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The authors examine consumer inferences about product attributes that are unobservable at the time of the decision. Extant research predicts that in the absence of an explicit correlation between product attributes, consumers will infer that the brand that is superior on the observable attributes is also superior on the unobservable attributes. The authors propose an alternative inference strategy that makes the counterintuitive prediction that the apparently superior brand is inferior on the unobservable attributes. The authors refer to these inferences as "compensatory inferences" and assert that they are associated with consumers' intuitive theories about the competitive nature of a market. In a series of four experiments, the authors examine the occurrence of compensatory inferences and compare them with other inference strategies.

The Role of Market Efficiency Intuitions in Consumer Choice: A Case of Compensatory Inferences

The nature of consumers' inference processes has been the subject of several research inquiries aimed to reveal the decision strategies consumers use to infer unobservable brand attribute information. Several specific questions have attracted researchers' attention: Do consumers form inferences about missing or unavailable information? (Brown and Carpenter 2000; Huber and McCann 1982; Jaccard and Wood 1988; Kivetz and Simonson 2000; Lim, Olshavsky, and Kim 1988; Meyer 1981; Simmons and Lynch 1991); How does a brand's performance on observable attributes affect consumer inferences about the missing attribute? (Dick, Chakravarti, and Biehal 1990; Huber and McCann 1982; Johnson 1987; Johnson and Levin 1985; Levin, Johnson, and Faraone 1984); and How does the variance of other brands' value on a given observable attribute affect consumer inferences about a brand's missing value on this attribute? (Ross and Creyer 1992). Existing research, however, has focused on a scenario in which only one of the brands has a missing value on a particular attribute. The issue of how consumers form inferences in a scenario in which the performance of all alternatives on a given attribute is unavailable at the time of the decision has only recently attracted researchers' attention and is the focus of this article.

Consider the following scenario: A consumer is choosing between two equally priced brands, each described on several attributes. One brand is superior on all attributes for which product description information is available. One of the important attributes, however, is unobservable at the time of the decision. How would a consumer decide which of these two brands is better on the unobservable attribute, and which one would the consumer choose?

Existing research suggests that consumers pursue one of two alternative strategies. First, consumers may form overall evaluations for each option on the basis of the available information and use these evaluations to infer the unobservable information (Beckwith and Lehmann 1975; Cooper 1981; Nisbett and Wilson 1977). This evaluative consistency strategy suggests that the value of a missing attribute will be inferred to conform to the overall evaluation of the brand (Ajzen 1977; Broniarczyk and Alba 1994a; Dick, Chakravarti, and Biehal 1990; Fishbein and Ajzen 1975). According to this strategy, the brand that is superior on the observable attributes will be inferred to be superior on the unobservable attribute as well.

Second, consumers may use one particular attribute that they believe to be correlated with the unobservable attribute and use the correlated attribute as a basis for their inferences. This strategy, referred to as "probabilistic consistency" (Dick, Chakravarti, and Biehal 1990), suggests that the value of a missing attribute will be inferred according to

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the perceived correlation among the attributes (Downing, Sternberg, and Ross 1985; Ford and Smith 1987; Hoch 1984; Huber and McCann 1982; John, Scott, and Bettman 1986; Kardes and Sanbonmatsu 1993; Meyer 1981; Ross and Creyer 1992). Consistent with this strategy, the brand that is superior on the believed-to-be-correlated attribute (e.g., warranty) will be inferred to be superior on the unobservable attribute (e.g., durability).

In this article, we argue that in addition to the evaluative and probabilistic consistency strategies, consumers may rely on other cues to draw inferences. In particular, consumers may learn over time that some markets, such as personal computers, are competitive and that in these markets equally priced brands offer comparable value and higher-priced brands offer higher value or quality (Lichtenstein and Burton 1989; Rao and Monroe 1988; Tellis and Wernerfelt 1987). Several empirical studies have demonstrated an understanding of market efficiency by consumers (Agarwal and Ratchford 1980; Besanko, Gupta, and Jain 1998; Ratchford 1979). How consumers use that knowledge in making inferences remains unexplored and is the focus of this research.

We propose that consumers use their knowledge of market efficiency to make inferences about the unobservable attributes and that these inferences cannot be readily accounted for by either of the inference strategies that have been explored in the literature. In particular, we suggest that on the basis of their prior experience, consumers form expectations about the pattern of value dispersion across choice alternatives and use these expectations to infer the unobservable attribute information. For example, in considering two equally priced personal computers, a consumer might observe that Brand A offers a faster modem than Brand B. Aware that personal computers are a very competitive category, this consumer might expect that the equally priced Brands A and B offer equal value and thus infer that Brand B dominates Brand A on another attribute (e.g., reliability). In this case, consumers attempt to match benefits offered by equally priced brands by inferring that the dominance of the apparently superior brand might be compensated for by inferior performance on one of the unobservable attributes. We refer to this inference pattern as a "compensatory inference strategy" and assert that this strategy is a function of consumers' intuitive theories about market efficiency.

The data reported in this article support our theorizing about the compensatory nature of market efficiency inferences. In particular, we show that under certain conditions, consumers use their market efficiency intuitions to draw inferences about the unobservable attributes. We outline the conditions under which consumers will make such inferences and suggest a role for the strength of consumers' intuitions about market efficiency and the availability of alternative inference bases (e.g., perceived interattribute correlation).

PERCEIVED VALUE, MARKET EFFICIENCY, AND COMPENSATORY INFERENCES

Choice sets and the markets from which they are drawn vary in the degree to which offerings are at value parity. For example, in the case of personal computers, differences between products are often perceived as minimal, which forces manufacturers to offer comparable packages. For other products, such as wine, for which value is more subjective and consumers are less knowledgeable, much less pressure exists to offer the products at value parity with competitors. The degree of value parity that exists in a market is closely related to the concept of market efficiency, a central concept in the economic analysis of competition. In highly efficient markets, brands offer value parity, so that the value of an additional unit of any attribute is equal to its marginal price (Rosen 1974). Equally priced products are expected to offer equal value, and higher priced products are expected to offer greater value, (Hauser and Shugan 1983; Lichtenstein and Burton 1989; Rao and Monroe 1988; Ratchford 1979; Tellis and Wernerfelt 1987). Figure 1, Panel A, shows an example of a highly efficient market. Brands differ in terms of the benefits offered, but equally priced brands offer nearly equal perceived benefits. In this market, there is no "free lunch": Consumers get what they pay for, obtaining more benefits is costly, and there are no bargains.

In less efficient markets, consumers observe and expect less value parity. As illustrated in Figure 1, Panel B, there is a greater dispersion of total benefits at a given price. In this case, equally priced brands offer different total benefits. In this market, consumer search costs may be high, the benefits may be ambiguous, or the cost of valuing the benefits may be high. Whatever the cause of the inefficiency, consumers may come to understand the inefficient nature of the market through experience or word of mouth and may behave accordingly by making comparisons and drawing inferences.

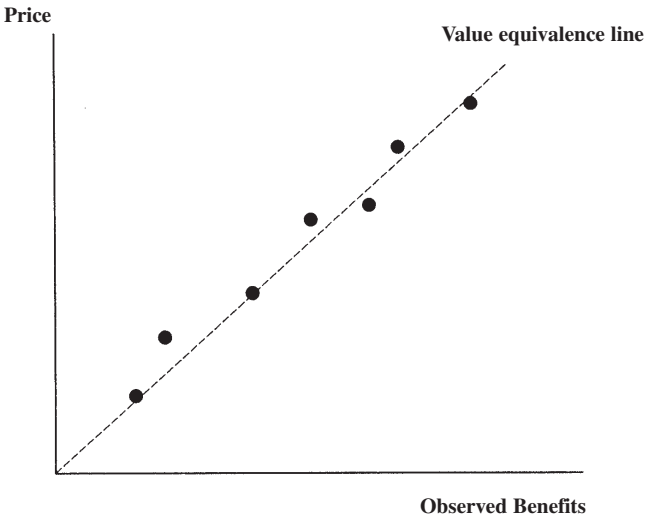
Categorizing a market as either efficient or inefficient is complicated by two factors. First, consumers often choose among brands that have both observable and unobservable attributes. As an illustration, personal computers are easily comparable on speed and memory capacity but less easily comparable on attributes such as reliability. Second, markets rarely are perfectly efficient or inefficient. In many cases, some brands are at value parity and others are not. Consider a scenario in which two brands are equally priced, but on the observable dimensions one of the brands (say, Brand A) offers fewer benefits. This situation may reflect several possibilities. First, Brand A might be a bad deal, just as it appears. Second, Brand B may offer still greater value than Brand A by virtue of its unobservable characteristics. Finally, Brand A may be comparable to Brand B by virtue of its unobservable benefits.

To assess the benefits offered by the two brands, consumers might draw inferences about the value of unobservable benefits offered by these brands. We argue that the inferences consumers draw will depend on (1) their perceptions of the efficiency of the market and (2) their ability to construct value-parity comparisons. That is, consumers will use their perceptions of the relationships between total benefits adjusted for price to assess total value and choose among brands. For example, if Brand A dominates Brand B on the observable attributes, consumers know that the prices of Brands A and B are equal, and they believe that the market is efficient, a logical inference is that on the unobservable attributes, Brand B must dominate Brand A, given their equal price.

To illustrate, consider the scenario depicted in Figure 2. In this case, Brands A and B in Figure 2, Panel A, offer the

Figure 1
PERCEIVED VALUE AND MARKET EFFICIENCY

A: High-Efficiency Market



B: Low-Efficiency Market

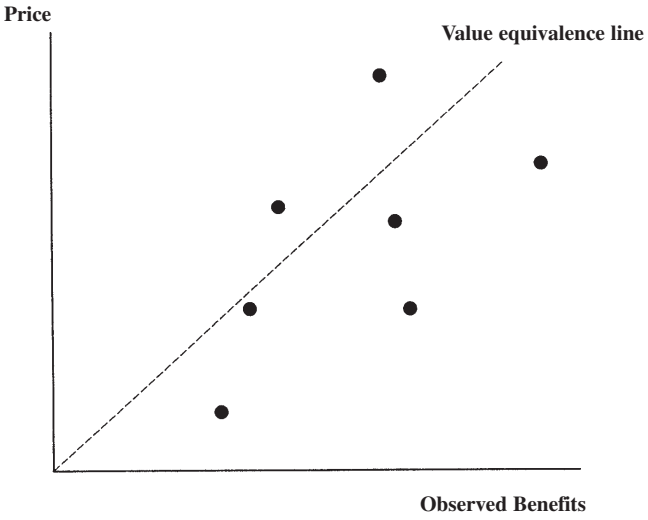
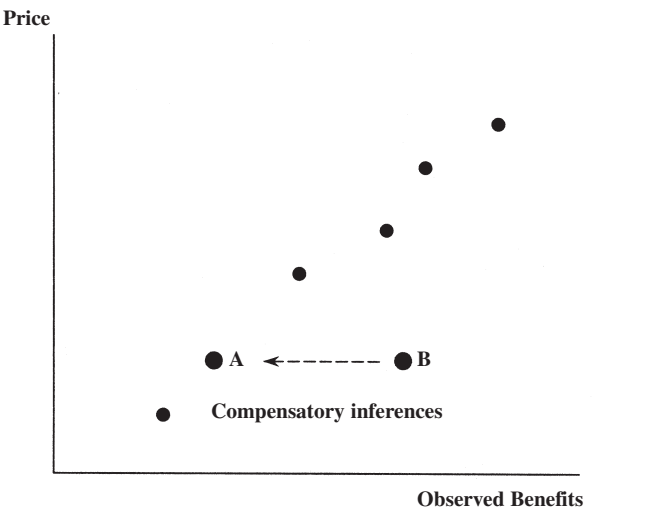
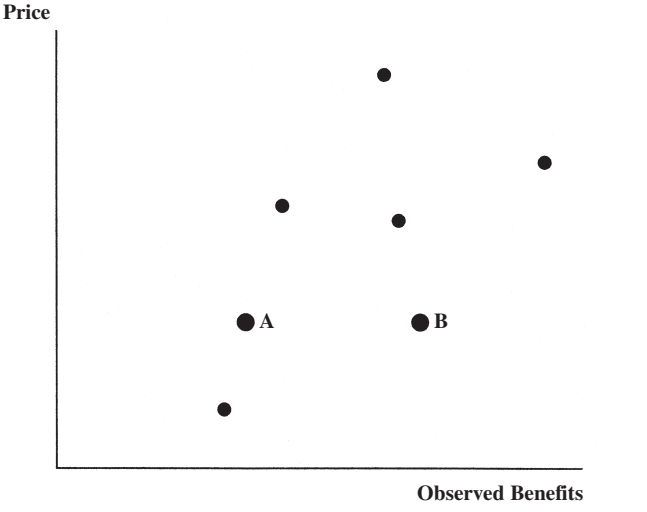


Figure 2
MARKET EFFICIENCY AND COMPENSATORY INFERENCES

A: Superior Brand in a High-Efficiency Market



B: Superior Brand in a Low-Efficiency Market



same price/benefit trade-off as in Figure 2, Panel B, and the only difference is the expected pattern of distribution of the other brands in the market. Therefore, when consumers believe that markets are efficient, they will expect all brands to be located near the value equivalence line or "the efficient frontier" (Hauser and Shugan 1983). In this context, if one of the brands is off the efficient frontier, such as Brand B, consumers will attempt to restore the expected value parity by inferring that the apparently superior Brand B is inferior on an unobservable attribute (Figure 2, Panel A). We further predict that this type of compensatory inference will occur only when an efficient market is expected. When markets are viewed as inefficient (Figure 2, Panel B), the disparity in value between Brands A and B is expected by consumers and therefore will not lead to compensatory inferences. Rather, under those conditions, an alternative strategy—the evaluative consistency strategy—may be preferred by consumers.

More generally, compensatory inferences can be thought of as two-stage price–quality inferences. Most of the existing research (Huber and McCann 1982; Johnson 1987; Johnson and Levin 1985) has treated the price–quality relationship as a one-stage process in which consumers infer missing quality (price) information on the basis of the observable price (quality). In contrast, we focus on a scenario in which consumers infer brands' relative performance on a given nonprice attribute on the basis of these brands' performance on the other nonprice attributes. In this case, consumers base their inferences not simply on the

price–quality relationship but rather on their expectations of the dispersion of the value offered by the brands in the choice set. Thus, in a market perceived to be efficient, if consumers see a set of equally priced brands, they are likely to make an inference that these brands should offer equal benefits. In the next stage, consumers use this inferred performance parity to make an inference about the unobservable attribute. When one of the brands is superior on the observable attributes, consumers are faced with an inconsistency between the observed and the expected information. In an attempt to restore the balance in the perceived value of the alternatives, consumers may infer that the observably superior option is inferior on the unobservable attribute.

This discussion raises the question whether consumers always rely on perceived market efficiency to draw inferences about unobservable attributes and, if not, what factors facilitate the use of compensatory inferences. Extant research has shown that when consumers perceive the unobservable attribute to be correlated with an observable attribute, correlation-based inferences such as probabilistic inferences will supercede other inference strategies, such as evaluative consistency (Broniarczyk and Alba 1994a). Building on these data, we expect that because of its complex, two-stage nature, compensatory inferences are likely to be superseded by probabilistic consistency inferences as well. Therefore, we predict that compensatory inferences are more likely to be drawn in a scenario in which brand attributes are not perceived as correlated and as a result, correlation-based inferences are not possible.

In the absence of a perceived interattribute correlation, consumers are presumed to make evaluative consistency inferences (Broniarczyk and Alba 1994a, b). Note that these inferences are, by definition, directionally opposite to compensatory inferences. Indeed, a consumer relying on evaluative consistency strategy will predict that the option that is superior on the observable attributes is superior on the unobservable attribute as well. In contrast, a consumer who employs a compensatory strategy will infer that the dominant brand is inferior on the unobservable attributes. The presence of these two conflicting predictions poses the question of when consumers will prefer compensatory to evaluative consistency inferences and what factors determine the significance and the strength of compensatory inferences.

We propose three key factors that determine the likelihood of compensatory inferences. First, consumers must have certain market efficiency intuitions on which to draw compensatory inferences. In particular, we expect compensatory inferences to be more pronounced in a marketplace perceived as highly efficient (Figure 2, Panel A) and less pronounced or nonsignificant in a marketplace perceived to be less efficient (Figure 2, Panel B). Second, we expect compensatory inferences to be more pronounced in the absence of interattribute correlations that might serve as cues for probabilistic inferences. Finally, we propose that compensatory inferences require the presence of an inconsistency between the expected market efficiency and the observed dispersion of value across the alternatives in the choice set. In particular, we focus on a scenario in which consumers who expect an efficient marketplace are confronted with a choice set in which one of the alternatives apparently offers more value. In this context, compensatory inferences imply the presence of a choice set in which at least one of the brands offers more value on the observable attributes compared with the other brands.

We examine compensatory inferences in a series of four studies. In Study 1, we offer initial evidence that consumers draw inferences that have a compensatory nature and that these inferences are a function of consumers' ability to make value-based comparisons across the choice alternatives. The studies that follow delineate conditions under which this compensatory inference strategy will be employed. In Study 2, we test the proposition that consumers who believe that markets are efficient are more likely to use compensatory inferences than consumers who believe that markets are inefficient. In this study, we directly compare compensatory, evaluative, and probabilistic consistency strategies by using qualitative analysis to examine consumer inferences. Our results document the compensatory nature of consumers' inferences and show that in a market perceived to be efficient, consumers are more likely to draw compensatory inferences than in markets perceived to be inefficient. In Study 3, we explore how the strength of consumer market efficiency intuitions affects their compensatory inferences by introducing a learning task that presents consumers with different value dispersion scenarios. The data show that consumers who are initially asked to make decisions from an efficient choice set are more likely to draw compensatory inferences than consumers who are initially presented with a choice set that is representative of an inefficient market. In Study 4, we examine the use of compensatory inferences in a scenario in which consumers have already established intuitive theories about possible correlation between the unobservable attribute and some of the observable attributes. Our results show that in the presence of a basis for probabilistic consistency inferences (e.g., an interattribute correlation), compensatory inference strategy is less likely to occur. Finally, we explore the implications of our results and suggest directions for further research.

STUDY 1

The primary goal of Study 1 is to demonstrate that consumers draw market efficiency–based compensatory inferences and that these inferences are a function of consumers' ability to make value-based comparisons across the choice alternatives. For that purpose, respondents were presented with four choice scenarios that differed in terms of their market efficiency and the availability of price information. Perceived efficiency of the market was manipulated by varying the presence or absence of a promotional activity (sale). This manipulation is based on the assumption that a market in which brands are regularly priced is more likely to be perceived as efficient (i.e., the brands are at value parity) than a market in which one of the brands is on sale (i.e., the brands are not at parity and the brand on sale offers more value).

We also manipulated the impact of the availability of the price information on the likelihood of compensatory inferences by either informing subjects that brands are at price parity or not providing any specific price information. Without price information, drawing inferences about overall value is difficult, which inhibits subjects from drawing compensatory inferences. Conversely, when price information is available, drawing compensatory inferences is possible. As a result, we expected compensatory inferences to be significant only in the presence of both price information and mar-

ket efficiency cues. In contrast, compensatory inferences were expected to be drawn less frequently in the presence of a market inefficiency cue or when price information is unavailable.

A total of 134 undergraduate students from Northwestern University were randomly assigned to the conditions of a 2 (perceived market efficiency: efficient versus inefficient market) × 2 (price information: available versus unavailable) between-subjects design. The stimuli were two laptop computers, referred to as Brands A and B. Each of these brands was described on four attributes: display size, hard drive size, CD-ROM speed, and modem speed (for more details, see Appendix A). Brands' values on these attributes were such that Brand A is equal to or better than Brand B on all observable attributes.

Perceived market efficiency and the availability of price information were manipulated as follows: (1) Subjects in the inefficient/price available condition were told that "Brand A is on sale this week and Brand B is offered at the regular price. In fact, Brand A is priced at $1,450 (sale price) and Brand B is also priced at $1,450 (regular price)"; (2) subjects in the efficient/price available condition were told that "both brands are offered at their regular prices (neither brand is on sale). In fact, both brands are equally priced at $1,450"; (3) subjects in the inefficient/price unavailable condition were told that "Brand A is on sale this week and Brand B is offered at the regular price"; and (4) subjects in the efficient/price unavailable condition were told that "both brands are offered at their regular prices (neither brand is on sale)." Following this manipulation procedure, subjects were asked to evaluate again the relative attractiveness of choice alternatives by distributing 100 points between the two brands.

Next, subjects were told that one of the important attributes of a computer is the amount of its memory (RAM) and that at present the majority of computers have at least 16 MB of memory and can be upgraded at the cost of about $100 for a 4-MB increment. Subjects were then asked to indicate their expectations about which of the two brands (A and B) is likely to have more memory. Finally, subjects were asked to imagine that they are buying one of these two models for a friend who cares only about a computer's memory and were prompted to indicate which one of the two computers they would select.

Results

We predicted that the availability of the price information moderates the impact of perceived market efficiency on consumers' inference strategy. Given the binary nature of the data on subjects' inferences (Brand A is better than Brand B or vice versa), we quantify the differences in consumer inferences across the experimental conditions by comparing the number of responses that indicate that Brand B (inferior brand) dominates Brand A (superior brand) on the unobservable attribute.

The data show that when the market was perceived to be efficient and when price parity information was available, 27% of subjects drew compensatory inferences by indicating that Brand B would be superior to Brand A on the unobservable attribute. In contrast, when the market was perceived as efficient and when price information was unavailable, only 3% of subjects believed that Brand B would be superior. In the context of a market perceived to be inefficient, only 3% of subjects formed the compensatory inference that Brand B dominates Brand A on the unobservable attributes, regardless of the availability of the price information.

As an additional measure, we used subjects' choices as reflected in the choice share of the brand that was inferior on the observable attributes. The choice share data displayed a pattern similar to the inference data; 27% of the subjects in the first condition (efficient market/price parity information available) selected the inferior brand versus 3% of the subjects in the inefficient condition when price parity information was available. In the absence of price parity information, only 6% of subjects in the efficient market condition selected the observably inferior brand, compared with 9% in the inefficient market condition. These data are directionally consistent with our predictions.

To test the significance of this data pattern, we examined a model that described subjects' inferences about brands' performance on the unobservable attribute as a function of efficiency, availability of price information, and their interaction. The data analysis (CATMOD; SAS Institute 2000) indicates that the interaction effect was significant at the $p < .01$ level ($\chi^2_1 = 6.85$). The choice share data we tested using the same model displayed a similar pattern ($\chi^2_1 = 6.78$, $p < .01$). More important, when pricing information was available, the difference in the pattern of consumer inferences in the two efficiency conditions (27% versus 3%) was significant ($\chi^2_1 = 8.52$, $p < .01$).

Discussion

We investigated the effect of perceived market efficiency on consumer inferences about unobservable attributes in a scenario in which one of the brands was superior on the available features. In this context, we showed that in a market perceived as efficient, compensatory inferences were more pronounced when price parity information was available, compared with when price information was not provided. We further showed that for equally priced brands, the brand that is superior on the available attributes was more likely to be perceived as inferior on the unobservable attribute in the absence of inefficiency cues. Compensatory inferences were significant only when subjects were presented with the (equal) price information, which thus reduces the possibility that the observed data pattern was a result of an unexpected yet significant interattribute correlation. These data are consistent with the hypothesis that the likelihood of occurrence of compensatory inferences is moderated by consumers' intuitions of market efficiency and their ability to make value-based comparisons across the alternatives in the choice set.

STUDY 2

In Study 2, we test the proposition that consumers who believe that markets are efficient are more likely to rely on compensatory inferences than consumers who believe that markets are inefficient. We directly compare compensatory, evaluative, and probabilistic consistency strategies by using qualitative analysis to examine subjects' justification for their inferences.

Method

Subjects and design. A total of 128 undergraduate students from Northwestern University were given a booklet containing the stimuli and were instructed to examine the presented information as if they were making a real purchase decision. They were asked to imagine that they were in a large electronics store to buy a camera. Subjects were further asked to consider two brands of cameras, Brand A and Brand B, both manufactured by major photographic equipment firms. Each of these brands was described on three attributes: speed range, weight, and price (for more details on the stimuli, see Appendix B). Brand A was superior to Brand B on both nonprice attributes; both brands were equally priced.

Participants were randomly assigned to the conditions of a between-subjects design. The two experimental conditions varied in terms of the nature of the market efficiency cue. As in Study 1, some of the subjects were told that both brands were offered at their regular price (efficient condition), whereas others were told that Brand A was on sale (inefficient condition). Participants were asked to evaluate Brands A and B by allocating 100 points between them. After the initial evaluation, subjects were told that the information about the lens quality of these cameras was currently unavailable, and they were asked to indicate which brand they expected to have a better quality lens. Next, participants were asked to imagine that they were buying one of the two cameras as a gift for a friend for whom the lens quality of the camera was the most important attribute, and they reported which of the cameras they would choose. Finally, subjects wrote a brief justification of their decision.

Results

Manipulation check. To check that the brand that was superior on the observable attributes was indeed perceived as more attractive, we examined subjects' ratings of the two brands. An indication of the success of the manipulation procedure would be higher ratings for Brand A than for Brand B. Thirteen of the subjects either rated both brands to be equally attractive or rated Brand B as slightly more attractive. These subjects were excluded from the further analysis. Consistent with the manipulation procedure, the remaining 115 subjects indicated strong preference for Brand A ($\bar{x}$ = 81.6 of 100, standard deviation = 15.9).

The impact of perceived market efficiency on consumer inferences. We predicted that only subjects in the efficient market conditions would draw the compensatory inference that Brand B, the inferior brand on the observable attributes, is superior on the unobservable attribute. The data show that only 11% of the respondents in the inefficient market condition indicated that Brand B was likely to be superior on the unobservable attribute (lens quality) compared with 36% in the efficient market condition. The difference between the two conditions is significant at the $p < .005$ level (χ^2_1 = 10.55). The choice data, in which subjects selected one of the brands under the assumption that the unavailable attribute was important, yielded similar results. Only 11% of the subjects in the inefficient market condition chose Brand B compared with 34% in the efficient market condition (χ^2_1 = 7.62, $p < .01$). These data are consistent with the prediction that compensatory inferences are more likely in the efficient than in the inefficient market condition.

Qualitative analysis of consumer inference strategies. To gain a better understanding of subjects' inference strategies, we analyzed the written justifications of their decisions. Subjects' answers were classified into one of the following categories: evaluative consistency, probabilistic consistency, and market efficiency inferences. For example, responses such as "Because camera A is better in everything else, it follows that camera A has a better lens as well" and "Since all other aspects of camera A are better, I would assume that the lens quality is also better" were coded as evaluative consistency inferences. Responses such as "Because of the speed range, the quality of the lens must be better" and "Because it is lighter in weight" were coded as probabilistic consistency inferences.

Finally, responses in which subjects made inferences on the basis of brands' relative value were coded as market efficiency inferences. In particular, we distinguished two types of market efficiency inferences: confirmatory, in which subjects' inferences were directionally consistent with the observed pattern of the dispersion of brands' value, and compensatory, in which subjects' inferences were in a direction opposite to the observed pattern of the dispersion of brands' value. For example, inferences such as "Camera A is a higher quality camera that has been marked down from a higher price, so its lens might be worth more," "If A wouldn't be on sale, my answer would be B because A is clearly better, and so to get the same price the manufacturer must lower cost somewhere else (i.e., lens). But since A is on sale, it'll probably have better lens too," and "One on sale might be better because it is normally more expensive" were coded as confirmatory inferences. Inferences such as "I believe markets are efficient: If Brand B is inferior on the other attributes, it must have some qualities that account for the price," "If they are competitive brands, the price, determined by the market, should make them relatively equal. Therefore, 'B' has got to have something good. Assuming the price is fair, no free lunch," and "If B had the worse lens, added to the shorter speed range and heavier weight, I'd expect it to be less expensive than A. Since they're the same price, I assume B has a better lens" were coded as compensatory inferences.

Subjects' written justifications were interpreted by a panel of three independent judges. Disputes (4% of the responses) were solved by a majority vote. Of the total 115 responses, 85 were successfully classified into one of the three inference strategies identified previously. The remaining 30 responses either were missing or were classified by the judges as not uniquely interpretable; 13 of them were in the efficient market condition and 17 in the inefficient market condition. Subjects' inference strategies as a function of the perceived market efficiency are shown in Table 1.

The data show that across the two experimental conditions, 54% of the subjects used either evaluative or probabilistic consistency inference strategies and the remaining 46% relied on their market efficiency intuitions (both confirmatory and compensatory) to infer the unavailable attribute information. In particular, 26% of the responses were categorized as confirmatory inferences (perceived market efficiency leads to inferences that the superior Brand A is also superior on the unobservable attribute), and the remaining 20% were categorized as compensatory inferences (perceived market efficiency leads to inferences that the inferior Brand B is superior on the unobservable attribute).

Table 1
INFERENCE STRATEGIES AS A FUNCTION OF THE PERCEIVED MARKET EFFICIENCY

Inference Strategy	*Low-Efficiency Market (%)*	*High-Efficiency Market (%)*
Evaluative/probabilistic consistency inferences	41	67
Confirmatory market efficiency inferences	52	0
Compensatory market efficiency inferences	7	33

We further examined subjects' responses across the two experimental conditions. Consistent with our theorizing, all the confirmatory inferences occurred in the inefficient market scenario (52%), and none of the subjects in the efficient market scenario made the confirmatory inference that the brand that was superior on the observable attributes is superior on the unobservable attribute as well. More important, 33% of the subjects in the efficient market condition reported compensatory inferences, compared with only 7% of the subjects in the inefficient market condition ($\chi^2_1 = 9.52$, $p < .005$). These findings are consistent with our theorizing about the market efficiency nature of consumers' compensatory inferences.

Discussion

Both quantitative and qualitative data support our conceptualization that respondents used their market efficiency intuitions to make inferences about unobservable brand attributes. Subjects in the efficient market condition were significantly more likely to draw the compensatory inference that the apparently superior brand is inferior on the unobservable attribute than were subjects in the inefficient market condition. Compensatory inferences were significant, though they were not the dominant inference strategy: More than one-third of the respondents drew compensatory inferences; the rest relied on evaluative and probabilistic inference strategies. Content analysis of the data showed that subjects' compensatory inferences were based on their perceptions of market efficiency. These findings are consistent with the hypothesized market efficiency nature of compensatory inferences.

More generally, Study 2 demonstrates that consumers rely on their market efficiency intuitions to draw compensatory inferences and that in the presence of a market inefficiency cue, compensatory inferences are less likely to be drawn. In this study, consumers rely on their already established theories about market efficiency. An alternative strategy to manipulate the strength of consumers' market efficiency intuitions is to present them with market data that either confirms or disconfirms their market efficiency beliefs. For example, priming consumers with a choice set in which brands are at value parity is likely to enhance their market efficiency beliefs, whereas a set in which brands are not at value parity is likely to decrease the perceived market efficiency. In this context, if our theory about the perceived market efficiency nature of compensatory inferences is correct, the data-induced difference in the strength of consumers' market efficiency beliefs is likely to have a direct impact on the likelihood of compensatory inferences. We test the validity of this proposition in Study 3.

STUDY 3

This study examines how the strength of consumers' market efficiency intuitions affects their compensatory inferences. We operationalize the strength of market efficiency intuitions by introducing a learning task that presents consumers with different value dispersion scenarios. In particular, some of the consumers were presented with a choice set in which brands were at parity (efficient set), some were presented with a choice set in which brands were not at parity (inefficient set), and the remainder were not given any specific value parity information.

Consistent with our theory, we expect consumers who are initially presented with an efficient choice set to be more likely to form compensatory inferences than consumers who are given an inefficient choice set. We also expect consumers who are initially presented with an inefficient choice set to be less likely to form compensatory inferences than consumers who are not presented with any value parity information.

Method

A total of 108 subjects were given the stimuli booklets and were asked to evaluate presented information. The stimuli were a set of computers described on six attributes: processor speed, hard drive size, CD-ROM speed, memory, and price (for more details on the stimuli, see Appendix C).

There were three experimental conditions that varied in the nature of the learning task. Subjects in the efficient condition (45 respondents) were presented with a scenario in which brands were at value parity (i.e., better performance correlated with a higher price). Subjects in the inefficient condition (31 respondents) were presented with a scenario in which one of the brands was more attractive than the other alternatives (i.e., it had the best performance and the lowest price). Finally, subjects in the base condition (32 respondents) were presented with a simple list of attributes and attribute values, but unlike the first two scenarios, the information presented was not organized by brand, and no price information was provided.

Respondents were initially presented with the learning task and were asked to examine the available information. Next, they were presented with the choice set and were asked to select one of the alternatives. The choice set was structured so that one of the brands (Brand A) was superior on two of the attributes (hard drive and CD-ROM) and equal on all other attributes. Next, subjects were asked to indicate their expectations about these brands' reliability (Brand A more reliable, Brand B more reliable, Brands A and B equally reliable). Finally, as a check of the effectiveness of the value dispersion manipulation, subjects in the efficient and inefficient conditions were presented with a choice set that consisted of the same brands they had evaluated in the learning phase, and they were asked to evaluate their attractiveness using a 100-point scale. This manipulation check was done at the end of the experiment to avoid possible interference with the main results.

We argued that compensatory inferences are more pronounced when consumers have strong intuitive beliefs

about market efficiency than when consumers' beliefs in market efficiency are relatively weak. In particular, we expected compensatory inferences to be more pronounced following the efficiency learning task (efficient condition) than when the market efficiency learning task is not present (base condition).

We also hypothesized that compensatory inferences are not likely to occur in a market that is perceived to be inefficient. In the context of the experimental task used in Study 3, this translates into a lower likelihood of compensatory inferences (or even absence thereof) in a condition following the inefficiency learning task (inefficient condition) compared with a scenario in which market efficiency learning task is not present (base condition).

Results

Manipulation check. The goal of the learning task was to present subjects with scenarios that differ in the dispersion of value across the alternative in the choice set. To measure the success of this manipulation, we examined the pattern of subjects' brand evaluations across the experimental conditions. We expected subjects in the efficient condition to rate brands as similar in their overall value, whereas we expected subjects in the inefficient condition to indicate significant discrepancies in perceived value of the alternatives in the choice set.

The data showed significant differences in the pattern of value dispersion across the choice alternatives in these conditions. Subjects in the inefficient condition assigned, on average, 96.2 of 100 points to the brand with the highest performance and lowest price, indicating a strong belief that this brand offers more value than the other brands in the set. In contrast, subjects in the efficient condition were less determined in selecting an option that was superior in terms of its value. Their average valuations ranged from 15.4 points to 33.4 points, indicating subjects' belief that brands are similar in their overall attractiveness. These two patterns of value distribution across choice alternatives are consistent with the desired manipulation of consumer intuitions of market efficiency.

The effect of the strength of market efficiency intuitions on attribute inferences and brand choice. Of the subjects in the efficient condition, 56% selected Brand B, which was inferior on the observable attributes. In contrast, only 31% of the subjects in the base condition selected the inferior brand. The difference is significant at the $p < .05$ level ($\chi^2_1 = 4.84$), indicating that subjects in the efficient condition were more likely to adopt a compensatory inference strategy than the subjects in the base condition.

The inference data revealed similar pattern: 58% of the subjects in the efficient condition indicated that Brand B is likely to have a better reliability than Brand A, 11% indicated that Brand A would likely be more reliable than Brand B, and 31% indicated that Brands A and B were likely to be equally reliable. In contrast, only 34% in the base condition indicated that Brand B would likely be more reliable than Brand A, 22% indicated that Brand A would likely be more reliable than Brand B, and 44% indicated that they would likely be equally reliable. The difference between the number of subjects making compensatory inferences in the two conditions was significant at the $p < .05$ level ($\chi^2_1 = 4.39$).

Furthermore, only 3% of the subjects in the inefficient condition selected Brand B; this number is significantly less than the 31% of the subjects in the base condition ($\chi^2_1 = 10{,}17$, $p < .05$). Subjects' inferences about brands' relative reliability painted a similar picture: Only 3% of the subjects indicated that Brand B is likely to be more reliable than Brand A, 36% indicated that Brand A is likely to be more reliable, and 61% indicated that brands are likely to be equally reliable.

Discussion

Study 3 provides support for the proposition that the likelihood of compensatory inferences is a function of the strength of consumers' market efficiency intuitions. Subjects who were exposed to an efficient choice set in the learning phase of the experiment were more likely to rely on a market efficiency inference strategy than subjects who were not primed with an efficient choice set. In contrast, only 5% of the subjects who were primed with an inefficient market used compensatory strategy to infer missing attribute information.

Note that both the efficiency and the inefficiency learning tasks included reliability—the attribute that was unobservable in the test phase of the study. The purpose of including reliability in the learning task was to provide subjects with an additional base for inferences—data-driven probabilistic inferences—and thus create a more rigorous environment for compensatory inferences. Indeed, in both the efficient and the inefficient learning tasks, reliability ratings were correlated with two of the other available attributes (processor and hard drive) so that higher reliability is associated with higher values on these attributes as well. Consequently, subjects' reliance on this data-driven correlation would have led to the noncompensatory inference that the brand that is superior on the observable attributes, Brand A, is also more reliable.

The data from Study 3 can explain some of the variance in the strength of the compensatory inferences in the first two studies: 27% in Study 1 to 42% in Study 2. In particular, Study 3 data indicate that variance in consumers' level of familiarity with market dynamics could serve as a possible explanation of the observed variance in the strength of compensatory inferences.

Overall, Study 3 demonstrates that consumers with stronger market efficiency intuitions are more likely to use evaluative consistency inferences than are consumers with less pronounced market efficiency intuitions. This finding can be extended to predict the reliance on perceived market efficiency cues by expert and novice consumers. Indeed, in the absence of a basis for theory-driven probabilistic inferences, expert consumers, who are aware of the competitive dynamics of the market, are more likely to form compensatory inferences than are novice consumers, who will be more likely to rely on evaluative consistency strategy. This proposition is consistent with the research on consumer expertise, which suggests that as consumers' familiarity with the product category increases, their cognitive structures used to differentiate products become more refined and complete and their ability to elaborate on given information improves (Alba and Hutchinson 1987).

Although the studies presented so far provide evidence in support of the concept of market efficiency inferences, they

do not eliminate the possibility that market efficiency and probabilistic consistency inferences could have been confounded. Indeed, it can be argued that compensatory inferences were driven by an unpredicted yet significant inter-attribute correlation. To ensure the independence of the market efficiency and probabilistic consistency effects and provide a stronger test of the market efficiency inferences, we designed the next study in such a way that market efficiency and probabilistic consistency strategies made directionally opposite predictions. Such an experimental setup also enables us to examine the relative strength of the compensatory versus the probabilistic consistency strategies.

STUDY 4

Study 4 directly contrasts the compensatory inference strategy with the probabilistic strategy. In particular, this study presents subjects with a choice set in which these two inference strategies lead to directionally opposite inferences. For that purpose, choice sets in some of the conditions were designed so that the unobservable attribute would be perceived to be correlated with one of the observable attributes. Building on the evidence about consumers' intuitive theories about the correlation between a product's warranty and its durability (Broniarczyk and Alba 1994a, b), we used the warranty–durability correlation to test the significance of consumers' compensatory inferences in the presence of directionally opposite probabilistic inferences.

Method

Subjects and design. Seventy MBA students from Northwestern University were given a booklet containing the stimuli and were instructed to examine the presented information as if they were making a real purchase decision. Overall, the stimuli design was very similar to ones previously used in the literature (Broniarczyk and Alba 1994a, Study 3). There were three experimental conditions in which we manipulated the presence of price information and the presence of correlated attributes (for more details on the stimuli, see Appendix D).

Subjects were asked to consider two brands of cameras that were described on six attributes: speed range, weight, film loading, durability rating, battery life, and price. Brands A and B were identical on all attributes except that Brand A had a higher durability rating and a longer battery life. Respondents were asked to evaluate the relative attractiveness of these brands by distributing 100 points between them. In Condition 1, 26 respondents were asked to imagine that they were buying one of the cameras as a gift for a friend, a professional photographer, who equally values three attributes in a camera: fast speed, low weight, and extended warranty. Subjects were also told that warranty information was not available at the time of the decision, and they were asked to choose one of the brands for their friend. In this condition, brand durability could provide a basis for inference about warranty length (durability–warranty/price parity condition), and consumers would select Brand B if they made the compensatory inference that Brand B is superior on the unobservable attribute (extended warranty in this case).

Subjects in Condition 2 (20 respondents) were presented with the same stimuli without the price information (durability–warranty/no price information condition). If our reasoning about the market efficiency nature of compensatory inferences is true, the lack of price information would have prevented consumers from making value-based brand comparisons. As a result, in this condition we expect to observe fewer compensatory inferences than in Condition 1, in which subjects were told that brands were equally priced.

Finally, subjects in Condition 3 (24 respondents) were given price information, but they were told that the third attribute their friend cared about was picture quality (rather than warranty, as in Condition 1). Because there was no reason to expect any significant correlation between picture quality and durability (Broniarczyk and Alba 1994a, b), we expected to observe fewer probabilistic consistency inferences in this condition (durability–picture quality/price parity condition). Subjects' responses in Condition 3 were used as a benchmark to document the presence of a significant correlation between the unobserved (warranty) and one of the observed attributes (durability rating) in Condition 1.

In summary, we expected that consumers will be most likely to rely on their market efficiency intuitions in the absence of directionally opposite probabilistic consistency inferences (durability–picture quality) and when they are aware that brands are equally priced (Condition 3). In the presence of conflicting probabilistic consistency inferences (durability–warranty) and when price information is available (Condition 1), we expected compensatory inferences to be less pronounced than in Condition 3. Finally, in the absence of price information (Condition 2), we expected that none of the respondents will make the compensatory inference that Brand B is better on the unobservable attribute than Brand A.

Results and Discussion

The data show that 19% of the subjects in Condition 1 (in which both durability ratings and price information were available) selected the apparently inferior Brand B; the others chose Brand A, the superior brand. In contrast, none of the subjects in Condition 2 (durability ratings available/price information unavailable) selected Brand B. The difference in choice shares between these two conditions is significant ($\chi^2_1 = 4.31$, $p < .05$), which indicates that subjects in Condition 1 were more likely to make compensatory inferences than subjects in Condition 2. Given that the only difference between these two conditions was the presence of price parity information, we conclude that subjects' compensatory inferences were most likely associated with their ability to make value-based comparisons across the brands in the choice set.

Subjects in experimental Condition 3, who were presented with the price information and the (noncorrelated) picture quality information, displayed a different pattern of preferences: 42% selected the inferior Brand B. This preference pattern was significantly different from the pattern displayed by subjects in the first experimental condition (42% versus 19%; $\chi^2_1 = 2.99$, $p = .08$). Because the only difference between these two conditions was the nature of the unobserved attribute (warranty versus picture quality), we ascribe the difference in choice shares to differences in inference strategies. In Condition 1, the availability of a durability rating and the focus on warranty length have made probabilistic consistency inferences more likely than in Condition 3, in which subjects were asked to focus on

picture quality. In the absence of a basis for the directionally opposite probabilistic inference, respondents were more likely to draw compensatory inferences. Thus, compensatory inferences were more likely in Condition 3, less likely in Condition 1, and least likely in Condition 2, as predicted.

Study 4 showed that even in the presence of attributes that were perceived to be correlated, a significant number of subjects made compensatory inferences that were directionally opposite to the probabilistic consistency as well as evaluative consistency inferences. In the absence of a significant interattribute correlation, however, compensatory inferences were significantly stronger and comparable in strength to evaluative consistency inferences (42% of responses). These data suggest that compensatory inferences are likely to be a function of the degree to which alternative bases for inferences, such as probabilistic cues, are available.

Study 4 also documents the existence of unprompted compensatory inferences, demonstrating that consumers' market efficiency inferences can have a significant influence on their decision processes even when the consumers are not explicitly asked to elaborate on brands' performance on the unobservable attribute. This finding is especially important considering that compensatory inferences, though significant, are not the dominant response mode. The presence of spontaneous compensatory inferences further demonstrates the relevance of this type of inference strategy in consumer choice.

GENERAL DISCUSSION

Faced with incomplete information, consumers draw inferences in several ways to make decisions. Previous research has demonstrated that in the absence of a perceived correlation among product attributes, consumers follow an evaluative consistency strategy, inferring that the offering that is superior on the observable attributes will also be superior on the unobservable attributes. In contrast, we propose that consumers, drawing on their perceptions of markets and their relative efficiency, use an alternative inference strategy that makes the counterintuitive prediction: The observably superior brand is inferior on the unobservable attributes. We refer to this inference strategy as a compensatory inference. We present evidence that consumers draw such inferences when (1) a market is perceived as efficient; (2) there is a discrepancy between what is observed and what is implied by the notion of market efficiency; and (3) other bases for assessing the unobserved attributes, such as interattribute correlations, are absent.

In a series of four experiments, we identify conditions under which consumers are likely to draw compensatory inferences. We examine the likelihood of compensatory inferences occurring by comparing them with other inference strategies—evaluative and probabilistic consistency. Two aspects of our results are particularly interesting. First, our results suggest that consumers' reliance on compensatory inference strategy is likely to depend on the strength of their market efficiency beliefs. The existence of these beliefs is central to drawing compensatory inferences. Although we have considered, for the most part, cases in which markets are either efficient or inefficient, in reality consumers maintain varying perceptions about the relative efficiency of markets on the basis of their experience and observation. In some cases, buyers may strongly believe in the efficiency of markets, but in other cases the perceived efficiency is lower. When a market is seen as more efficient, compensatory inferences are more useful and therefore are drawn more frequently. For example, in Study 3, by using data to manipulate consumers' market efficiency beliefs, we show that consumer intuitions about market efficiency result in higher likelihood of compensatory inferences.

Second, the strength of compensatory inferences depends on the availability of other bases for inference. For example, in Study 4, when the warranty–durability correlation was useful for making inferences, only 19% of subjects drew compensatory inference. But when that correlation was not relevant, 42% of subjects drew compensatory inferences to make a choice. This finding is consistent with the literature that demonstrates that theory-driven probabilistic cues supercede both evaluative and data-driven cues (Broniarczyk and Alba 1994a, b). We show that when consumers have established beliefs that some of the product attributes are correlated, this correlation tends to supercede consumers' market efficiency beliefs, and as a result, compensatory inferences are less likely to occur.

Studies described in this article have demonstrated occurrence of compensatory inferences in a variety of contexts. In particular, we varied the number of attributes across the studies (from three to six), used different manipulations of market efficiency (both theory and data driven), and used stimuli from different product categories (computers and cameras). And although the magnitude of the observed effect varied across studies, the data pattern observed within each of the studies was consistent with the experimental predictions, documenting consumer reliance on their market efficiency beliefs.

Inference Patterns Across Studies

Across the studies presented in this article, subjects' use of compensatory inferences varies considerably, from a low of 27% in Study 1 to a high of 56% in Study 3. Examining the pattern of results across these studies provides additional insights into compensatory inferences and suggests other interesting avenues for research in at least four areas.

First, central to drawing compensatory inferences is the notion of market efficiency. Some consumers may hold that belief to a greater degree than others. Some of those differences can be induced by experimental manipulation, such as the learning task in Study 3, and other differences arise from the diversity in the backgrounds of subjects. In Study 1 and in Study 2, for example, the subjects were undergraduates, and in the other studies, MBA students participated as subjects. The strength of market efficiency intuitions may be a function of the extent to which consumers are cognizant of the degree of price competitiveness in the marketplace because of experience or education. MBA students may be more sensitive to the notion of market efficiency and may have more experience as consumers; with a more strongly held belief in the efficiency of markets, they are more likely to make compensatory inferences. Across our studies, we find a pattern consistent with this prediction. In our first two studies, an average of 30% of respondents (undergraduates) in the efficient condition made compensatory inferences; in the later studies, which included MBA students, this number was close to 50%. Therefore, it is possible that the differences in the likelihood of compensatory inferences across

studies were at least partly driven by subjects' different market efficiency priors. Although unplanned, this diversity in subjects' backgrounds across the experimental studies provides further insight for the role of consumers' prior market efficiency theories on their compensatory inferences.

Second, the likelihood of compensatory inferences can also be a result of the differences in the degree of discrepancy between subjects' beliefs in market efficiency and the observed distribution of value in the choice set. The notion of market efficiency implies some perceived relationship between total value and price. When observed value varies widely and a market is perceived to be efficient, a logical inference is that on the unobserved aspects of value, observably inferior brands are superior. Greater inconsistency in the perceived value offered by the alternatives should therefore lead to a greater likelihood that subjects draw compensatory inferences. In a separate study, we varied the dominance of one alternative over another and found that when one brand clearly dominates the other and when the market is perceived to be efficient, the use of compensatory inferences is much more likely than when brands are more similar in their attractiveness. Thus, greater inconsistency between the expected and the observed market efficiency is likely to be associated with higher likelihood of compensatory inferences.

Third, differences across the experiments may also be due to the degree to which the inconsistency between the expected and observed information is salient to the consumer. The issue of salience of the discrepant information is especially important given that compensatory inferences were defined as a second-order price–quality inferences that require consumers (1) to form overall evaluations and (2) to contrast these evaluations with their market efficiency expectations. In this context, compensatory inferences require more effort and cognitive resources on the part of the consumers and therefore are less likely to occur when consumers have constrained resources (e.g., under time pressure, parallel decision tasks, distractions). Under constrained resources, consumers are more likely to use simplifying heuristics and noncompensatory rather than compensatory decision rules (Payne, Bettman, and Johnson 1993; Wright 1974). As a result, the likelihood of compensatory inferences can be expected to be lower when consumers have constrained cognitive resources. Investigating the impact of cognitive resources on the likelihood of second-order inferences such as compensatory inferences is a promising area for further research.

Fourth, the strength of compensatory inferences is likely to be a function of how the information is displayed and, in particular, whether the information format encourages alternative-based (holistic) or attribute-based (dimensional) evaluations. Extant research shows that with a display that encourages alternative-based processing, more alternative-based processing will be observed (Bettman and Kakkar 1977). In this context, it can be argued that compensatory inferences are more likely to occur in the context of "by-alternative" rather than "by-attribute" processing, because compensatory inferences require overall brand evaluations in order to generate value-based comparisons of the alternatives. At the same time, probabilistic inferences, which are based on perceived interattribute correlations, are likely to be more pronounced in the context of attribute-based processing. Thus, the nature of the information display might have a direct impact on the balance between compensatory and probabilistic consistency inferences. Studying the impact of a consumer's decision strategy on the relative strength of compensatory compared with probabilistic consistency inferences can add to the understanding of the psychological mechanisms of compensatory reasoning in consumer choice and is worthwhile to pursue in further research.

All of these factors can affect the strength of consumers' compensatory inferences. These factors might account for the differences in the percentages of subjects who relied on compensatory strategy in our experimental studies. Indeed, our studies used different product categories, different attribute values, different subject samples, and different decision environments. Yet despite the variety of contexts and the associated difference in percentages of respondents following a compensatory strategy across studies, within the context of each study a significant number of respondents consistently relied on market efficiency beliefs to infer the unavailable attribute information.

Managerial Implications

Our findings have important implications for understanding consumer behavior in a scenario in which some of the relevant information is unobservable at the time of the decision. Conventional wisdom suggests that marketers are always better off emphasizing only the advantages of their offerings. We show that this assumption is likely to hold primarily in markets that are perceived to be inefficient by consumers. In markets perceived to be efficient, however, consumers may draw the compensatory inference that the dominant brand has certain disadvantages on the unobservable attributes. In this context, it might be argued that by adding an inferior yet irrelevant feature to the dominant brand, marketers can increase consumers' overall preferences for the dominant brand.

Thus, our data furnish empirical evidence to support a positioning strategy that is based on emphasizing an irrelevant feature on which the target brand is inferior. Consider, for example, Smucker's tagline, "With a name like Smucker's, it has to be good," or Volkswagen's "The 1970 VW will stay ugly longer." In the context of a market perceived to be efficient, to be successful, a brand named Smucker's must be really good and a car that is ugly must be reliable. Thus, by the virtue of compensatory inferences, a brand emphasizing its inferiority on a given observable attribute can get favorite ratings on the unobservable one, and as the importance of the unobservable attribute increases, so does the impact of compensatory inferences on consumers' ultimate choice decision. An additional benefit of this "emphasize an irrelevant disadvantage" strategy is that a positive statement needs certain proof, but no proof is needed for negative statements. Therefore, superiority based on compensatory inferences is likely to face less resistance on the part of the consumers than a direct claim of the unobservable benefit.

Our findings also suggest that the brand that is superior on the observable attributes may also benefit from emphasizing market inefficiency itself. Given that perceived market efficiency is a necessary condition for the existence of compensatory inferences, by manipulating consumers' market effi-

ciency beliefs, a firm can eliminate compensatory inferences altogether. In contrast, because the inferior brand is better off in a market perceived to be efficient rather than inefficient, it may benefit from an emphasis on market efficiency. Thus, our findings imply that by manipulating consumers' beliefs about the competitive nature of the market, firms can influence consumers' perceptions of their brands.

Appendix A
STUDY 1 STIMULI

Feature	*Computer A*	*Computer B*
Display size	12.1 inches	12.1 inches
Hard drive	3.1 GB	1.6 GB
CD-ROM	16x	10x
Modem speed	56.6	28.8
Price	$1,450	$1,450

Appendix B
STUDY 2 STIMULI

	Camera A	*Camera B*
Speed range	1/1000 sec.–4 sec.	1/500 sec.–2 sec.
Weight without the lens	1.2 lb.	1.4 lb.
Price	$259	$259

Appendix C
STUDY 3 STIMULI

Learning Phase/High Market Efficiency Condition

	Brand A	*Brand B*	*Brand C*	*Brand D*
Processor speed	400 MHz	366 MHz	333 MHz	300 MHz
Hard drive size	14.6 MB	12.8 MB	12.2 MB	10.4 MB
Memory	64 MB	64 MB	64 MB	64 MB
Reliability rating	★★★★★	★★★★	★★★	★★
Price	$1,749	$1,649	$1,599	$1,499

Learning Phase/Low Market Efficiency Condition

	Brand A	*Brand B*	*Brand C*	*Brand D*
Processor speed	400 MHz	366 MHz	333 MHz	300 MHz
Hard drive size	14.6 MB	12.8 MB	12.2 MB	10.4 MB
Memory	64 MB	64 MB	64 MB	64 MB
Reliability rating	★★★★★	★★★★	★★★	★★
Price	$1,499	$1,649	$1,599	$1,749

Learning Phase/No Market Efficiency Information Condition

Common Attribute Values	
Processor speed	400 MHz, 366 MHz, 333 MHz, 300 MHz
Hard drive size	14.6 MB, 12.8 MB, 12.2 MB, 10.4 MB
Memory	64MB
Reliability rating	★★★★★, ★★★★, ★★★, ★★

Test Phase: Reliability Unobservable, Brand A Dominant on the Observable Attributes

	Brand A	*Brand B*
Processor speed	366 MHz	366 MHz
Hard drive size	14.6 MB	12.2 MB
Memory	64 MB	64 MB
CD-ROM	40x	32x
Price	$1,549	$1,549

Appendix D
STUDY 4 STIMULI

Condition 1: Durability–Warranty Correlation/Price Information[a]

	Camera A	*Camera B*
Maximum speed	1/2000 sec.	1/2000 sec.
Weight without the lens	1.2 lb.	1.2 lb.
Automatic film loading	Yes	Yes
Durability rating	9	8
Battery life	48 hours	32 hours
Price	$359	$359

Condition 2: Durability–Warranty Correlation/No Price Information[b]

	Camera A	*Camera B*
Maximum speed	1/2000 sec.	1/2000 sec.
Weight without the lens	1.2 lb.	1.2 lb.
Automatic film loading	Yes	Yes
Durability rating	9	8
Battery life	48 hours	32 hours

Appendix D
CONTINUED

Condition 3: Durability–Picture Quality/Price Information[c]

	Camera A	*Camera B*
Maximum speed	1/2000 sec.	1/2000 sec.
Weight without the lens	1.2 lb.	1.2 lb.
Automatic film loading	Yes	Yes
Durability rating	9	8
Battery life	48 hours	32 hours
Price	$359	$359

[a]Important attributes are fast speed, low weight, and extended warranty (unavailable).

[b]Important attributes are fast speed, low weight, and extended warranty (unavailable).

[c]Important attributes are fast speed, low weight, and picture quality (unavailable).

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