishes ambiguity, a situation in which multiple (different) evaluations can be assigned to an object, from vagueness that precludes any evaluation. Because the present research concerns imprecise judgments rather than multiple interpretations, the Ellsberg (1961) notion of ambiguity is adopted.

via consumers' crystallization of beliefs (i.e., expressing beliefs about the product benefits). All of these factors reduce the comparability of brands, and thus cause ambiguity.

The latter two factors—experience and belief crystallization—are noteworthy because they may simultaneously induce ambiguity and unwarranted confidence in judgments. When product performance is ambiguous, these two factors may create knowledge that is “objectively” not useful but is highly accessible and perceived to be diagnostic. Accessibility and perceived diagnosticity determine to what extent a potential input is actually used in a decision (Feldman and Lynch 1988; Lynch, Marmorstein, and Weigold 1988). The following two sections outline how experience and belief crystallization can simultaneously cause ambiguity and confidence in judgment.

Experience

Experience provides qualitatively different types of information about the incumbent brand, including unique beliefs about the benefits and subtleties of the consumption experience (Wright and Lynch 1994). Thus, differences in experience with the competing brands may result in noncomparability during choice. Specifically, beliefs about the benefits of the incumbent based on one's extensive experience may not be comparable to the specific attributes hailed by a superior (but untried) competitor.

In addition, research in psychology (Fazio and Zanna 1978) as well as in marketing (Smith and Swinyard 1983) reports that consumers attach higher validity to judgments that are based on direct experience. Extensive experience provides additional information about the incumbent brand. Additional information, regardless of relevance, can enhance confidence in beliefs without increasing accuracy in judgment (Heath and Tversky 1991; Oskamp 1965; Peterson and Pitz 1988).

Experience can also strengthen beliefs to the point of overconfidence. Research on experience-based learning argues that, in some cases, experience may inhibit rather than facilitate learning (Alba and Hutchinson 1987; Brehmer 1980; Einhorn 1980; Einhorn and Hogarth 1978). According to Einhorn and Hogarth (1978), experience results in “persistence of the illusion of validity” (p. 396). In the present context, the illusion of validity persists, owing to confirmatory biases in testing the hypothesis that certain benefits follow from using the incumbent and to failure to appreciate that these are not unique to the incumbent (Fischhoff and Beyth-Marom 1983; Klayman and Ha 1987, 1989; Tschirgi 1980). The confirmatory biases are very likely to occur in marketing contexts that do not facilitate attribute-by-attribute comparisons among brands. In the Einhorn and Hogarth (1978) model, confidence is an increasing monotonic function of feedback. Assuming that the positive aspects of a brand are greater than

the negative aspects (which is very likely with most brands in most product categories), feedback and hence confidence become increasing functions of the number of trials, even when experience is nondiagnostic.

Belief Crystallization

Extensive experience with a brand is not the only route that simultaneously enhances noncomparability and perceived diagnosticity. Crystallization of benefit beliefs may produce similar effects even when consumers have had only limited experience with the brand. In this article, the term *belief crystallization* refers to elaboration of attribute information to benefits caused by these attributes. Specifically, subjects in the experiments had an opportunity to think about the benefits of the brand and express their beliefs when information about the brand attributes and what benefits these attributes can offer were still in their memory. Mere mental elaboration about benefits provided by product attributes may induce decision biases in several ways. First, elaboration of the incumbent's benefits results in information that is qualitatively different from the information available for the attack brand. Second, thought increases the absolute amount of information available about the incumbent brand and thus confidence in judgment. Furthermore, causing consumers to think in terms of benefits may result in elaboration of the *positive* aspects of the brand (Koriat, Lichtenstein, and Fischhoff 1980). Expression of these beliefs also may provide reasons to justify the choice of the incumbent and thereby increase confidence. Further, memory for these abstract beliefs may decay less rapidly than specific attribute information (Alba, Marmorstein, and Chattopadhyay 1992; Chattopadhyay and Alba 1988).

In sum, experience and belief crystallization increase the amount of noncomparable information and thus accentuate ambiguity. However, these factors also provide unwarranted confidence in judgment that favors the incumbent. The following experiments investigate the effects of decision ambiguity on consumers' preference for the incumbent in an ambiguous product category. Specifically, the process proposed in this article is that under low ambiguity (e.g., when the incumbent and the attack brand contain the same set of attributes and consumers have perfect memory for attributes), consumers prefer the attack brand over the incumbent because of the superiority of the attack brand. When the level of ambiguity is high, and consumers do not acquire high confidence in their judgments, once again they will prefer the attack brand and thus exhibit the ambiguity avoidance demonstrated in Ellsberg's (1961) studies and Biehal and Chakravarti's (1983) experiments. However, when the level of ambiguity is high, and consumers acquire confidence in their judgment, they will prefer the incumbent and exhibit the status quo bias as long as the initial choice context does not

make the incumbent's inferiority transparent. In such instances, consumers will exhibit overconfidence in preference judgments, inasmuch as they will not only misassess the superiority of their chosen brand but also display inappropriate confidence in the superiority judgments (Lichtenstein, Fischhoff, and Phillips 1982).

EXPERIMENT 1

The objective of this experiment was to investigate the effects of extensive experience and belief crystallization on preference for an incumbent over an "objectively" superior attack brand when the decision context does not facilitate attribute-by-attribute comparisons. It was expected that under extensive experience or belief crystallization, the incumbent would be preferred. On the other hand, when experience with the incumbent is limited and there is no elaboration of attributes, consumers should exhibit ambiguity avoidance. Insofar as consumers behave conservatively, they should prefer the attack brand because its attributes are directly observable at the time of choice.

Method

Product. Stimuli in this experiment and all subsequent experiments were brands of skin lotion that claimed to contain only natural ingredients. The choice of product category was based on three considerations. First, product evaluation through experience should be ambiguous. In the category of lotions, one needs a high degree of expertise to discriminate brands based on trial alone. Second, a category was needed in which subjects could examine attribute values and then form beliefs and expectations based on these values. These initial beliefs needed to be reinforced by experience. Third, a product that could be easily tried in an experimental setting was required. The category of skin lotions satisfied all these criteria. To suppress the effects of brand familiarity, the stimuli were restricted to the subcategory of "natural" lotions.

Experimental Design. A 2 (experience) \times 2 (belief crystallization) between-subjects factorial design was employed. The particular levels of experience and belief crystallization were determined after a series of pretests.² The dependent variables in the present experiment were (1) the proportion of subjects who chose the incumbent brand and (2) confidence in the superiority of the chosen brand.

²The results of these pretests suggested that compared to a single trial or four trials, six trials resulted in higher confidence in subjects' judgment of the quality of a brand and higher relative attitude for that brand (defined as the difference in ratings between the most highly rated brand and the second most highly rated brand). Also, those who rated their beliefs about the putative benefits of a brand exhibited higher confidence and recalled more benefit information about the brand after two days' delay.

Subjects. Subjects for this experiment and all subsequent experiments were volunteers recruited from introductory marketing and psychology classes. Because hand and body lotions are directed primarily toward women (*Consumer Reports* 1977), only female subjects were included. As compensation for their participation, the subjects earned extra class credit. In the present experiment, usable responses were obtained from 88 subjects.³ Fourteen subjects were excluded for reasons given below. In most sessions, subjects participated one at a time. Whenever there were two or more subjects in a session, each subject performed the choice and experience tasks individually, while the other(s) waited in the adjacent room.

Procedure. Subjects were invited to participate in a skin lotion choice experiment. They were told beforehand that they would be asked to use the brand(s) of lotions they chose. To prevent random brand switching or variety seeking, they were also told that about 15 percent of the subjects participating in the experiment would receive, as a gift, a brand they chose during a predetermined round of the experiment (known only to the experimenter). Thus, it was always in subjects' best interest to choose the brand they thought was superior. Next, subjects were asked to read a story that provided information about the key ingredients of the products. This story familiarized subjects with the importance of the key attributes of natural lotions and the benefits derived from these attributes. To construct this story as well as the stimuli set, six experts in the category of lotions were interviewed.⁴ After receiving these general instructions and product-class information, subjects were shown a brand-by-attribute matrix that described four fictitious brands in terms of seven attributes. Subjects were asked to inspect the information carefully and then make a choice. Fictitious brand names were used to label the alternatives. (These names were rated equally desirable in a pretest.) One of these alternatives, labeled Botanical Spring, was superior in attribute values to all other brands in the choice set. Hence, it was expected that every subject would choose this brand. All but nine subjects chose Botanical Spring (hereafter referred to as the incumbent). The data for those who chose other brands were excluded from analysis.

Once a subject made her initial choice, she was asked to try all the four brands in the choice set in a blind test and then to choose the one she liked the best. Each

subject was made to believe that whatever brand she had chosen was in fact Botanical Spring. Thus, the experiences of subjects confirmed the information given in the matrix. This deception was necessary to minimize curiosity-related brand switching in the latter half of the experiment.

The experience and belief crystallization manipulations were then administered. Subjects in the Limited Experience condition were asked to try the chosen brand once, while those in the Extensive Experience condition were asked to try the chosen brand six times. There was a two-minute interval between trials. The cover story given to those in the Extensive Experience condition was that previous research had shown that people could evaluate lotions more accurately after a series of trials. After each trial, subjects in this condition were given paper towels to wipe off any excess lotion.

Next, subjects in the High Belief Crystallization condition rated their beliefs about the benefits of the chosen brand on an eight-item, nine-point scale (1 = least likely and 9 = most likely), while those in the Low Belief Crystallization condition were assigned an unrelated task. The instrument contained the following belief dimensions: (i) promotes healthy skin texture, (ii) restores lost moisture, (iii) softens skin, (iv) firms and conditions skin, (v) cleanses skin, (vi) disinfects skin, (vii) can remove blackheads, and (viii) can prevent wrinkles in the long run. Subjects in all conditions were then asked to rate the overall quality of the chosen brand and also confidence in this rating. Both these measures were on a single, nine-point scale. (As these measures are not pertinent to the theoretical framework of this article, they will not be discussed.) Finally, the response latency of evaluation was measured via computer for all subjects. (Because there was no variation in latency across conditions, this measure will not be discussed further.) Subjects were then asked to return after two days to complete the experiment.

On returning, subjects were asked to assume that they were going on a shopping trip to buy lotions and that the market conditions had not changed since they made their original choice. The task was to choose a brand among the four brands in the original choice set. It was expected that everyone would choose the incumbent brand (Botanical Spring). Data from five subjects who did not choose the incumbent brand were excluded.

Subjects were then given the critical choice task. They were asked to assume that once again they needed to buy lotions. This time they happened to visit another store that did not stock the original set of brands. Instead, they encountered two new brands. One of the two new brands, Natural Blossom, was assigned attribute values that made it objectively superior to the other new brand, Botanical Glory, as well as to Botanical Spring (the incumbent). However, decision ambiguity was heightened across all conditions via memory constraints. At this critical round, subjects chose either the incumbent brand or the better of the new brands (i.e.,

³About 70 percent of the subjects claimed to use some lotion at least once per day, 18 percent used it once in two days, 9 percent used it once a week, and 3 percent used it less frequently. Only 15 subjects used natural lotions.

⁴The experts in this category included professional beauticians and managers of stores selling natural skin-care products. They provided the list of key attributes in natural lotions and the benefits each of these attributes can produce. Pamphlets supplied by the manufacturers of natural skin-care products and stories that appeared in several issues of *Glamour* and *Cosmopolitan* magazines served as additional sources of information.

the attack brand). (Subjects were told to assume that going back to the store that stocked the original set of brands would not involve any cost.) After they had chosen a brand, subjects were asked to state the reasons for their choice. They were also asked to judge which of these brands was superior in attribute values and then rate how confident they were about this superiority judgment (on a nine-point scale where 1 = least confident and 9 = most confident). Finally, subjects were interviewed as to what they thought was the purpose of the experiment. The responses suggested that no subject guessed the hypotheses correctly.

Results

A binary logit approach was used to analyze choice data. The dependent variable was the proportion of subjects choosing the incumbent brand. Data were analyzed through the CATMOD procedure of SAS. The focus was on comparing the mean proportion in the Limited Experience–Low Belief Crystallization cell with the mean proportions in the other three cells. This comparison is critical because it was hypothesized that either experience or belief crystallization can cause asymmetry in information favoring the incumbent. It was expected that the proportion of subjects choosing the incumbent would be significantly less in the Limited Experience–Low Belief Crystallization cell than in the other three cells. Further, the proportion in each cell was compared to 0.5, the value reflecting indifference between the incumbent and the attack brand.

Choice, Experience, and Benefit Beliefs. The proportion of subjects who chose the incumbent brand under different levels of experience and belief crystallization is presented in Table 1.

As expected, the proportion of subjects choosing the incumbent brand was much less in the Limited Experience–Low Belief Crystallization condition (14 percent) than in the other three conditions (which ranged from 68 to 82 percent). The former cell proportion is significantly lower than 0.5 ($Z = 3.58, p < .01$). The tendency to choose a stimulus brand (i.e., a brand that is directly available) in the Low Experience–Low Belief Crystallization condition replicates the results of studies that report a pervasive tendency to avoid uncertainty in a mixed-choice context (Biehal and Chakravarti 1983, 1986). However, extensive experience or thinking in terms of benefits seems to provide diagnostic cues that counter the effect of uncertainty. That is, the results in the remaining three cells show a significant tendency to prefer the incumbent brand. In each of these cells, the proportion choosing the incumbent was significantly greater than 0.5 (Z ranges from 1.79, $p < .05$, to 3.18, $p < .01$) despite the objective superiority of the attack brand. The interaction between experience and belief crystallization was significant (χ^2 /Wald statistic = 3.85, $p < .05$). It is interesting to note that belief crystallization mattered in the Limited Experience condition

TABLE 1
CHOICE PROBABILITIES FOR THE INCUMBENT AND CONFIDENCE IN COMPARATIVE JUDGMENT UNDER DIFFERENT LEVELS OF EXPERIENCE AND BELIEF CRYSTALLIZATION (EXPERIMENT 1)

Dependent measure	Low belief crystallization		High belief crystallization	
	Limited experience	Extensive experience	Limited experience	Extensive experience
Choice	3/22 (.14)	16/22 (.73)	15/22 (.68)	18/22 (.82)
Confidence	3.95	4.68	5.45	5.55

but did not have any effect in the Extensive Experience condition (χ^2 /Wald statistic = 11.55, $p < .007$, in the Limited Experience condition vs. 0.51, $p > .47$, in the Extensive Experience condition).

These results suggest that under extensive experience or high belief crystallization, the objectively inferior incumbent brand is preferred. The differential pattern of results in the Limited Experience–Low Belief Crystallization cell compared to the other three cells cannot be explained in terms of simple risk aversion or the behavioral decision theory concept of loss aversion. The classic view of ambiguity avoidance, as well as the research of Biehal and Chakravarti (1983, 1986), suggests that the attack brand would be preferred in all conditions. However, Samuelson and Zeckhauser (1988) imply that the incumbent (i.e., the status quo option) would be preferred in all conditions. Tversky and Kahneman (1991) suggest that the status quo tendency may be driven by “loss aversion.” That is, the previously chosen option is considered to be the reference point, and giving up this option (i.e., an outcome below the reference point) may be perceived as a loss. In Tversky and Kahneman’s (1991) theory, losses loom larger than gains. Thus, a significant majority of subjects in all conditions should exhibit a tendency to prefer the incumbent. The results of experiment 1 do not support the predictions of either the loss aversion stream of research or the Biehal and Chakravarti (1983, 1986) studies. Further, confidence in comparative judgment was lower in the Limited Experience–Low Belief Crystallization cell than in the other three cells (3.95 vs. 5.23, $F = 9.27, p < .0001; \omega^2 = 0.17$; see Table 1 for confidence across different levels of experience and crystallization).⁵

Discussion

To date there are only a limited number of conceptual schemes that explain the psychological mechanisms that

⁵An analysis of residuals indicated that confidence of subjects in the Limited Experience–High belief crystallization condition was significantly lower than that of subjects in either of the Extensive Experience conditions.

underlie incumbent advantage. From a learning perspective, Kardes and Kalyanaram (1992) proposed a set-size explanation for the pioneering advantage. Information about the attributes of the pioneer is perceived to be novel and thus receives greater attention that enhances memorability. Information about the late entrants receives less weight. The greater amount of information consumers possess about the pioneer causes judgmental extremity and confidence and thus results in pioneering advantage. The results of the first experiment are consistent with the results of Kardes and Kalyanaram (1992). In the Kardes and Kalyanaram studies, as in our experiment, memory constraints existed because of sequential rather than simultaneous presentation of information.

However, the incumbent advantage discussed in the present article is a result of not just the amount but also the quality of information that enters consumers' decision processes. Information acquired through experience and elaboration led to perceived validity in judgment and choice. The choice pattern in the Limited Experience-Low Belief Crystallization cell of experiment 1 favored the attack brand. This pattern does not support the set-size explanation because these subjects possessed a higher amount of information about the incumbent than about the attack brand. Nonetheless, subjects in our studies initially learned information about a set of brands rather than a single pioneering brand. Further, in the Kardes and Kalyanaram (1992) studies, unlike in the present research, attribute weights were unambiguous. In situations similar to the one investigated by Kardes and Kalyanaram, differential attention and recall (resulting in the set-size effect) may explain the pioneer advantage.

The attitude-accessibility model (Fazio 1986) predicts that accessible attitudes lead to attitude-consistent behavior via a selective perception mechanism. According to Fazio's model, more subjects in the Limited Experience-Low Belief Crystallization cell of experiment 1 should prefer the incumbent. Not only did they have direct experience with the incumbent, they presumably had retrieved their attitude toward the incumbent (by choosing the incumbent from the original set of brands on the second day) just before the attack brand was introduced. Nonetheless, most subjects in this cell preferred the attack brand and therefore exhibited the classic uncertainty avoidance tendency.

The cognitive dissonance paradigm also cannot provide a satisfactory account of our results. Following the cognitive dissonance viewpoint, it may be argued that the mere act of choosing increases commitment to the alternative (which is reflected in confidence in comparative judgment). In our experiment, although the act of choosing an alternative occurred in all conditions, confidence in choice varied as a function of experience and belief crystallization. Further, there is less evidence for commitment toward the previously chosen incumbent in the Limited Experience-Low Belief Crystalli-

zation condition. Given these findings, it is reasonable to ask whether experience and belief crystallization always lead to preference for the incumbent. Experiment 2 investigates this question.

EXPERIMENT 2

In experiment 1, experience and belief crystallization caused an asymmetry in information that favored the incumbent brand. In addition, ambiguity was exacerbated by constraints placed on memory. The objective of this experiment was to test whether the effects of extensive experience and belief crystallization persist when ambiguity is reduced.

Method

The general procedure of this experiment was similar to that of experiment 1. However, the Extensive Experience-High Belief Crystallization condition of experiment 1 was the only condition retained. Within this context, memory was manipulated. In the Memory-Based condition, the tasks of experiment 1 were replicated exactly. In the Stimulus-Based condition, the only difference was that specific attribute information about the incumbent brand was reintroduced when the attack brand was presented. It was expected that this information would facilitate brand comparisons and would weaken the status quo bias observed in experiment 1. Twenty-eight female students participated in this experiment.

Results and Discussion

The results support the hypothesis that when decision ambiguity is reduced, consumers choose a brand that is superior to others in terms of attribute values. The proportion of subjects preferring the incumbent brand was 0.35 in the Stimulus-Based condition compared to 0.70 in the Memory-Based condition (χ^2 /Wald statistic = 3.42, $p < .07$). Unlike in the Memory-Based condition, in the Stimulus-Based condition, a majority of subjects preferred the superior, attack brand.

Consistent with the preference formation mechanism suggested by Carpenter and Nakamoto (1989) in the context of pioneering brand advantage, the results of experiment 2 underscore the role of decision ambiguity in the incumbency advantage. However, some of these results cannot be explained in terms of the process suggested by Carpenter and Nakamoto. According to Carpenter and Nakamoto, the pioneer serves as a prototype against which the later entrants are judged; accordingly, the pioneer defines attribute importance as well as the ideal combination of attributes. Carpenter and Nakamoto (1989) explicitly proposed ambiguity as a necessary condition for order-of-entry effects. They argued that, in such contexts, consumers' ideal points shift toward the attribute values the pioneer possesses. Further,

a me-too brand will gain greater market share by positioning itself away from the pioneer. The choice pattern in most cells of experiments 1 and 2 appears to be consistent with the learning and preference formation process suggested by Carpenter and Nakamoto (1989). However, in the Stimulus-Based condition of the present experiment, a similar, but superior late entrant was preferred to the incumbent, suggesting an independent process. Although ambiguity in the decision context was reduced by simultaneous presentation of information, the attribute weights and ideal points were still ambiguous. Do the findings of experiment 2 imply that memory for attribute values of the incumbent inevitably reduces ambiguity and facilitates optimal choice? Experiment 3 examines this question.

EXPERIMENT 3

In the first two experiments, decision ambiguity was enhanced by the imposition of memory constraints. However, in a number of product categories, a common form of noncomparability occurs when two brands claim the same benefits but compete on a set of non-overlapping attributes. For example, aloe vera and vitamin E may provide the same benefit of keeping skin healthy. If two competing brands emphasize different ingredients that lead to the same benefit, decision ambiguity increases. From the results of experiment 1 and the apparent advantage conferred by experience when attribute comparisons are inhibited, it is hypothesized that the incumbent will retain its advantage if it has been extensively experienced, even if its inferior attributes are reintroduced at the time of choice. Memory for specific attributes will not reverse consumers' preferences because the attributes are nonoverlapping. Thus, the objective of this experiment was to generalize the findings of experiment 1 in the context of noncommon attributes.

Method

This experiment had a 3×2 fully crossed factorial design. The factors were experience and availability of specific attribute information. Experience was varied at three levels: none, limited (one trial), and extensive (six trials). Availability of specific attribute information was at two levels: available (stimulus-based choice) and not available (memory-based choice). The latter factor was manipulated as in experiment 2. As in experiment 1, the proportion of subjects choosing the incumbent brand was the primary dependent variable. The other dependent variable was confidence in comparative judgment measured after subjects had chosen between the incumbent and the attack brand.

A total of 144 female subjects participated in this experiment. The stimulus set was constructed after a pretest. The competing brands had two sets of attributes that led to the same benefit. One set had vitamin E,

jojoba extracts, and papaya extracts as the distinct ingredients. The second set had aloe vera, cocoa butter, and apricot extracts as the unique ingredients. In the pretest the second set was rated slightly higher in terms of importance and desirability. Hence, it was decided to describe the attack brand in terms of these attributes. The No Experience condition allows for verification of the superiority of the attack brand.

As in experiment 1, subjects first read a story and then saw a brand \times attribute matrix that described four brands of lotions in terms of the same seven attributes. Subjects were asked to choose the best brand on the basis of attribute information given in the matrix. Botanical Spring (the incumbent) was superior to other brands in terms of overall value. To enhance comparability between the No Experience condition and the other two conditions, subjects in the Limited and Extensive Experience conditions were only given an opportunity to try their selected brand. The remainder of the procedure was identical to the first day of experiment 1.

On returning, subjects were asked to choose a brand from among the original brands. Data from 12 subjects who did not choose Botanical Spring were excluded. Subjects then saw the attack brand (Natural Blossom), which was described in terms of a different and superior set of important attributes. For half of the subjects, specific attribute information about the incumbent brand was not presented (Memory-Based condition). Others saw information about the incumbent and the attack brand side by side (Stimulus-Based condition). All subjects were asked to choose between the two brands, judge which of these brands was superior in terms of attributes, and express confidence in this superiority judgment.

Results and Discussion

Analysis of the choice proportions revealed a main effect of experience (Wald statistic = 13.97, $p < .001$). Neither the effect of availability nor the interaction between availability and experience was significant. Table 2 presents the choice proportions in the six experimental conditions.

In the No Experience conditions, only 33.5 percent of the subjects chose the incumbent. This replicates the results of the pretest and shows that most consumers prefer the attack brand when the designated incumbent has not established a foothold. However, additional experience with the incumbent causes consumers' preference for the incumbent to increase. The difference between the No Experience and the Limited Experience conditions was significant ($Z = 1.82$, $p < .05$), as was the difference between the Limited Experience and the Extensive Experience conditions ($Z = 2.28$, $p < .05$). As expected, the proportion of subjects choosing the incumbent brand was higher than would be expected by chance in the Extensive Experience conditions

TABLE 2
CHOICE PROBABILITIES FOR THE INCUMBENT AND CONFIDENCE IN COMPARATIVE JUDGMENT UNDER DIFFERENT LEVELS OF EXPERIENCE AND AVAILABILITY (EXPERIMENT 3)

Dependent measure	Low availability (memory-based)			High availability (stimulus-based)		
	No experience	Limited experience	Extensive experience	No experience	Limited experience	Extensive experience
Choice	.40	.55	.74	.27	.50	.77
Confidence	5.68	5.64	6.86	6.50	6.68	7.54

(0.755; $Z = 2.6$, $p < .01$), irrespective of availability of specific attribute information. In the No Experience cells the proportion of subjects choosing the incumbent was significantly less than would be expected by chance (0.335; $Z = 1.78$, $p < .05$). In the Limited Experience conditions, approximately half of the subjects chose the incumbent brand.

In this experiment, the use of nonoverlapping attributes caused ambiguity in all conditions. Given this baseline-level difficulty, additional constraints associated with memory had little effect. In such contexts, experience offers undue advantage to the incumbent. An analysis of the confidence scores reveals that, as expected, subjects in the Extensive Experience cells exhibited higher levels of confidence than those assigned to the other levels of experience (7.2 in the Extensive Experience condition vs. 6.1 in the other two conditions, $F = 24.45$, $p < .0001$; $\omega^2 = 0.18$; see Table 2 for confidence means).⁶

Some results from experiment 3 are consistent with the direction-of-comparison effect observed in preference judgments (see, e.g., Houston, Sherman, and Baker 1989; Kardes and Sanbonmatsu 1993; Sanbonmatsu, Kardes, and Gibson 1991). This stream of research argues that in preference judgments the unique good features of the second encountered brand (subject) are weighed more heavily than those of the first encountered brand (referent), because the features of the subject are more memorable. However, Sanbonmatsu et al. (1991) found that this effect is weak when overall evaluations are available for the alternatives. In our experiment an overall evaluation about the incumbent was always available. Still, the choice pattern varied as a function of level of experience. When competing brands are described in terms of unique attributes, extensive experience not only makes the overall evaluation available, but also produces confidence and thus makes the overall evaluation more diagnostic.

⁶Residual analysis indicated no significant difference between the Limited and No Experience cells. Further, availability of attribute values had a main effect on confidence (6.06 in the Low Availability condition vs. 6.9 in the High Availability condition; $F = 16.99$, $p < .0001$; $\omega^2 = 0.126$).

EXPERIMENT 4

It has been argued thus far that perceptions of superiority of the incumbent are strengthened by factors causing decision ambiguity. Experience or belief crystallization, when combined with factors that interfere with direct attribute comparisons, can lead to the incumbency advantage. However, if there is reason to doubt the superiority of the incumbent brand, even extensive experience and memory constraints may not help the incumbent weather a direct attack. This proposition was tested in experiment 4 by varying the relative attractiveness of the incumbent among its initial set of competitors. Thus, this experiment proposes a boundary condition for the effect of ambiguity on the incumbency advantage.

Method

Twenty-eight female undergraduates were randomly assigned to two groups that differed only in terms of the superiority of a "context" brand (Herbal Abundance) that was presented alongside the incumbent (Botanical Spring) during the initial choice. Experience and belief crystallization were held uniformly high across both experimental conditions. Memory constraints were also high across the conditions. Thus, except for the manipulation of context, this experiment replicated the Extensive Experience-High Belief Crystallization cell of experiment 1.

As in experiment 1, subjects read a story about natural skin lotions. They saw a brand \times attribute matrix that described four brands in terms of seven attributes. They were asked to examine the attribute values given in the matrix. The key manipulation pertained to the attribute values of Herbal Abundance (i.e., the context brand). In one condition the context brand was superior to the incumbent brand in attribute values; in the other condition it was inferior. The attribute values of the incumbent brand and the other two brands in the choice set were constant across condition. Thus, in terms of superiority, the order in the first condition was Herbal Abundance, Botanical Spring, and Garden Exotica or Nature's Nurture. The order in the second condition was Botanical Spring, Herbal Abundance, and Garden

Exotica or Nature's Nurture. Hereafter, these two conditions will be called the Second Best and the Best conditions, respectively, on the basis of the position of the incumbent.

Before announcing their choices, subjects were told that one of the brands given in the matrix, Herbal Abundance, was not available in the market anymore and therefore they should choose one of the other three brands. As expected, in both conditions the incumbent brand was chosen by all subjects. After choice, they were asked to try the brand six times and then rate their beliefs on eight nine-point scales as in experiment 1. Only five items passed the test of reliability; therefore, the mean of these five ratings constituted the belief score for each subject.⁷ As in the previous experiments, subjects were asked to return after two days and complete the remainder of the tasks that were the same as in experiment 1.

Results and Discussion

As expected, more subjects chose the incumbent brand when the incumbent was framed as the best than when it was framed as the second best in its original set (9 of 14 vs. 3 of 14, respectively; Wald statistic = 4.84, $p < .03$). Context also had a significant effect on belief score that was the mean of five belief scales (5.61 in the Incumbent Best condition vs. 5.10 in the Incumbent Second Best condition; $F = 7.32$, $p < .02$; $\omega^2 = 0.18$). Although subjects in both conditions chose the same brand and had the same number of trials, the beliefs of those who saw the incumbent as the best brand were more extreme. Thus, there is evidence for a biased appraisal of experience. However, these two groups did not vary in terms of confidence in comparative judgment. Irrespective of the brand chosen, subjects across experimental conditions considered their chosen brand to be superior and exhibited high confidence in the superiority judgment.

The results of the present experiment suggest that context influences the learning of standards for preference. Although researchers have reported contextual effects on choice (e.g., Huber, Payne, and Puto 1982), there is very little research that has examined whether these effects persist over time and across situations. (For an exception, see the "background contrast" effect suggested by Simonson and Tversky [1992].) Here, we find evidence that context-induced preferences for brands

learned in one choice occasion carry over to influence a later choice between the incumbent and a new attack brand.

Results of experiment 4 can be explained in terms of Kardes and Sanbonmatsu's (1993) omission-detection hypothesis. According to this view, when one of the alternatives in a choice set has some unknown property, judgment depends not only on the amount of information known about a target object but also on the judge's sensitivity to information that is unavailable about the target. The Second Best condition might have caused increased sensitivity to the attribute values of the incumbent that were unavailable on day 2 and thus might have forced subjects to avoid ambiguity. The omission-detection hypothesis also suggests that prior knowledge caused by factors such as experience will increase judges' sensitivity and therefore moderate extremity and confidence. Our results in the present experiment as well as in the previous experiments suggest that extensive experience results in decreased sensitivity and thereby induces inappropriate confidence.

EXPERIMENT 5

The first four experiments all examined conditions that engender loyalty to an inferior incumbent. In this experiment I examine how a superior competitor can weaken consumer loyalty to an incumbent brand. Hoch and Deighton (1989) proposed a strategy for "underdog" brands when ambiguity in the choice context is high. According to their model, an opportunity to try the new brand can "disambiguate" the decision and thereby increase the proportion of subjects choosing a superior attack brand. Experiment 5 was designed to test this assertion.

Method

The main manipulation in this study involved the opportunity to try the attack brand before choosing between the incumbent and the attack brand. The No Trial of Attack Brand condition of the present experiment was an exact replication of the Extensive Experience-Stimulus-Based condition of experiment 3. Thus, the incumbent and attack brands possessed non-overlapping attributes, and subjects could examine attribute values of both these brands before choosing between these two brands. In the Trial of Attack Brand condition subjects tried the attack brand before making the critical choice. Out of 60 subjects who volunteered for this study, data from eight subjects were excluded for the reasons given below.

As in other experiments, the initial tasks involved reading a story about natural lotions, examining the brand \times attribute matrix, and choosing a brand on the basis of information in the matrix. Data from three subjects who did not choose Botanical Spring were excluded from the analysis. Unlike in the previous ex-

⁷When all the eight scales were retained, the instrument exhibited low reliability ($\alpha = 0.59$). This analysis revealed that the last three items and the remaining items were uncorrelated. Because the last three items measure beliefs about credence benefits (disinfects skin, removes blackheads, and prevents wrinkles in the long run), subjects in both groups rated the brand low on these dimensions. After the exclusion of these items, the reliability of the instrument improved ($\alpha = 0.69$). Although the two groups varied very little on these belief dimensions, the pattern of results did not change even if these items were included. The analysis yielded a smaller but still significant effect.

periments, subjects were not given the opportunity to try all the four brands before the initial choice (to investigate whether high confidence occurs even when subjects' initial choices were not based on trial). Instead, after the initial choice, subjects experienced the "chosen" brand six times. Because subjects did not try all the brands before choice, it is possible that some of them may not have liked the brand they tried and may have switched as soon as an opportunity was given. To reduce this possibility, each subject was asked to evaluate the brand she tried on a nine-point scale (1 = dislike and 9 = like). Data from five subjects whose evaluations were less than five on this scale were excluded.

Subjects returned after two days. The key factor in this experiment was manipulated when the attack brand was introduced. One-half of the subjects were asked to choose with or on the attribute information given in the matrix (No Trial of Attack Brand condition). The other half, in addition to receiving information about the attributes of the competing brands, also had an opportunity to try the attack brand once (Trial of Attack Brand condition). After choice, superiority judgments and confidence in these judgments were measured in the same manner as in the previous experiments.

Results and Discussion

In the No Trial of Attack Brand condition, 65 percent (17 of 26) of the subjects chose the incumbent, whereas only about 39 percent (10 of 26) of those who had an opportunity to try the attack brand chose the incumbent brand ($\chi^2/\text{Wald statistic} = 3.68, p < .06$). The two groups did not vary in terms of confidence in comparative judgment (6.38 in the No Trial group vs. 6.35 in the Trial of Attack Brand group). To gain further insight into the process that drove the differential choice pattern, subjects' confidence in comparative judgment was analyzed as a function of the brand chosen. In the No Trial of Attack Brand condition, those who chose the incumbent brand were marginally more confident than those who chose the attack brand (6.64 vs. 5.88; $F = 3.57, p < .1; \omega^2 = 0.09$). This effect was almost identical in magnitude and direction when subjects tried the new, attack brand (6.8 for the incumbent vs. 6.06 for the attack brand, $F = 3.27, p < .1; \omega^2 = 0.08$).

The results of experiment 5 are consistent with the findings of decision research (e.g., Oskamp 1965) in that additional information through experience of a new brand increases confidence in the superiority of a previously chosen brand. It should be noted that subjects' judgments based on trial in our pretests indicated that neither of these brands is truly superior to the other. This shows that opportunity to try the new brand may act as a double-edged sword. Some subjects may switch to a new, superior brand after being given an opportunity to try this brand. However, others may not only stay with the previously chosen brand, but exhibit increased confidence in its superiority. This may be es-

pecially true in the instances in which product trial does not reveal much about the quality of the competing brands, as was the case in the current experiments.

GENERAL DISCUSSION

The results of the five experiments suggest that the incumbent brand establishes an advantage over the attack brand when the decision environment is ambiguous and when the context of the initial choice favors the incumbent. Thus, decision ambiguity influences incumbent advantage. It should be noted that in the target product category, evaluation of performance is inherently ambiguous. This is critical to the success of the other manipulations in this research. Accordingly, the findings apply primarily to ambiguous products at this time.

Bettman et al. (1993) have reported that ambiguity (operationalized in terms of negatively correlated attributes) led people to choose superior options. Bettman et al. conducted their investigation in the context of stimulus-based choices. One may infer that the findings of Bettman et al. suggest the opposite of what has been reported in the present research. However, in the Bettman et al. studies, the structure of the problems, combined with the ability of subjects, provided a high degree of correspondence between effort and accuracy. In the present experiments, as in many marketplace choices, there exists very little correspondence between effort and accuracy. Bettman et al. (1993) have proposed memory constraints as a factor causing failures in adaptivity. Our results suggest that all factors that heighten decision ambiguity may also contribute to failures in adaptivity and cause people to stay with the status quo option even if this option is inferior to others in the choice set.

Several psychological processes can explain the choice of the incumbent versus the attack brand. In the previous sections, it was suggested that while several conceptual schemes can explain subsets of our results, no single rival theory can account for the entire pattern of results. The biases caused by decision ambiguity seem to be the most parsimonious explanation of the findings. Specifically, certain decision contexts induce overconfidence in comparative judgments, and thereby cause preference for the incumbent. An exploratory test of the psychological processes offered some initial support for this proposition.

In this investigation, four plausible explanations were explicitly considered. Two of these (overconfidence in the superiority of the incumbent and risk aversion) pertain to choice of the incumbent and the remaining two (variety seeking and accurate judgment of superiority in terms of attributes) describe the choice of the attack brand. Subjects' judgments regarding which of the two brands was superior in terms of attributes, along with confidence in these judgments, were analyzed to understand the process underlying choice. This analysis

was performed on the pooled data from all five experiments.

Operational definitions for the rationale underlying each subject's choices were established as follows: (i) if a subject judged the objectively inferior incumbent brand to be superior and expressed high confidence in this judgment (five or above on a nine-point scale), it was concluded that her choice of the incumbent was driven by inappropriate confidence (Lichtenstein et al. 1982); (ii) if a subject chose the incumbent but judged the attack brand to be superior or equal in attribute values or judged the incumbent as superior but expressed little confidence in this judgment (below five on the scale), then her choice was interpreted in terms of risk aversion or sheer inertia; (iii) if a subject chose the attack brand and judged this brand to be superior to the incumbent, she was classified as having accurately judged the quality of brands; and (iv) if she chose the attack brand and considered the incumbent to be superior, she was classified as exhibiting variety-seeking behavior.

Of those who chose the incumbent, 112 (62 percent) judged it to be superior to the attack brand. It may be recalled that the attack brand was superior to the incumbent. Of these, 91 (over one-half) exhibited overconfidence in that their confidence ratings were five or above. However, 67 of the 179 subjects who chose the incumbent (38 percent) judged the attack brand to be superior and thus exhibited risk aversion or inertia. Of those who chose the attack brand, only 17 percent (26 of 149) appeared to be variety seekers. These results offer some initial evidence that overconfidence may be a key mechanism by which ambiguity causes incumbent preference. However, a rigorous test of this hypothesis and a detailed investigation of the competing processes that account for the incumbency advantage are left to future research.

CONCLUSION

The premises of this article are consistent with the Hoch and Deighton (1989) framework. Ambiguity emerges as a critical decision factor causing the status quo bias. The central theme of this article is also consistent with that of Carpenter and Nakamoto (1989) in its assertion that consumer taste is endogenous and can be influenced (see also Gibbs 1993; March 1978). While previous research on incumbency focused exclusively on learning from information provided by the experimenters, the current studies afford an opportunity to learn from experience. As Hoch and Deighton (1989) have argued, the context of learning is such that experience can teach very little, but subjects seem to have attached higher diagnosticity to their experience-based beliefs. The exploratory analysis offers evidence that preference for the incumbent and overconfidence covary in ambiguous decision contexts. Our future research proposes to investigate the causal sequence and also the

competing processes by which ambiguity causes the incumbency advantage.

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