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The Influence of New Brand Entry on Subjective Brand Judgments

YIGANG PAN
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Previous attraction effect studies show that brand choices are affected by the entry of a new brand. However, much remains to be known as to the causes for this effect. This article explores the impact of a new brand entry on consumers' subjective brand judgments. Three specific effects were hypothesized and tested, namely, range, frequency, and categorization. Results from two experiments demonstrate that the new entrant has a significant impact on subjective brand judgments, brand preferences, and choice.

The stream of research in the attraction effect area shows that the entry of a new brand affects choice outcomes in ways that are inconsistent with the predictions of many choice models (Huber, Payne, and Puto 1982; Huber and Puto 1983; Ratneshwar, Shocker, and Stewart 1987; Simonson 1989; Simonson and Tversky 1992). Though the major findings of the attraction effect have been shown to be stable and its implications on choice research have been acknowledged, relatively little has been known about the causes as well as the possible avenues of impact of a new brand entry on the choice probability of brands in the choice set.

We propose that a new brand entry affects subjective judgments of brands in the set. More specifically, a new brand entry affects judgments of existing brands through the range, frequency, and categorization effects. As a result of this change certain brands become more desirable than others in the choice set. Two experiments support these propositions. These changes are consistent with changes in preference and choice.

BACKGROUND

The Attraction Effect

The attraction effect relates to the phenomenon of how adding a new alternative to the choice set alters the choice likelihood of existing alternatives (Huber et al. 1982; Huber and Puto 1983; Ratneshwar et al. 1987; Simonson 1989, 1991; Simonson and Tversky 1992; Tversky 1988). In Huber et al. (1982), subjects saw two brands presented on two attributes (of the more is better type) and were asked to choose a brand. Two weeks later, subjects saw these two brands again with a new brand added to the set. The new brand was inferior to one of the existing brands on both attributes, but not to both (which is called asymmetrical dominance). Subjects were asked again to choose a brand. Their study shows a significant shift of choice outcomes in favor of the asymmetrically dominating brand. Huber and Puto (1983) further investigate the attraction effect by examining the stability of the effect when the new entrant is inferior to the existing brand only on one attribute and not on the other. In other words, the new entrant is only "relatively" inferior since it falls below the linear trade-off line between the two existing brands. The attraction effect again is shown to exist.

These empirical findings have provocative implications for choice research. As Huber et al. (1982) suggest, the empirical evidence illustrates instances of violation of regularity: the property that an addition of a new choice alternative should not increase the choice likelihood of any existing alternative, an axiom that many choice models rely upon. These findings also run counter to the similarity effect: the intuition that a new alternative will draw more share from the similar alternatives than from the dissimilar alternatives.

A number of studies have attempted to explain the attraction effect. Ratneshwar et al. (1987) show that the attraction effect is moderated, though not caused, by lack of stimulus meaningfulness and subject's familiarity with the product category. Simonson (1989) proposes that consumers tend to choose the alternative supported by the best reasons under preference uncertainty and shows that brands tend to gain share when

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they become compromise alternatives in the choice set. Simonson and Tversky (1992) propose two principles. The extremeness aversion principle suggests that consumers are more likely to choose the compromise alternatives in the choice set (Simonson 1989). The tradeoff contrast principle suggests that comparisons between alternatives in the choice set affect the choice outcome as well as the levels of the alternatives on the attributes. These studies use choice as the dependent variable and enrich our understanding regarding the relationships between alternative positions in the choice set and the choice outcome. However, it is not clear whether changes in the choice set after new brand entry affect perceptions of alternatives in the set and how perceptual changes affect the choice outcome.

Though it seems evident that subjects take into account the information about the new brand in their choice considerations in ways that are different from that implied by the regularity or similarity assumptions in choice modeling, few studies have examined and tested the underlying causes or processes of the influence of new brand entry on choice. The speculated reasons include perceptual framing of the decision problem, evaluation processes used, and change in attribute attention/weight (see Huber et al. 1982 for a detailed discussion).

The primary objective of this article is to explore the impact of new brand entry on the subjective judgments of brands and how these relate to the changes in overall brand preferences and choice. Second, by incorporating in the experimental design various entry positions reported in different previous studies, such as dominated, dominating, extreme, and compromise entries, this study may provide new understanding on the impact of various entry positions on choice.

Brand Judgments

Subjective brand judgments, also called "brand perceptions," are values a consumer believes a brand has on the perceptual attributes of the given product category. A brand's subjective judgments are the perceived positions of the brand in the perceptual product attribute space. Perceptual attributes are typically abstract. Furthermore, the same brand is often judged differently by different consumers. While perceptions tend to be heterogeneous, by contrast, objective brand specifications are concrete and unambiguous. For example, a $400 price tag on a brand of TV set is the description of that brand on the objective attribute of price, whereas regarding it as expensive or cheap is its subjective judgment made by a certain consumer on the perceptual attribute of expensiveness.

"In making a judgment, the person encodes information about the object, integrates that information with previous knowledge, arrives at some conclusion about the object, and renders a response that conveys the conclusions" (Upshaw 1984, p. 237). The formation of subjective brand judgments occurs through a process of learning about the brands on objective or physical attribute dimensions, comparing the brands in the set, and possibly reducing the number of objective attribute dimensions to a few perceptual dimensions. The need for consumers to develop and apply subjective brand judgments in the choice process stems from consumers' limited cognitive capacities (Bettman 1979; Newell and Simon 1972). Many brands and objective attributes exist in each product category. Consumers may have difficulty integrating and analyzing brand information. They simplify information processing by forming subjective judgments or beliefs about brands. Issues such as how consumers perceive brands, how to represent brands in the perceptual space, and how perceptual structure affects choice have been of interest to marketing researchers for decades (e.g., Green and Srinivasan 1990). However, few studies have focused on the evolution of brand positions in the perceptual space over time due to external influences, like new brand entry (for an exception, see Moore and Lehmann 1982).

It has been shown that perceptual activity occurs in a context (Helson 1964). Perception is relativistic rather than absolute (Dember and Warm 1979) and is guided by prior concepts, knowledge, and beliefs (Hamlyn 1983). Brand perceptions are no exception (Farley, Katz, and Lehmann 1978; Monroe 1977; Sujan and Bettman 1989). The stream of research on consumer's response to price has demonstrated that consumers compare sets of prices in forming price perceptions and price perceptions influence perceived quality, perceived value, and willingness to buy (e.g., Dodds, Monroe, and Grewal 1991; Monroe and Petroshius 1981).

The relative nature of brand perceptions can often be observed. Consider the following examples: Sony electronics are expensive (compared with other brands). A Lincoln Town Car has low mileage per gallon (compared with smaller cars), and an apple may not taste as sweet if eaten after candy. Finally, a fictitious case from Huber et al. (1982): "A store owner has two camel hair jackets priced at $100 and $150 and finds that the more expensive jacket is not selling. A new camel hair jacket is added and displayed for $250; the new jacket does not sell, but sales of the $150 jacket increase." When the $150 jacket is the highest-priced jacket, it may be judged as expensive. When another jacket is priced at $250, the $150 jacket may be judged as less expensive.

Range and Frequency Effects

Parducci (1974) proposes that perception is subject to range and frequency effects (see also Birnbaum 1974). The range effect implies that the difference between two stimuli on a perceptual dimension decreases when the range (i.e., the difference between the two extreme stimuli on that dimension) increases; and the frequency

effect implies that the difference between two stimuli on a perceptual dimension increases when the frequency (i.e., the number of stimuli between that pair on that dimension) increases.

Research on perception in psychophysics often focuses on the relationship between one physical dimension (e.g., actual weight of stimuli) and one perceptual dimension (e.g., their heaviness). In marketing, brands are typically specified along multiple objective attributes, and consumer perceptions of brands involve multiple perceptual attributes as well. Marketers are interested in the relationship between multiple objective attributes and consumers' judgments on multiple perceptual attributes. Nevertheless, Parducci's range and frequency effects, if generalized to the context of multiattribute brand judgments, suggest that if a new brand enters between the two existing brands (increases the frequency between the two brands), the two existing brands will be perceived as more dissimilar. On the other hand, if a new brand comes outside the two existing brands (increases the range), the two existing brands will be perceived as more similar to each other.

A similar phenomenon has been noted in the psychometric literature. Krumhansl (1978, 1982) has suggested that perceptual distance between two objects depends on both the distance between them on underlying attributes and the "density" of objects in the space. This model, which has been tested and implemented by DeSarbo, Manrai, and Burke (1990) and DeSarbo and Manrai (1992), suggests that distance increases when other objects (brands) occur either between (the frequency effect) or near (the categorization effect) the two objects being evaluated.

Categorization Effect

Considerable interest has been recently focused on categorization processes (e.g., Cohen and Basu 1987). Research on categorization suggests that, by grouping similar objects, information-processing efficiency as well as cognitive stability are enhanced (Cohen and Basu 1987; Lingle, Altom, and Medin 1984). When alternatives are presented on objective product attributes, alternatives that have similar specifications are more likely to be categorized in a subgroup. When a new brand's specifications are similar to a subgroup of existing brands, it is likely that the new brand would be categorized as in that subgroup (Sujan and Bettman 1989). By definition, when brands are categorized in a subgroup, they are perceived as more similar to each other than to brands outside the subgroup. Thus, if a new brand is positioned close to an existing brand, thus forming a subgroup, the existing brand should be perceived as more similar to the new entrant and less similar to other existing brands in the set.

HYPOTHESES

Subjective brand judgments are formed through a transformation from objective or physical attribute dimensions (e.g., size of a TV set in inches) to subjective or perceptual dimensions (e.g., bigness of the set). This transformation process involves comparisons of brands available in the market. When a new brand enters the choice set and is used in the comparisons of the brands in the set, it can affect how brands are perceived. For example, a 19-inch TV set may be perceived as big when compared to a 13-inch set and small when compared to a 27-inch one. When high-definition TV sets enter the market, current models will score poorly on the picture quality dimension.

Based on the discussion in the background section, it is clear that brand judgments are context dependent. Here, we focus on three specific context effects: the range, frequency, and categorization effects. More specifically, we test whether the range and frequency effects (Parducci 1974) and the categorization effect (Cohen and Basu 1987; Sujan and Bettman 1989) affect the judgments of brands after a new brand enters a market. This leads to the following three hypotheses:

H1: When a new brand is positioned outside two existing brands, the two existing brands are judged to be more similar (range effect).

H2: When a new brand is positioned between two existing brands, the two existing brands are judged to be less similar (frequency effect).

H3: When a new brand is positioned closer to an existing brand than to other existing brands, the existing brand is judged to be less similar to other existing brands (categorization effect).

Notice that Hypotheses 1 and 3 imply that the range and categorization effects may work in opposite directions and hence can cancel out. (Our results show the range effect is stronger than the categorization effect.)

STUDY 1

Design and Method

Forty-five MBA students from a major northeast business school participated in an experiment. Three product categories were used: cars, TV sets, and campus apartments. Subjects spent on average 15 minutes completing a questionnaire at the end of the regular class period. In the experiment, subjects were first exposed to brands described on objective or physical attributes (e.g., how many seconds a brand of car takes to reach 60 mph). Then subjects were asked to rate the brands on the corresponding perceptual dimensions (e.g., the acceleration of a car) on a scale ranging from 0 to 100. Subjects were also asked to indicate attribute

importance on a nine-point semantic scale. Finally, subjects were asked to indicate their overall preference for each brand by assigning a number between 0 and 100. (The most preferred one was assigned 100 points and the rest a number between 0 and 100 relative to the most preferred brand.)

We chose cars, TV sets, and apartments as product categories relevant to the (student) subjects. For cars we used a single attribute to get a simple test of Hypotheses 1, 2, and 3. For TV sets and apartments we used two attributes, the number used in many brand entry studies and models. Brands were described in a fashion similar to that used in *Consumer Reports*. For TV sets and apartments, three existing brands are positioned on the efficient frontier in the two-dimensional space, that is, the three existing brands do not dominate one another. We use three existing brands because we are interested in the relative changes of perceived positions among brands, and three is the minimum number that can yield meaningful pairwise comparison.

A new brand was added to the three existing brands and positioned close to one of the three existing brands. The new brand either dominates or is dominated by one of the three existing brands, that is, the new brand is either better or worse than an existing brand in an absolute sense on all objective attributes in the experiment. The new brand is introduced by a brief statement indicating that this brand recently became available. The design is between subjects, that is, subjects in the control condition are only exposed to the three existing brands and subjects in the two treatment conditions are exposed to three existing brands and one new brand. Both within-subjects (e.g., Huber et al. 1982) and between-subjects designs (e.g., Simonson 1989) have been reported in previous papers in this area. Appendix A provides the positioning of the brands used in the first study.

Analysis and Results

The overall range, frequency, and categorization effects were analyzed based on each individual subject's perceptual rating for each brand aggregated across five attributes. The perceptual distances between brands B and C relative to that between brands A and B are significantly different across different entry conditions (Table 1). An entry between brands B and C increases the relative distance between them, whereas an entry between Brands A and B decreases it. When an entry is outside the three existing brands, the categorization effect seems to be operating. An entry beyond A seems to create two subgroups with B and C in one and A and the entrant in the other. As a result, B and C become relatively closer than A and B. Similarly, an entry beyond C increases the relative distance between B and C.

The mean perceptual ratings for each brand in each entry condition are reported in Table 2. Again, there

TABLE 1

THE IMPACT OF ENTRY ON BRAND JUDGMENTS

Condition	(B − C)/(A − B)
Control	1.10
Entry between brands B and C	1.62
Entry between brands A and B	1.00
Entry beyond brand A	.88
Entry beyond brand C	1.14

NOTE.—$F(4,192) = 5.11, p < .01$.

are obvious patterns supporting the range, frequency, and categorization effects. In order to further and more formally test our hypotheses, we calculate perceived pairwise brand distances based on the mean perceptual ratings from Table 2. The number of brands between the pair is used to operationalize the frequency effect construct. The number of brands outside the pair is used to indicate the range effect. When a new entrant is positioned close to an existing brand to form a subgroup (representing the categorization effect), the dummy variable representing presence in a subgroup is coded 1 (otherwise the variable is coded as 0). The following regression model was used to estimate the range, frequency, and categorization effects:

$$\text{Perceived Dist} = b_0 + b_1\text{Obj} + b_2\text{Frequency} + b_3\text{Range} + b_4\text{Categorization} + \text{error}, \quad (1)$$

where

Perceived Dist = perceptual pairwise brand distance,
Obj = objective pairwise brand distance,
Frequency = number of brands between a pair,
Range = number of brands outside a pair, and
Categorization = whether one of the pair is in a subgroup.

Objective distances are directly calculated from brand specifications presented in the experiment. The objective attribute levels of brands are standardized within attribute to allow for pooling. The analysis on the data pooled across five attributes shows that all three effects are significant and in the hypothesized direction (Table 3). The frequency effect is positive ($p < .01$), and the range effect is negative ($p < .01$). The categorization effect is positive ($p < .05$). In addition, objective brand distances have a positive effect ($p < .01$), which serves as a manipulation check on whether subjects paid attention to the objective specifications of brands.[1] (Sep-

[1]We used regression as a means to look for directional effect. We also modified our model to include (*a*) objective distance squared, (*b*) a log of objective distance (to match Fechner's model), and (*c*) a log-log function of objective and perceived distances to allow for Stevens' classic "power" curve. The results are qualitatively identical with the exception that the categorization effect is no longer significant when the log of objective distance is used.

TABLE 2

MEAN PERCEPTUAL RATINGS (0–100)

Product attribute	Control condition			Entry 1 condition				Entry 2 condition			
	A	B	C	A	B	C	New brand	A	B	C	New brand
Car acceleration	68	52	34	77	59	48	69[a]	70	56	35	46[b]
TV picture quality	58	71	84	54	74	88	68[a]	54	69	90	83[b]
TV durability	81	69	57	84	72	56	65[b]	82	72	60	51[c]
Apartment spaciousness	53	67	85	34	55	72	44[a]	40	56	74	61[b]
Apartment closeness	86	76	62	86	70	60	91[d]	88	74	59	78[a]

[a]New brand enters between brands A and B.
[b]New brand enters between brands B and C.
[c]New brand enters outside brand B.
[d]New brand enters outside brand A.

arate analysis on the five attributes was generally consistent with the aggregate result.)

The results support the hypotheses that brands are perceived differently after the entry of different new brands through the range, frequency, and categorization effects. When a new brand enters between two existing brands, the two existing brands are perceived as more dissimilar. When a new brand enters outside the two existing brands, the two existing brands are perceived to be more similar. When a new brand is positioned close to an existing brand and forms a subgroup, brands in the subgroup are perceived as more similar to each other and dissimilar to brands not in the subgroup.

Discussion

Study 1 demonstrates that new brand entries affect how brands are judged subjectively. When a new brand enters between two existing brands on an attribute, the two existing brands are judged as more dissimilar on that attribute. When a new brand enters outside the two existing brands, the two existing brands are judged to be more similar. Furthermore, when brands form a subgroup, the brands in the subgroup are judged to be farther from brands not in the subgroup.

STUDY 2

Motivation

The second study attempts to address a number of limitations in the first experiment. First of all, there was no choice measure in the first experiment. Therefore, the findings are less effective in explaining the attraction effect, which uses choice as the dependent variable. Second, brand subjective judgments were measured through ratings of brands on the subjective product attributes. In the experiment, brands were described by numbers on objective attributes, and subjects provided numbers to indicate how brands were perceived on the subjective attributes. Thus, it is possible that subjects were merely engaged in a number-matching exercise. It has been suggested that changes in brand judgments can come from changes in how consumers mentally represent the stimuli or in how they anchor rating scales when mapping context-invariant mental representation onto the scales (Birnbaum 1974; Lynch, Chakravarti, and Mitra 1991; Upshaw 1984). In other words, it is hard to remove the reasonable doubt that changes in brand ratings on subjective attributes are the artifact of this specific judgment measurement method. Finally, as the experiment was between subjects, it is impossible to examine the changes in brand perceptions after the entry of the new brand.

Design and Method

The second experiment was different from the first one in three major aspects: (1) a choice measure was included; (2) brand judgment was measured using a different measurement method, namely, similarity measures; and (3) the experiment was within subjects.

Changes in subjective brand judgments after entry were examined in two ways. The first was through verification using a different measurement method. In the second experiment, brand judgments were measured through brand pairwise similarity judgments on a scale of 1 (similar) to 9 (dissimilar), which is commonly used in marketing and psychophysics. The second way to test the judgment changes was to examine expected changes in behavior, that is, changes in brand choice and preference after the new brand entry (Lynch et al. 1991). In many circumstances, judgment changes caused by context effects, like the entry of new brands, take place gradually and do not lead to an immediate change in behavior. However, the cross verification using a different measurement method should increase

TABLE 3

DETERMINANTS OF PERCEIVED DISTANCE BETWEEN BRANDS

Independent variable	Regression coefficient (n = 75)
Intercept	15.43
	(7.90)***
Objective distances	2.84
	(5.87)***
Frequency effect	4.36
	(4.25)***
Range effect	−4.10
	(−4.03)***
Categorization effect	1.56
	(2.02)**
Model R^2	.89

NOTE.—The values in parentheses are t-statistics.
**$p < .05$.
***$p < .01$.

TABLE 4

ENTRY IMPACT ON PAIRWISE SIMILARITY JUDGMENTS AND PREFERENCE

Entry conditions	Similarity judgments[a] (mean differences)	Preference ratio[b] (brand A/ brand B)
Before entry	. . .	1.07
Entrant in dominated position	.23	.91
Entrant in dominating position	.39	1.14
Entrant in extreme position	−.99	.82
Entrant in compromise position	1.33	1.20

[a]Similarity judgments: (after-entry similarity judgment of two existing brands) − (before-entry similarity judgment of two existing brands); $F(3,405) = 23.07$, $p < .001$.
[b]Preference ratio: preference ratings for brands on a scale of 1–100; $F(4,817) = 2.25$, $p < .065$.

our confidence in the findings, even if changes in behavior are not dramatic.

The second experiment was within subjects. Subjects performed two tasks with an interval of two weeks between them, as in Huber et al. (1982). One hundred and six students participated in the experiment and 103 completed both before-entry and after-entry tasks. Subjects first responded to four before-entry product categories, each having two existing brands, presented on two objective product attributes. Two weeks later, subjects were exposed to the same four product categories, each having the same existing brands and a new brand. Each subject was exposed to a different one of the four entry positions for the new entrant (a dominating, dominated, compromise, or extreme entrant) in each of the four product categories. After exposure to the brands, subjects rated the overall similarity of each pair of brands on a nine-point similarity scale. Then subjects picked a brand as their choice and indicated brand preferences on a 1–100 scale. The most preferred brand was given 100 points and the rest a number between 1 and 99 to indicate its relative preference to the most preferred one. Finally, subjects reported each attribute's importance on a nine-point scale. Appendix B provides the four product categories and brand positions. A total of 12 different questionnaires was used to randomize the order of presentation of the two existing brands, four entry positions, and four product categories in the experiment.

Analysis and Results

1. *Similarity Judgments.* The changes in the overall similarity judgments of the two existing brands before and after the entry of a new brand were examined. Data from the four product categories were aggregated. An ANOVA shows that the differences across entry positions are significant ($F(3,405) = 23.07$, $p < .001$ [Table 4]). When a new brand enters between two existing brands, the two existing brands are perceived as more dissimilar (a compromise entry operationalizes the frequency effect). When a new brand enters outside the two existing brands, the two existing brands are perceived as more similar (an extreme entry operationalizes the range effect). A dominating or dominated entrant makes the two existing brands look more dissimilar, as the entrant is positioned close to one existing brand (a dominated or dominating entry operationalizes the categorization effect). There are six possible comparisons among the four means. All the comparisons are significant at the .05 level except for the one between dominating and dominated. Thus, the results again suggest that the entry of a new brand alters subjective brand judgments significantly.

2. *Brand Choice.* The within-subjects switching of brand choices over the two periods is tabulated in Table 5. When the entrant was dominated by B, 50 percent of those subjects who chose A before new brand entry switched to B, while only 16.1 percent of those subjects who chose B before new brand entry switched to A ($\chi^2(1) = 12.76$, $p < .01$). When the entrant was in an extreme position and B became a compromise brand, 62.1 percent of those subjects who chose A before new brand entry switched to B, and 25 percent of those subjects who chose B before new brand entry switched to A ($\chi^2(1) = 10.03$, $p < .01$). When the entrant was a superior alternative and dominated B, most subjects switched to the entrant from A and B (switching between A and B was minimal). Likewise, when the entrant was in a compromise position, most subjects switched to the entrant, and there were few switches between the two existing brands. Overall, the switching results are consistent with previous attraction effect studies and the findings reported earlier.

TABLE 5

BRAND CHOICE SWITCHING (No. of Subjects)

New brand entry condition	Before-entry brand choice	After-entry brand choice			Changes in choice for A and B		
		A	B	Entrant	Unchanged	Reversed	%
Entrant dominated	A	20	20	2	20	20	50.0
	B	9	47	4	47	9	16.1
Entrant extreme	A	11	18	3	11	18	62.1
	B	11	33	25	33	11	25.0
Entrant dominating	A	6	2	23	6	2	25.0
	B	2	8	58	8	2	20.0
Entrant compromise	A	15	3	22	15	3	16.7
	B	3	20	38	20	3	13.0

The effect of brand entry on choice was also estimated using ordinary least squares (OLS) regression. For each product category, there were two brands before new brand entry and three brands after the entry of a new brand. The dependent variable was brand choice. The chosen brand was coded 1, and the unchosen brands 0. The independent variables were the four dimensions defining each brand's position relative to the positions of other brands in the choice set: dominating, dominated, compromise, and extreme. The two before-entry brands were coded 0 across all four dimensions, as they were positioned distinctly apart. Each of the three brands after new brand entry was coded 0 or 1 on these four dimensions, depending on its position relative to other brands in the set. For example, if the entrant was in a compromise position, the entrant was coded 1 on the compromise dimension and 0 on the other three dimensions, while brands A and B were coded 1 on the extreme dimension and 0 on the other three dimensions. A total of 2,038 observations were used (103 subjects $\times$ 4 product categories $\times$ 5 brands, less missing data). We report only results aggregated across the four categories. We expected no differences across the product categories, which served mainly to allow a single respondent to provide data for different entry positions and to preclude the results depending on an idiosyncratic category effect. We tested for differences across the four categories in the impact of the four entry positions on choice and found no difference at the .05 level ($F(12,2033) = 1.50 < 1.75$).

When all five brands are used in the OLS regression, all four positional effects are significant and in the expected direction (Table 6). When a brand is in a dominating or a compromise position, its likelihood of being chosen increases. On the contrary, if a brand is in a dominated or an extreme position, it has a smaller chance of being chosen.

While OLS analysis may be robust to specification error, it is not strictly appropriate to use it on a binary dependent variable. However, the varying size of the choice set (two vs. three brands in before- and after-entry conditions) is not perfectly appropriate for multinomial logit analysis either. We therefore used multinomial logit on the after-entry data only. This produces results nearly identical to the results on before- and after-entry brands, the exception being that extreme is no longer significant. Notice that logit results are basically identical to OLS results on the same subset of data. This further confirms that the entry of new brands has a substantial impact on choice.

3. *Brand Preference.* For each entry condition, we computed the before- and after-entry average preference ratio between brands A and B (the two existing brands) and found significant differences ($F(4,817) = 2.25$, $p < .065$ [Table 4]). The difference in the preference ratio from 1 monotonically increases with the absolute value of the change in perceived distance between A and B, suggesting that more similar brands are rated more equal in preference.

We also examined the impact of entry on preference ratings (Table 6). The results closely match the choice results in sign and significance.

While it seems unlikely that these results represent changes in responses and not in actual preference, the results are based on subjective ratings that are subject to various response biases and context effects. Moreover, while it is possible for preference strength to change without a change in preference order, clearly the strongest evidence for the impact of new brands on preference would be the evidence of preference reversals. Consequently, we examined changes in the preference order of A and B between the before- and after-entry conditions.

The within-subjects brand preference order over the two periods is tabulated in Table 7. When the entrant was dominated by B, 47.5 percent of subjects who preferred A to B in the first period reversed their preference and now preferred B to A, while only 16.4 percent of subjects who preferred B to A in the first period switched to preferring A to B ($\chi^2(1) = 10.8$, $p < .01$). When the entrant was in an extreme position and B became the

TABLE 6

ENTRY IMPACT ON CHOICE AND PREFERENCE

Independent variable	Before- + after-entry brands: Choice (OLS) (n = 2,038)	Before- + after-entry brands: Preference (OLS) (n = 2,057)	After-entry brands: Choice (OLS) (n = 1,223)	After-entry brands: Choice (multinomial logit) (n = 1,223)
Intercept	.42	80.38	.19	. . .
	(30.24)***	(120.57)***	(8.19)***	
Dominating	.32	11.59	.54	1.14
	(9.16)***	(6.80)***	(14.64)***	(58.78)***
Dominated	−.33	−17.07	−.11	−.77
	(−9.52)***	(−10.03)***	(−2.96)***	(7.05)***
Compromise	.14	7.22	.36	.93
	(3.86)***	(4.25)***	(9.63)***	(14.51)***
Extreme	−.19	−8.69	.03	.04
	(−6.38)***	(−6.03)***	(1.00)	(.03)
Model R^2	.12	.10	.24	U^2 = .21

NOTE.—The values in parentheses are t-statistics for OLS and Wald chi-square statistics for multinomial logit.
***$p < .01$.

compromise alternative, 60.6 percent of subjects who preferred A to B in the first period switched to preferring B to A, and 21.9 percent of those who preferred B to A in the first period switched to preferring A to B ($\chi^2(1) = 14.34, p < .01$). When the entrant dominated B, more subjects switched from preferring B to A to preferring A to B than the opposite after the entry of a new brand (18 vs. 12, $\chi^2(1) = 2.06$, NS), though not significantly more. When the entrant was in a compromise position, the difference in switching between A to B and B to A was not significant, as expected ($\chi^2(1) = 2.51$, NS). In short, preference order switching is consistent with the previous findings and suggests that the changes in perception and preference ratings are real and not merely an artifact of the rating task.

4. *Attribute Weights.* A stream of research suggests that changes in the range and variance of alternatives on product attributes have the potential of shifting subjects' attribute attention and thus attribute weights (Arnold, Oum, and Tigert 1983; Curry and Menasco 1983; Levin and Gaeth 1988; Meyer and Eagle 1982; Simonson 1991; Wittink, Krishnamurthi, and Reibstein 1990). To see if this occurred here we first tested the within-subjects differences in *stated* relative weights (measured by the ratio of the weight given attribute 1 to the weight given attribute 2) before and after each of the four entry conditions. There were no significant differences ($F(3,407) = 0.13$, $p < .94$).

We further examined the *inferred* relative attribute weight shifts using a compensatory model. We compared relative attribute weights before and after entry of a particular new entry (dominating, dominated, compromise, or extreme). A linear model was used incorporating the attribute levels (standardized within product category to allow for pooling) and an interaction term between attribute and entry. The interaction term tests whether the attribute weights shift significantly after the entry. We found the absolute weights changed in some cases, but across the four analyses we did not find relative shifts of weights in favor of either attribute. It appears that the changes in the range and variance of attributes caused by the entry of a new brand were not strong enough to bring about significant shifts in attribute weights in this study.

LIMITATIONS

One important issue that arises is the level of differentiation between the entrant and the existing brands needed to produce a noticeable difference. Moreover, the level of differentiation needed to provide a noticeable difference may vary by person (perhaps related to expertise and involvement). Here we implicitly assume that the differences used are noticeable, which seems reasonable given the focus on few brands and only two attributes. The results (especially for the dominated entry) demonstrate that at least for a substantial faction of the subjects the difference was noticeable. Further research is clearly needed to test for the level of differentiation required to produce inferior-superior comparisons.

Another limitation of the study is that the results apply to continuous attributes for which the direction of preference is clear. Extension of the results to discrete attributes (e.g., color) is nontrivial and an area for future research.

Perhaps the most serious issue for future research is to see how pervasive these effects would be in a more realistic setting. This setting would include both brand

TABLE 7

PREFERENCE ORDER SWITCHING (No. of Subjects)

Entry condition	Before-entry preference order	After-entry preference order						Changes in preference order for A and B		
		A > B > N	A > N > B	B > A > N	B > N > A	N > A > B	N > B > A	Unchanged	Reversed	%
Entrant dominated	A > B	17	2	13	6	2	0	21	19	47.5
	B > A	7	1	19	26	1	1	46	9	16.4
Entrant extreme	A > B	12	1	11	6	0	3	13	20	60.6
	B > A	11	0	9	19	3	22	50	14	21.9
Entrant dominating	A > B	1	5	1	2	10	9	16	12	42.9
	B > A	1	2	3	4	15	40	47	18	27.7
Entrant compromise	A > B	1	13	2	2	8	11	22	15	40.5
	B > A	0	3	4	12	9	21	37	12	24.5

names and many attributes, some of which may be categorical ones. If consumers followed simplifying rules that focused on few dimensions (and, if relevant, also treated brand as a continuous attribute measured by desirability), then the results presented here seem likely to be replicated. Moreover, if subjects were more involved (i.e., actually purchasing the products), then small differences might be even more noticeable, making the results even stronger. However, given most consumers and most markets, the effects found here are likely to be less noticeable in the real world. Clearly, further research is needed to establish the external validity of these findings.

CONCLUSION

Two experiments using different judgment measurement methods provide consistent findings that the entry of different new brands affects subjective brand judgments. The results are based on analysis both at the attribute level (study 1) and at the holistic or overall brand similarity judgment level (study 2). Furthermore, changes in brand choice and preference in the data are consistent with judgment changes.

The results support the growing literature on context effects in judgment. Specifically, they support the existence of range and frequency effects (Parducci 1974) and a categorization/object density effect (Krumhansl 1978) in the context of new brand entry. When an inferior brand is introduced in the two-dimensional attribute space as in Huber et al. (1982), it enhances the perceptions of the superior existing brand, according to the range and frequency effects. As the dominating brand is pushed to a higher level in the perceptual space, its chance of being chosen increases, holding other factors constant. Furthermore, if the new inferior brand is positioned close enough to the existing brand, it may be categorized as in a subgroup with the superior brand and lose in comparison to the existing brand (Carpenter and Nakamoto 1989). Thus, the findings in this article provide an alternative explanation for the process by which the attraction effect operates.

Of course other changes besides a single new brand entry can affect perceptions and preferences. These include technological improvements of an existing brand or a simultaneous entry of multiple brands, and further work is needed to establish their impact. Moreover, the strategic implications of this analysis are quite interesting, including entry encouragement for an inferior brand near an existing brand as a means of increasing share. These and other topics are left to future research.

APPENDIX A

TABLE A1

POSITIONS FOR EXISTING AND NEW BRANDS (Study 1)

Products and attributes	Brand A	Brand B	Brand C	Entry 1	Entry 2
Car:					
Acceleration (seconds to reach 60 mph)	13.7	12.5	11.3	11.9	13.1
TV set:					
Screen resolution (lines)	305	345	375	340	370
Durability (weeks before breakdown)	260	234	202	228	189
Apartment:					
Size (square feet)	360	412	516	372	424
Closeness to campus (seconds of walking)	420	540	780	400	520

APPENDIX B

TABLE B1

POSITIONS FOR EXISTING AND NEW BRANDS (Study 2)

Products and attributes	Competitor (A)	Target (B)	Entrant dominated	Entrant extreme	Entrant dominating	Entrant compromise
Calculator battery:						
Expected life (hours)	29	20	16	16	24	24
Price/pair ($)	3.25	2.15	2.70	1.60	1.60	2.70
Compact sedan:						
Fuel efficiency (mpg)	29	38	34	42	42	34
Acceleration (seconds to reach 60 mph)	10	14	16	16	12	12
Light bulb:						
Expected life (hours)	750	1,050	900	1,200	1,200	900
Light output (lumens)	1,200	850	675	675	1,025	1,025
TV set:						
Durability (months)	84	60	48	48	72	72
Screen resolution (lines)	285	375	330	420	420	330

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