Negative Spillover in Brand Portfolios: Exploring the Antecedents of Asymmetric Effects

Marketers cultivate brand relatedness in their brand portfolios to increase marketing efficiency through positive spillover of brand equity. However, creating linkages between brands may also make them vulnerable to negative spillover. This research investigates the structure of relatedness in a brand portfolio to understand the nature of spillover effects. The results of two experiments show that the magnitude of spillover between brands is a function of not only the strength of brand associations but also their directionality. The results also show that the directional strength of association is influenced by the number and salience of associations linked to each brand. The authors draw implications for a theoretical understanding of spillover effects in marketing, as well as for the management of brand portfolios.

Keywords: product-harm crises, spillover effects, association asymmetry, brand portfolio

The conventional single-brand company and stand-alone brands are increasingly rare (Laforet and Saunders 1999). Complex brand portfolios with multiple brands, subbrands, endorsed brands, and cobrands are ubiquitous because brand relatedness helps sellers fulfill market segmentation, brand strategy, and marketing efficiency objectives (Aaker and Joachimsthaler 2000). Relatedness is cultivated through a variety of marketing means, including the use of common brand names and logos, similar trade dress and design, similar or related advertising, promotion of complementary usage, and even proximate shelf location (Aaker and Joachimsthaler 2000; Rajagopal and Sanchez 2004). After they are established, consumers’ perceptions of brand relatedness influence the processing of brand-related external information. Indeed, a brand cannot be isolated from exposure to information about related brands; inevitably, it becomes subject to indirect effects. For the most part, these indirect effects are intended to be positive, as when affect associated with a well-known brand spills over onto brands within the same brand portfolio. However, increased brand relatedness may also expose brands to unintended risk from related brands in a portfolio when negative incidents (e.g., product-harm crises) occur. For researchers and marketers alike, the implication is that neglecting indirect effects on brands limits the understanding of the antecedents of important marketing constructs, such as brand evaluations and purchase likelihood.

Spillover from extension products to parent brand evaluations (e.g., John, Loken, and Joiner 1998) and from one brand to competing brands within the same product category (Roehm and Tybout 2006) has been previously documented. Such studies demonstrate that the strength of linkages between brands and their products or product category is a good predictor of the magnitude of spillover. However, brand linkages can be characterized by more than just the strength of association. Associative network theory (e.g., Collins and Loftus 1975) suggests that linkages between two concepts can point in both directions. Taking the directionality of linkages into account suggests a pattern of spillover that cannot be predicted on the basis of non-directional strength of association alone. For example, negative information about Special K breakfast cereal might not affect evaluations of Corn Flakes to the same extent as the same information about Corn Flakes affects evaluations of Special K. In particular, it becomes necessary to spell out which of the two directional linkages between brands predicts the spillover from one to the other. From a marketing standpoint, asymmetric strength of association suggests asymmetric vulnerability of brands in a portfolio. Ignoring the directional nature of brand associations could lead to inaccurate predictions and expose brands to unintended risk if the incorrect direction of the linkage is used to predict spillover. However, the directionality of brand associations has been only conceptually proposed (e.g., Farquhar and Herr 1993) but never empirically examined, nor has the impact of association asymmetry on spillover effects received much research attention.
If the directionality of association indeed influences the pattern of spillover, the antecedents of asymmetry deserve attention because these antecedents determine the network structure that guides the subsequent processing of external information and its indirect effects on brands. Previous research has primarily examined brand-related linkages as part of category structures (e.g., Farquhar, Herr, and Fazio 1990). It suggests that brand–category linkages can be asymmetric in strength and that this asymmetry influences how consumers process brand-related information. However, little is known about the drivers of association asymmetry or whether asymmetry indeed exists in linkages between brands in a brand portfolio. An understanding of the structure of interbrand relatedness would not only sharpen our predictions about spillover but also provide guidance in the design of brand portfolio architecture.

The objectives of this article are to examine the impact of both the strength and the directionality of association on spillover, as well as the antecedents of association asymmetry. A typical brand portfolio consists of a parent brand and subbrands as nodes and linkages of varying strength between these entities as the basic elements. We examine spillover by introducing negatively valenced information (i.e., product-harm crises) that implicates different brand entities within the portfolio and by predicting and observing the indirect negative consequences on related brands. Findings from two experiments show that spillover is influenced by directional strength of association between brands and that the directional strength of association is a function of the number and salience of associations linked to each brand. From these results, we draw theoretical implications for spillover effects in marketing and suggestions for the management of brand portfolios.

Cognitive Brand Networks

Our examination of the impact of external information on consumers’ brand evaluations begins with the premise that brand representations are not cognitively independent. However, this premise still leaves open the choice of representational theory and the nature of brand associations that we can use to formulate our predictions. The marketing literature has conceptualized brand associations using both categorization theory and associative network theory. Categorization theory imposes a hierarchical structure on consumers’ cognitive representation and emphasizes a brand’s graded product category membership (its typicality) according to semantic feature similarities (Loken and Ward 1990; Sujan 1985). The focus of studies using the categorization model has been on examining product category–brand or brand–product relationships rather than brand–brand relationships.

In a brand portfolio, category membership is one of many ways that brands can be linked. Other ways that brands can be linked include the common parent brand name, phonetic similarity, spatial proximity (e.g., brands placed closely on the shelf), and goal congruence (Ratneswar, Pechmann, and Shocker 1996). For example, Nescafé and Nestea may be linked in consumers’ memory because of their phonetically similar brand names and because they share a similar trade dress and design, in addition to their common membership of the beverage category.

Associative network theory (Collins and Loftus 1975) provides a general representation that captures the many types of relatedness that can occur between brands in a portfolio. This theory conceptualizes brand knowledge as consisting of a brand node to which a variety of associations, such as brand claims, evaluations, and attributes, are linked (Keller 1993; Morrin 1999). An extension of this conceptualization of brands as nodes captures the relatedness between brands by positing linkages between nodes. Within a brand portfolio, firms’ family-branding initiatives can be viewed as attempts to establish cognitive linkages between the parent brand and its subbrands or among subbrands. For example, Unilever’s ice-cream brand in Europe, Ola, is associated with several subbrands that are often presented together in a single print advertisement. After they are established, these links can gain strength through repeated exposure and additional learning opportunities. Furthermore, because subbrands within a brand portfolio often share similar quality standards, brand image, and advertising execution elements, consumers may also use these additional cues to organize their mental representation of brand portfolios. Accordingly, we conceptualize the representation of brand portfolio information as a brand network that consists of a set of interconnected brand nodes. In a managerial illustration of brand architecture, Aaker and Joachimsthaler (2000) use specifications such as endorsed brands, subbrands, and cobrands to describe different brand entities involved in a brand portfolio. In this research, we use the specification “subbrand” to refer to any brand entity (e.g., Nescafé, KitKat) that carries a part of the product line within the parent brand portfolio (e.g., Nestlé).

Spillover as a Cognitive Process

Strength of Brand Relatedness and Spillover

Spillover effects in a brand network can be viewed as the combination of two consecutive processes: the retrieval of related nodes and their updating. Retrieval is considered the result of “spreading activation” through the associative network (Collins and Loftus 1975). In the context of brand portfolios, a brand node (referred to as the “origin brand”) is primed and activated by external information, and this activation spreads to related brand nodes (referred to as “destination brands”) through associative network linkages. Brand relatedness—the strength of association between brands—is reflected in the probability of brand retrieval and the level of activation at the destination brands (Morrin 1999; Nedungadi 1990). When strength of association is retrieved, it may also determine the extent of updating of these brands. Prior research in attitude and information integration (e.g., Olson and Zanna 1993) has suggested that brand evaluation updating occurs when consumers are exposed to valenced messages, and the extent of updating depends on message memory and the amount of elaboration triggered by the message. In the context of brand portfolios, strong associations between brands render the information at the origin brand more salient and relevant at the destina-
tion node (Chapman and Aylesworth 1999), and therefore a greater extent of updating in the destination node may be expected. The resultant updating of the destination node provides a measure of the spillover effect.

That the magnitude of spillover is a function of the strength of association has been shown in previous research. For example, Roehm and Tybout (2006) find that perceived similarity between brands makes a scandal about one brand more diagnostic to competitor brands and leads to more spillover. Their model measures similarity as a function of the shared attributes among brands. Therefore, similarity asymmetry and its consequence on spillover were not examined in their study.

**Directionality of Brand Relatedness and Spillover**

Linkages between cognitive entities may not be symmetric in strength because “the direction processed more frequently develops stronger relations” (Barsalou and Sewell 1985, p. 650). Marketing scholars who allude to directionality suggest that neglecting the directionality of brand associations can lead to erroneous predictions about consumers’ brand-related behavior. For example, Farquhar and Herr (1993) and Herr, Farquhar, and Fazio (1996) suggest that brand-building activities focus on building and strengthening the directional association from the brand to associates, such as product category, product attributes, and usage situations, whereas brand-leveraging activities depend mainly on the directional associations from these other associates to the brand, leading Holden and Lutz (1992) to the exhortation, “Ask Not What the Brand Can Evoke; Ask What Can Evoke the Brand?”

Similarly, in a brand network, the directional strength of association between brand nodes may vary, and such differences can be critical in predicting the pattern of spillover in the network. In Figure 1, we illustrate the structure of a simple but typical brand portfolio with a parent brand, P (e.g., Kellogg), and three subbrands, A, B, and C (e.g., Special K). We first focus on the linkages between each of the subbrands and the parent brand. The parent brand–subbrand link reflects the strength of association from the parent brand to the subbrand and can be used to predict the extent to which the parent brand evokes the subbrand; conversely, the subbrand–parent brand link reflects the likelihood that the subbrand will evoke the parent brand.

If a distinction between the two directions of association exists, the directionality of association should influence the pattern of spillover. In other words, if the subbrand–parent brand link is not of the same strength as the parent brand–subbrand link, we expect to observe a different magnitude of spillover, depending on the direction. However, the question still remains, Which of the two links predicts the spillover on the parent brand when the crisis occurs at the subbrand, and vice versa? Given that negative events such as product-harm crises usually occur at the subbrand level, we consider the spillover of subbrand crises onto the parent brand. On the basis of the retrieval–updating process posited to underpin spillover, we propose that when a subbrand is the locus of the initial activation, the subbrand–parent brand link serves as the pathway for spreading activation and the consequent retrieval and updating of the parent brand node. Therefore, as a first step, we propose to test the extent to which spillover to the parent brand due to negative information at a subbrand is a function of the subbrand–parent brand link strength rather than the parent brand–subbrand link strength. Thus:

**H1:** Spillover from subbrand to parent brand is a function of the subbrand–parent brand link strength rather than the parent brand–subbrand link strength.

Asymmetry may also exist in the subbrand–subbrand link. Therefore, determining directionality of association is important in predicting spillover between subbrands. In other words, if the strength of association between subbrands is asymmetric, the magnitude of spillover will be asymmetric. Associative network theories indicate that the strength of a link depends not only on the quantity and quality of processing but also on the relative importance of the link to a conceptual node. Specifically, the amount of activation spreading from a brand node along a linkage is a function of the strength of that linkage relative to the sum of strengths of all linkages emanating from that brand node. Therefore, given a fixed level of activation at a node, the more links it radiates, the weaker is the activation that emanates toward any one link. This effect is referred to as the “fan” effect in Anderson’s (1983) spreading activation model (see also Kahana 2002). In a brand network, not all subbrands have equal salience. Some subbrands are more salient or dominant in the network and have more links emanating from them than others. We expect this asymmetry in associations to lead to asymmetric spillover between subbrands. Thus:

**H2:** Spillover between subbrands is a function of the directional strength of association between subbrands. In particular,

(a) The spillover between Subbrands A and B is asymmetric when the strength of association between A and B is asymmetric, and

(b) Negative information at Subbrand A has greater spillover on Subbrand B than on Subbrand C when the A–B association is stronger than the A–C association.

![FIGURE 1](image.png)

**FIGURE 1**
An Example Associative Brand Network
Representing a Brand Portfolio

- **Parent Brand P**
- **Subbrand A**
- **Subbrand B**
- **Subbrand C**

S: Strong association
W: Weak association
S/W: Either strong or weak association

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S/W: Either strong or weak association
W: Weak association
S: Strong association
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Experiment 1a

The purpose of Experiment 1a is to examine the directionality and asymmetric of spillover in brand portfolios. A total of 387 students participated in a series of pretests and the main study in exchange for entry into lotteries with small prizes. The experimental stimuli we used in this study were snack bars and ice cream, products that are highly relevant and familiar to the participants. Of the 185 students who participated in the main study, 47.6% were female, 59.5% were business students, and 40.5% were law students. Participants in the pretests were drawn from the same pool as the main study.

Pretests

We conducted five pretests with the following objectives: (1) to select a suitable brand portfolio for hypothesis testing, (2) to test the fictitious product-harm crisis stories to be used as stimuli for readability and realism, and (3) to assess baseline familiarity and brand evaluations for brands in the selected portfolio. Pretest 1 measured the directional strength of association from subbrands to their parent brands using a computer-based response time sequential priming method. Response time sequential priming is well established in social psychology and consumer research as a method for measuring the strength of association between nodes in a cognitive structure (e.g., Bargh and Chartrand 2000; Herr, Farquhar, and Fazio 1996). Participants were exposed to a prime and then a target after a short delay (referred to as “stimulus onset asynchrony”). Following established practice (e.g., Herr, Farquhar, and Fazio 1996), we set the stimulus onset asynchrony at 750 milliseconds (ms). We asked right-handed participants to respond to the question of “relatedness” between two brands that appeared on a computer screen by pressing the “M” (yes) or “Z” (no) key (we used the reverse pattern of keys for left-handed participants) as rapidly as possible while remaining accurate in their responses. There were 34 participants in Pretest 1. The task consisted of four practice questions, followed by five blocks of eight questions each (four experimental questions and four filler questions) in a randomized order. The first word in each pair was a subbrand (e.g., Cornetto Flakes), and after a delay of 750 ms, a parent brand (e.g., Kellogg) that may or may not have been related appeared on the screen as the second word. The response latency, measured in ms, is taken as an inverse indicator of the strength of association between the two brands.\(^1\) We tested several consumer packaged goods brand portfolios as part of the initial stimulus pool. Criteria for the selection of a stimulus set were that it needed to include several subbrands associated with the parent brand at varying levels of strength (see Figure 1). On the basis of the results of Pretest 1, we selected the Ola ice-cream brand portfolio (with subbrands Raket, Cornetto, and Magnum) for Experiment 1a. The results show that the strengths of the Magnum–Ola and Cornetto–Ola associations are both stronger than the Raket–Ola association (836

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\(^{1}\)Participants who incorrectly answered the relatedness question apparently did not associate subbrands with the parent brand, and therefore we did not include them in further analysis. The same was done in Pretest 2.
Cornetto association is equivalent (2.88 versus 2.84; \( t_{31} = .14, p > .80 \)). The relative strengths of association between each pair of brands in the Ola portfolio appear in Figure 2.

Pretest 5 measured baseline brand familiarity and brand attitudes among 74 participants. The results showed that participants were familiar with the Ola brands (M = 5.59, 5.91, 5.91, and 5.53 for Ola, Cornetto, Magnum, and Raket, respectively; 7 = “familiar”; \( ps > .10 \)). Participants also had similar initial brand attitudes toward these brands (M = 5.62, 5.89, 5.53, and 5.52, respectively; 7 = “favorable”; \( ps > .10 \)).

**Experimental Procedure**

We randomly assigned 185 participants to one of the three experimental groups and one control group. In the experimental groups, we employed negative information—in particular, product-harm crises—as an external information prime because the spillover effects through the brand network are likely to be pronounced and, therefore, more easily detectable from a methodological standpoint (e.g., Ahluwalia, Burnkrant, and Unnava 2000). Participants in each experimental group were exposed to the same crisis story about one of the three subbrands (Magnum, Cornetto, or Raket). In this manner, we manipulated the locus of the product-harm crisis to vary strength of association with other brands. After reading the crisis story, participants evaluated the three subbrands—Magnum, Cornetto, and Raket—in a counterbalanced order and the parent brand Ola. Next, participants evaluated the perceived severity of the crisis story on a seven-point scale (“not at all severe” and “very severe”) and provided demographic information. Participants were then debriefed and thanked. Those in the control group evaluated the brands without reading the crisis story.

**Dependent Variables**

Consistent with previous research on brands and negative information, we employed a composite measurement of brand evaluations, including dimensions of brand attitude (“negative/positive,” “bad/good,” “unfavorable/favorable”), brand trust (“not at all trustworthy/very trustworthy,” “not at all reliable/very reliable,” “not at all dependable/very dependable”), perceived quality of the brand and the product (“low quality/high quality”), brand purchase likelihood (“not at all likely/very likely”), and brand desirability (“not at all desirable/very desirable”) (Cronbach’s \( \alpha = .94 \)) (Ahluwalia, Burnkrant, and Unnava 2000; Dawar and Pilutla 2000). The mean of the ten-item scale serves as the dependent variable.

**Results**

The manipulation check showed that the crisis was perceived as equally severe in the three experimental groups (\( ps > .10 \)). We found no systematic differences across gender or subject majors (\( ps > .10 \)). \( H_2 \) predicted that spillover from subbrand to parent brand would be a positive function of the subbrand–parent brand link strength but not of the parent brand–subbrand link strength. As we indicated, the link strength from the parent to each of the subbrands is equivalent in our stimuli, but the subbrand–parent brand links vary in strength. We test whether crises with loci at strongly associated subbrands have a greater negative impact on parent brand evaluations than crises at weakly associated subbrands.

Pretest results showed that the Raket–Ola association is significantly weaker than both the Magnum–Ola and the Cornetto–Ola associations. The results of a one-way analysis of variance (ANOVA) with planned contrasts showed that crises at Magnum and Cornetto had significantly stronger effects on Ola than did a crisis at Raket (OlaRaket crisis = 4.66 versus OlaMagnum crisis = 4.13; \( t_{74} = 2.13, p < .05 \); OlaRaket crisis = 4.66 versus OlaCornetto crisis = 3.69; \( t_{74} = 3.67, p < .001 \)). Furthermore, we know that the strength of the Magnum–Ola association is equivalent to the strength of the Cornetto–Ola association. The results showed that the impact of the crisis at Cornetto on Ola was not significantly different from that of the crisis at Magnum (\( t_{74} = –1.67, p = .10 \)). Therefore, \( H_1 \) is supported; the magnitude of spillover at the parent brand is positively related to the strength of subbrand–parent brand association. Means of brand evaluations in the control and experimental groups appear in Table 1.

\( H_2 \) predicted that spillover between subbrands would be a function of the directional strength of association between them. \( H_{2a} \) tests whether the spillover between Subbrands A and B is asymmetric when the strength of association between them is asymmetric. In line with the pretests, the Raket–Magnum association is stronger than the Magnum–Raket association. The results of a 2 \( \times \) 2 between-subjects ANOVA with one factor for Crisis Locus (Magnum versus Raket) and the other factor representing Crisis (crisis group versus control group) showed that the Raket crisis had a greater spillover on Magnum evaluations (Magnumcontrol = 5.65 versus Magnumexperiment = 4.91; \( t_{90} = 3.87, p < .001 \)) than did the Magnum crisis on Raket evaluations (Raketcontrol = 5.06 versus Raketeexperiment = 4.99; \( t_{91} = .36, p > .70 \); \( F(1, 170) = 5.46, p < .05 \)). Next, we also know that the Cornetto–Magnum association is stronger than the Magnum–Cornetto association. The results showed that the Cornetto crisis had a greater spillover on Magnum evaluations (Magnumcontrol = 5.65 versus Magnumexperiment = 3.80; \( t_{84} = 7.89, p < .001 \)) than did the Magnum crisis on

![Figure 2](image-url)
Cornetto evaluations (Cornettoncontrol = 5.34 versus Cornettonexperiment = 4.24; t91 = 5.64, p < .001; F(1, 176) = 5.41, p < .05).

H2b tests whether the crisis at Subbrand A has a greater spillover onto B than C when the A–B association is stronger than the A–C association. A 2 × 2 mixed ANOVA with a within-subjects factor for strength of association (strong versus weak; the same participant evaluated both strong and weak subbrands associated with the subbrand implicated in the crisis) and a between-subjects factor representing a crisis (crisis group versus control group) showed that the crisis at Magnum had greater spillover on the strongly associated Cornetto than on the weakly associated Raket (Cornettoncontrol = 5.34 versus Cornettonexperiment = 4.24; t91 = 5.64, p < .001; Raketcontrol = 5.06 versus Raketexperiment 4.99; t91 = .36, p > .70; F(1, 91) = 15.62, p < .001). Similarly, we also found that the crisis at Cornetto had a greater spillover on the strongly associated Magnum than on the weakly associated Raket (Magnumcontrol = 5.65 versus Magnumexperiment = 3.80; t45 = .36, p > .70; F(1, 91) = 15.62, p < .001; Raketcontrol = 5.06 versus Raketexperiment 4.70; t45 = 1.43, p > .10; F(1, 85) = 25.73, p < .001). Overall, the results support H2.

Discussion

In Experiment 1a, we measured the directional strength of association between subbrands and the parent brand and between subbrands and found that asymmetric strength of association predicts asymmetric spillover between brands. These results indicate that both strength and directionality of association are significant predictors of spillover effects of a product-harm crisis, both from subbrands to the parent brand and between subbrands. However, a potential limitation of Experiment 1a is that we measured rather than manipulated the strength of association. Although this provides a valuable test of the hypotheses in a “naturalistic” setting, the evidence presented is correlational, not causal. In addition, the specificities of stimuli employed could potentially confound the result. We conducted Experiment 1b to address these issues.

Experiment 1b

Experimental Procedure

We used the Nestlé portfolio with the subbrands Nuts and Crunch. For simplicity, we focused on the subbrand–parent brand links in this experiment. In memory research, the rehearsal or repeated-exposure task is commonly used to strengthen the association between concepts (e.g., Posavac et al. 2001). In the experimental group, participants performed a computer-assisted priming task in which the Nuts–Nestlé and Crunch–Nestlé associations (and several filler brand associations) were strengthened through repeated sequential exposure. Each repetition required participants to respond to a question about the “relatedness” of the two brands, and an incorrect response triggered a feedback message. On the basis of previous studies (e.g., Gürhan-Canli and Maheswaran 1998), we minimized the possibility of demand effects from the repeated-exposure task by providing a cover story and instructions that focused participants on the task, and we minimized the cognitive resources available to speculate about other possible purposes of the task by including filler brands in the repeated-exposure task to minimize the possibility of making the stimulus brands salient and by scheduling a break after the completion of the priming task to clear participants’ short-term memory. After the break, participants completed a questionnaire with a crisis (the same crisis used in Experiment 1a) at the Nuts brand. The remainder of the procedure was similar to Experiment 1a. Participants in the control group completed the same procedure as those in the experimental group, but we did not manipulate the strength of association between Nuts and Nestlé and between Crunch and Nestlé through repeated exposure.

Results

Manipulation checks showed that the Nuts–Nestlé association was significantly stronger in the experimental group than in the control group (413 ms versus 1240 ms; t22 = −4.75, p < .001), as was the strength of the Crunch–Nestlé association (470 ms versus 1258 ms; t68 = −7.32, p < .001). The results showed that compared with the control group, the decline in the brand evaluations of the parent brand, Nestlé, due to the crisis spillover was greater when the strength of association was experimentally increased through rehearsal (Nestlécontrol = 4.29 versus Nestléexperiment = 3.25; t45 = 2.29, p < .05). Notably, the inclusion of the second subbrand, Crunch, enables us to gauge the spillover across subbrands. The results showed that the Crunch subbrand was more severely affected by the crisis at the Nuts subbrand in the experimental group than in the control group (Crunchcontrol = 4.42 versus

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TABLE 1

Mean Differences (Standard Error) of Brand Evaluations in Experiment 1a

<table>
<thead>
<tr>
<th>Crisis Locus</th>
<th>Raket</th>
<th>Magnum</th>
<th>Cornetto</th>
<th>Ola</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raket</td>
<td>2.64** (.1893)</td>
<td>4.91** (.1241)</td>
<td>4.70* (.1412)</td>
<td>4.66** (.1693)</td>
</tr>
<tr>
<td>Magnum</td>
<td>4.99 (.1297)</td>
<td>3.02** (.1965)</td>
<td>4.24** (.1537)</td>
<td>4.13** (.1854)</td>
</tr>
<tr>
<td>Cornetto</td>
<td>4.70 (.1813)</td>
<td>3.80** (.1827)</td>
<td>2.44** (.1550)</td>
<td>3.69** (.1837)</td>
</tr>
<tr>
<td>Control</td>
<td>5.06 (.1659)</td>
<td>5.65 (.1473)</td>
<td>5.34 (.1209)</td>
<td>5.83 (.1762)</td>
</tr>
</tbody>
</table>

*p < .01 (means in the crisis group compare with the mean in the control group).

**p < .001 (means in the crisis group compare with the mean in the control group).

F(1, 91) = 15.62, p < .001; F(1, 176) = 5.41, p < .05. Overall, the results support H2.
Crunch_{\text{control}} = 3.29; t_{40} = 3.11, p < .01). In line with associative network theory, activation at a brand node spreads out along the paths to connected nodes, and the stronger the activation, the farther the activation spreads along the paths. Therefore, we surmise that the activation at Nuts spreads to Crunch through the Nuts–Nestlé–Crunch paths and that the increase in the Nuts–Nestlé association increased the Nuts–Crunch spillover.

**Discussion**

These results indicate that the manipulated increase in the strength of the subbrand–parent brand association leads to greater crisis spillover from the subbrand to the parent brand. This finding increases our confidence in the results of Experiment 1a about the causal relationship between the directional strength of association and the magnitude of spillover effects. Overall, the results of Experiment 1 showed that associations between brands can be asymmetric (e.g., associations between Raket and Magnum and between Cornetto and Magnum) or symmetric (e.g., association between Raket and Cornetto), and asymmetric associations lead to asymmetric spillover effects. Given this finding, the question of what determines the directionality of association strength becomes relevant. We conducted Experiment 2 to delve into the antecedents of directionality.

**Experiment 2a**

**Directionality of Brand Relatedness**

Two theoretical explanations exist for the directionality of brand associations. Both suggest that asymmetry is a function of the number of associations of a brand. However, they differ when it comes to making predictions about asymmetry as a function of the salience of associations. Experiment 2a tests their common prediction, and Experiment 2b examines their divergent predictions. As we discussed previously, the first theory is the fan effect from associative network theory (Anderson 1983; Collins and Loftus 1975), which suggests that given a fixed level of activation, the more links a node has, the less activation is available for any one link. When two related brands have different numbers of associations, the strength of the link from the brand with fewer associations to the brand with more associations is stronger than the reciprocal link.

The second theoretical explanation resides in Tversky’s (1977) contrast model. This model suggests that the perceived similarity between Brand A and Brand B is expressed as a function of their common features (A ∩ B) and distinctive features (A − B: distinctive features of Brand A; B − A: distinctive features of Brand B):

\[ S(a, b) = \theta f(A \cap B) - af(A - B) - \beta f(B - A). \]

The parameters \( \theta, a, \) and \( \beta \) are weights that represent the importance of each feature set for the similarity judgment, and the \( f \) function measures the salience of features. When judging the similarity of Brand A to Brand B, Brand A’s features are weighed more heavily than brand B’s (\( a > \beta \)).

Thus, the distinctive features of Brand A detract more from similarity than the distinctive features of Brand B. Therefore, when Brand A (e.g., Shasta Cola) has fewer distinctive features (and, therefore, fewer features in total) than Brand B (e.g., Coca-Cola) (assuming that features are equally salient), this model predicts that Brand A will be judged more similar to Brand B than will Brand B to Brand A. In a brand portfolio, subbrands may be linked to different numbers of features because of different levels of brand familiarity, order of entry to the marketplace, or brand positioning. On the basis of the preceding discussion, we expect that the subbrand with fewer features will be perceived as more similar to the subbrand with more features than the reciprocal. The directional similarity judgment (e.g., similarity of Brand A to Brand B) is said to be positively related to the level of activation spread from one brand to the other—in other words, the directional strength of association from Brand A to Brand B (Ulhaque and Bahn 1992).

Therefore, both associative network theory and the contrast model predict the following:

**H3:** The strength of association from the brand with fewer associations to the brand with more associations is stronger than the reciprocal strength of association.

**Stimulus Development**

Two fictitious subbrands with different numbers of brand associations were required to test H3. First, we adapted six fictitious subbrand names (e.g., Tristix, Portello, Wheatello) from existing brand names in the product categories of ice cream, candy bars, and cookies; we told participants that these subbrands were from parent brands such as Good Humor, Nestlé, and Kraft. To avoid the confounding effect of brand specifics, we invited 12 participants to test the memorability and suitability of these fictitious brand names (Schmitt, Tavassoli, and Millard 1993). The results showed no differences in memorability and suitability among them (\( ps > .10 \)). Participants evaluated how realistic the associations presented for each fictitious brand were. The results showed that the descriptions of the Tristix and Portello ice-cream products (developed for the Good Humor portfolio) were considered the most realistic. Second, we selected nine associations (eight distinctive and one common) for the Tristix subbrand and three (two distinctive and one common) for Portello to manipulate the number of associations linked to each brand. These associations describe the product category and company that the subbrands belong to, the type of ice cream, packaging, flavor, ingredients, nutrition, and so forth.

\[ \text{Crunch}_{\text{experiment}} = 3.29; t_{40} = 3.11, p < .01\]
Experimental Procedure

There were 48 participants in the experiment, and they were broken down into groups of up to 15 participants per session in a behavioral research laboratory. We instructed participants to learn different numbers of associations of the fictitious brands Tristix (nine associations) and Portello (three associations) and the filler brand Activia (three associations). To emphasize each association and avoid confusion, we presented these associations on 15 cards and separated them into three piles, one pile for each brand. We stacked the three piles of cards in a counterbalanced order to avoid the effect of directional learning. We instructed participants to remember as much information as possible in five minutes and provided them with paper and a pencil to record the associations, thus facilitating learning. Next, participants completed an unrelated filler questionnaire consisting of one page of text and 20 questions to clear their short-term memory. Then, we tested the directional strength of association between the brands Tristix and Portello together with 32 filler brands in a sequential priming task (the same method as in Pretests 3 and 4 of Experiment 1a). We tested each participant randomly on either the forward or the reciprocal link. Immediately after this task, participants wrote down the features they could recall for the brands Tristix and Portello. Finally, we asked participants about their familiarity with ice-cream products and then debriefed them.

Results

Two judges were invited to count the number of recalled features for Tristix and Portello. The manipulation check showed that Tristix was linked to significantly more associations in participants’ memory than Portello (6.05 versus 2.85; t_{47} = 15.48, p < .001). Furthermore, the results showed that there was no significant difference in category familiarity between the group tested on the forward strength of association and the group tested on the reciprocal strength of association (4.44 versus 4.80; t_{46} = 1.02, p > .30).

H₃ predicted that the directionality of association strength would be influenced by the number of associations linked to brands. The results of an independent t-test showed that the Portello–Tristix association was significantly stronger than the Tristix–Portello association (5.00 versus 4.12; t_{46} = 2.33, p < .05). This result supports H₃: the associative link from brands with fewer associations (Portello) to brands with more associations (Tristix) was stronger than the reciprocal link.

Discussion

In Experiment 2a, we experimentally manipulated the number of associations linked to two fictitious subbrands and found that the brand with fewer associations was linked more strongly to the brand with more associations than the reciprocal link. This result supported the predictions of both associative network theory and the contrast model about the effect of the number of associations (or features) on the directional strength of association. Together with the findings in Experiment 1, we showed that asymmetric strength of association leads to asymmetric spillover between brands and that the number of associations linked to each brand is an important antecedent of association asymmetry.

However, the strength of directional association is influenced not only by the structural properties of brand associations, such as the number of associations linked to each brand, but also, potentially, by the salience of these associations. This contextual property (i.e., association salience) is managerially important because when a brand is affected by negative news, remedy strategies often involve changing the salience of certain brand associations. For example, managers may attempt to quarantine the affected brand by differentiating the affected brand (emphasizing its unique features) from the other brands in the portfolio. From a theoretical perspective, the effectiveness of such strategies depends on whether the priming of brand associations influences directional strength of association from the affected brand to other brands. Experiment 2b examines these managerial and theoretical issues.

Experiment 2b also allows us to overcome some of the limitations of Experiment 2a. For example, because Experiment 2a employed fictitious brand stimuli that participants first encountered in the laboratory, a common association between the brands may have been that their associations were learned in the same laboratory setting. To overcome this potential shortcoming, we employed real brand stimuli in Experiment 2b.

Impact of Priming Brand Associations

Intuitively, actively differentiating the harmed brand by, for example, proclaiming its distinctive features and muting its common features may limit the extent and scope of spillover because it reduces its strength of association with other brands. However, the action of differentiation may also prime the harmed brand further. Associative network theory and the contrast model make divergent predictions.

First, the contrast model suggests that the perception of similarity between brands increases with the measure of common features and decreases with the measure of distinctive features. The contribution of these feature sets to overall similarity depends on both the weights (θ, a, and β) and the salience (the f function) of the features. The weights of features depend on the task context (e.g., similarity or dissimilarity judgment) and the direction of judgment (e.g., features of Brand A weigh more heavily than those of Brand B when judging similarity of Brand A to Brand B). The salience of a stimulus depends on several factors, including intensity, familiarity, recency, frequency, and informational content (Tversky and Gati 1978). Given the fixed weight of each feature set, priming the distinctive features of a brand will increase the salience of these features and therefore should decrease the perceived similarity of this brand to other brands. Conversely, if the common features are primed, the salience of the common feature set will be increased, heightening the perceived similarity of the brands.

Second, associative network theory suggests that the activation of a destination node depends not only on the number of links emanating from the origin node but also on
the strength of activation of the origin node. The strength of activation may vary as a function of the salience of brand priming (Nedungadi 1990), and in turn brand salience may be heightened when an association (e.g., a feature) of the origin brand is primed. In other words, priming associations of an origin brand, regardless of whether they are distinctive or common associations, should increase the level of activation at the origin brand and thus increase the level of activation at the destination brand. Therefore, we propose the following competing hypotheses:

H4: Under the contrast model, priming common associations of an origin brand increases the strength of association from the origin brand to the destination brand, but priming distinctive associations of the origin brand decreases the strength of association from the origin brand to the destination brand.

H5: Under associative network theory, priming associations of an origin brand, regardless of whether they are distinctive or common associations, increases the strength of association from the origin brand to the destination brand.

**Stimulus Development**

To test these hypotheses, we require two suitable subbrands that have distinctive and common associations and are linked to different numbers of associations. We presented six subbrands (e.g., Nescafé, KitKat, Corn Flakes) from two brand portfolios (Nestlé and Kellogg) in a randomized order to 14 participants. Participants were asked to “list the features of these brands that come to mind” and were given two minutes for each brand (Johnson 1986). Two judges counted the number of features. The results showed that among the six brands, Nescafé had significantly fewer features than Nestea (2.28 versus 5.36; \( t_{13} = -5.40, p < .001 \)). Next, the two judges coded the common and distinctive features listed for the Nescafé and Nestea brands. Features were coded as “unique associations” if different wording was used, and they were coded as “common associations” if similar wording was used (Johnson 1986). The judges were in agreement 90% of the time, and disagreements were resolved by discussion. The listed common associations included the parent brand, Nestlé, and the beverage product category (e.g., “It is a drink”). For the distinctive associations, the most frequently mentioned ones were that Nescafé is an iced tea drink and had different flavors, but Nescafé is an instant coffee and is sold in the form of powder (e.g., “ground coffee”).

**Experimental Procedure**

We randomly assigned 132 participants to two control groups and four experimental groups in a 3 (no priming, distinctive association priming, common association priming) × 2 (direction of association) between-subjects design. In the experimental groups, participants were first instructed to state their agreement (“agree” or “disagree”) with the information on six cards; each card described a brand association. Of these six statements, four were filler statements, and two statements primed two common or two distinctive associations of the stimulus brand. Next, we tested the directional strength of association between the stimulus brands together with filler brands in a sequential priming task (the same method as in Pretests 3 and 4 of Experiment 1a). After this task, we gave participants an unrelated filler questionnaire to clear their short-term memory. Finally, participants listed as many features of Nescafé and Nestea as they could recall in two minutes for each brand and then were debriefed.

**Results**

The manipulation check showed that Nestea was linked to significantly more associations in participants’ memory than Nescafé (5.05 versus 2.15; \( t_{131} = 19.56, p < .001 \)). The results in the control group showed that the Nescafé–Nestea association is significantly stronger than the Nestea–Nescafé association (3.52 versus 2.52; \( t_{46} = 2.48, p < .05 \)). This result further corroborates the finding of Experiment 2a with real brand stimuli. Specifically, the strength of association is asymmetric when consumers associate different numbers of associations with two brands.

H4 and H5 offered different predictions about the impact of priming brand associations on the directional strength of association. Specifically, H4 predicted that the linkage would be strengthened when priming common associations and weakened when priming distinctive associations, whereas H5 predicted an equivalent effect of priming common and distinctive brand associations. We first analyzed the impact of priming common associations. The results showed that the Nescafé–Nestea association was significantly strengthened when the common associations of Nescafé were primed (3.52 versus 4.55; \( t_{43} = -2.05, p < .05 \), as was the strength of the Nestea–Nescafé association when Nescafé was primed (2.52 versus 3.84; \( t_{43} = -2.99, p < .01 \)).

Next, we analyzed the impact of priming distinctive associations. The results showed that the Nescafé–Nestea association increased when the distinctive associations of Nescafé were primed (3.52 versus 4.30; \( t_{44} = -1.71, p < .05 \), as did the Nestea–Nescafé association when Nestea was primed (2.52 versus 3.70; \( t_{43} = -2.37, p < .05 \)). These findings support H5; priming both common and distinctive brand associations increases the directional strength of association.

**Discussion**

In Experiment 2b, we found that compared with the control group, in which no association was primed, priming common and distinctive associations both increased the directional strength of association between brands. This finding favors the prediction of associative network theory over that of the contrast model. In line with associative network theory, the findings show that priming associations increases the level of activation emanating from the origin brand. The increased activation at the origin brand can temporarily increase the activation at the destination brand, which affects the strength of relatedness between brands. In addition, our results for the asymmetric association between the real subbrands Nescafé and Nestea provide further evidence in support of H3.

Overall, Experiments 1 and 2 examined the directional diversity of brand association and its impact on spillover in a brand portfolio. In Experiment 1, we found that asymmetry
exists and governs spillover. In Experiment 2, we found that the directional strength of association is influenced by both the number of associations linked to each brand and the salience of those associations.

**General Discussion**

Cognitive brand relatedness makes brands subject to spillover effects from other brands in a brand portfolio. These indirect antecedents of brand evaluations have received relatively little attention in the marketing literature. Our research examines the negative spillover of product-harm crises in brand portfolios. We found that the pattern of spillover is a function of both strength and directionality of brand association. In turn, the strength and the directionality of brand linkages are influenced by the number of associations linked to each brand and the salience of these associations.

**Theoretical Implications**

Our findings carry implications for the cognitive representation of brand portfolios and the consequences of the properties of these representations on spillover effects. Previous research (e.g., Nedungadi 1990) that examined indirect effects between brands through product category linkages suggests that there are asymmetric effects between brands when they are associated with the category at varying levels of strength. However, we found that the magnitude of spillover is predicted by the total strength of association between subbrands rather than by the strength of filial linkages between subbrands and the parent brand. For example, Cornetto has stronger associations with Ola than does Raket, but the total strength of the Cornetto–Raket association is equivalent to that of the Raket–Cornetto association, which results in symmetric spillover between Raket and Cornetto. Similarly, both Magnum and Cornetto are strongly associated with Ola, but the total strength of the Magnum–Cornetto association is weaker than that of the Cornetto–Magnum association, which leads to asymmetric spillover between the two subbrands. These findings suggest that many types of commonality linkages define relationships between brands in a portfolio, and this can help predict spillover.

The importance of directionality of linkages for marketing phenomena has been conceptually highlighted in previous research, but it has never been empirically tested (Farquhar and Herr 1993; Holden and Lutz 1992). Assuming that linkages are nondirectional, as previous studies have done, leads to the measurement of one of the directions of the linkage and ignores the other. This omission may lead to erroneous predictions if the incorrect direction of the linkage is measured in predicting spillover. Our studies not only provide empirical tests of the directionality hypothesis but also examine the consequences of such directional linkages on spillover in brand portfolios. We find that accurate predictions of spillover cannot be made without specifying the direction of the linkage between two brands. Spillover from Brand A to Brand B depends on the directional strength of association from Brand A to Brand B and not that from Brand B to Brand A.

The finding that asymmetric associations lead to asymmetric spillover also has implications for the interpretation of the spillover effects found in previous studies. For example, Roehm and Tybout (2006) find that a brand scandal may affect competitor brands that are perceived as similar to the affected brand. Competing brands may preemptively issue denials in an attempt to distance themselves from the source of the scandal. However, issuing a denial is effective only when scandal spillover has indeed occurred. Our findings suggest that a more complex set of effects may be at play. For example, perceptions of similarity between a brand and its competitor brands may be asymmetric, leading to the possibility of asymmetric spillover. In other words, given the same scandal, a brand may not affect its competitor brand to the same extent as a scandal for the competitor would affect the original brand. Therefore, issuing a denial should not be an automatic reaction when a related brand in a category is implicated in a scandal.

To understand the sources of asymmetric linkage better, we examined factors that influence the directional strength of association between brands. We found that brands with fewer associations have stronger linkages to brands with more associations than vice versa. This finding provides empirical evidence for both the “fan effect” in associative network theory and the “asymmetric similarity judgment” in the contrast model. We also found that priming brand associations, regardless of whether they are common or distinctive associations, can increase the directional strength of association. On the one hand, this finding supports associative network theory in that the increase in the level of activation at the origin brand can strengthen its association with the destination brand. On the other hand, it may also corroborate some of the previous discussions on the limitations of the contrast model. For example, Johnson (1986) suggests that despite its generality, the contrast model does not specifically address the psychological process of judging similarity or how the contrasting of features proceeds. Therefore, simply priming the distinctive features of a brand may not necessarily lead to brand differentiation. For example, consumers’ processing goals may influence the judgment of similarity. Consumers who are motivated to differentiate two brands are more alert to dissimilarities than consumers who just look for general information.

Finally, the findings of association asymmetry between brands in a brand portfolio also help us understand association asymmetry between other types of cognitive entities in consumers’ memory. For example, previous research (e.g., Herr, Farquhar, and Fazio 1996) indicates that the strength of the category–brand association (referred to as “category dominance”) may be asymmetric to that of the brand–category association (referred to as “instance dominance”). However, it is unclear when and why this asymmetry occurs. On the basis of our findings, we surmise that the brand–category asymmetry may occur when consumers link different numbers of associations to the brand and to the category information node in their memory. It is also possible that a brand–category linkage will become more category dominant when category-related information is primed, and it will become more instance dominant when brand-related information is primed.
Managerial Implications

In recent years, many consumer goods companies, including Nestlé, Unilever, and S.C. Johnson, have pursued an umbrella-branding strategy, placing a parent brand on product packs and advertisements of their subbrands. This deliberate attempt to increase the strength of association between subbrands and a parent brand is driven by the potential benefits of marketing efficiency. However, our results suggest that these need to be weighed against the risks of negative spillover when one subbrand suffers an adverse event. As part of a portfolio, brands are vulnerable not just to the risks inherent in their own products and actions but also to those of other brands in the portfolio. The likelihood of adverse events that can have spillover effects may be low, but the downside is dire and exacerbated by the interlinkages between brands.

The directionality of association strength and its effect on spillover carries implications for the management of negative spillover effect. For example, a crisis at Subbrand A may not influence evaluations of Subbrand B to the same extent as the same crisis at Subbrand B influences evaluations of Subbrand A. Managers need to be aware of this asymmetric spillover to design efficient remedy strategies that avoid exposing brands to unintended risk. Furthermore, if risks of adverse events are relatively high, as they may be in some product categories, such as pharmaceuticals or children’s toys, but the benefits of parent branding are still attractive, the architecture of a brand portfolio should be designed to take advantage of associative asymmetry. Brand architectures could be designed to limit the potential spillover from subbrands considered at risk by having weaker associations with the parent brand while still maintaining potential benefits of positive spillover in the reciprocal direction.

Lured by the effect of association asymmetry, we examined the antecedents of association asymmetry and found that the number of associations linked to each brand was a significant factor. This finding has implications for brand positioning in a brand portfolio. For example, when a firm introduces a new brand, if the goal is to position the brand closely to an established brand, it may be wise to limit the number of associations introduced for the new brand. Conversely, if the goal is to differentiate the new brand, more associations will effectively help reduce the perceived similarity of this brand to other brands in the portfolio.

Furthermore, we found that priming brand associations can, at least temporarily, increase the directional strength of association from the brand to related brands. This finding indicates that when a subbrand is affected by negative information, it may not be wise to prime the distinctive associations of that brand in the hope of limiting spillover. Instead, advertising emphasis should shift to underscore the positive equity of the parent brand and/or other subbrands while advertising of the affected brand is halted. If firms do this, the positive associations of other brands in the portfolio can help neutralize the negative evaluations of the subbrand while minimizing the negative reciprocal spillover from the subbrand to the parent brand and/or other subbrands.

The finding that priming increases the directional strength of association also helps explain why negative information can sometimes affect brands that are considered only weakly related to the affected brand. Specifically, when a brand is implicated in a negative message (e.g., a product-harm crisis), it is also primed in consumers’ memory. This priming may temporarily increase the directional strength association from the affected brand to the previously weakly related brand, making it a potential target for contamination. To examine this possibility, we conducted a posttest (n = 45) to examine the impact of priming brands in negative information on the direction strength of association. The results showed that compared with the control group, respondents associated the subbrand Nestea significantly more strongly with the fictitious subbrand Nescuit (a chocolate milk cookie from Nestlé) when Nestea was implicated in a fictitious negative news report (3.06 versus 4.14; t43 = 2.10, p < .05). This result indicates that the scope of contamination imposed by a negative message in a brand portfolio may be larger than what is normally expected. Managers need not only to prepare remedies actively for brands that are obviously related to the affected brand but also to keep a close eye on brands that seem to be less related and safe.

Finally, although we chose a particular type of brand portfolio in this research to test our hypotheses, our findings carry implications for other types of brand portfolio configurations as well. Aaker and Joachimsthaler’s (2000) brand relationship spectrum depicts interbrand relationships with four types of brand portfolios: house of brands, endorsed brands, subbrands, and branded house. In the house-of-brands configuration, brands in a portfolio are often independent from one another. In this condition, if there is no cognitive relatedness between brands, no spillover should occur. In the endorsed-brands and subbrands configurations, consumers are often aware of the linkage between brands. Therefore, our predictions about the causal relationship between directional strength of association and spillover apply most explicitly in these two conditions. In the branded-house configuration, all products share the same brand name. In this condition, the brand and the product are often considered one conceptual node because priming the product automatically primes the parent brand name. In other words, in this type of portfolio, the focus is on the interproduct linkages (e.g., Balachander and Ghose 2003) rather than on interbrand linkages.

Limitations and Future Research Directions

In this research, we controlled for or kept constant several factors that might potentially moderate the relationship between our independent and dependent variables. In this section, we describe some of these because they provide avenues for further research.

We predicted the pattern and magnitude of spillover on the basis of the strength and directionality of associative linkages between brands in a portfolio. However, in examining the effects of external information on a brand network, we found that the characteristics of the information itself can also potentially influence outcomes. For example, previous research has shown that severe crises and crises
that are perceived as avoidable cause more feelings of anger and stronger emotional reactions toward the harmed brand (Folkes 1984; Weiner 2000). Next, we investigated the impact of primary network features, strength, and directionality of association on the spillover effect. However, other features of a network, such as the strength of the node itself (e.g., a major versus minor brand) and the density of a network (e.g., the number of brands in a portfolio), may also influence the nature and extent of spillover. Further research on factors such as information characteristics and other network features that might moderate negative information processing would provide a more complete understanding of the spillover effects in a brand network.

We employed negatively valenced information as a stimulus to examine how its effects spread through the network. However, an open question is whether our findings can be equally applied to the spillover of positive information. For example, negative information has been shown to be more influential than positive information in forming evaluations and decision making (Skowronski and Carlston 1989), but previous research has also indicated that the greater influence of negative information (versus positive information) is not due to its negative valence but rather to its statistically rare, distinctive, and nonmodal characteristics (Scott and Tybout 1981). Therefore, we would expect a similar pattern of spillover of negative versus positive information if both types of information were similarly accessible, diagnostic, and statistically rare. Further research might verify this prediction.

We examined the effect of the number and salience of associations linked to each brand on the association asymmetry between brands. However, literature indicates that other factors may also potentially account for asymmetry in association between pairs of objects. One such factor is the direction of processing (Barsalou and Sewell 1985). Kahana (2002) also indicates that the direction of learning two words may lead to association asymmetry between the two words (e.g., river–bank). In this research, we controlled for this factor by counterbalancing the presentation order of fictitious brands in Experiment 2a and by randomly assigning subjects to different groups in Experiment 2b in which real brands were used. Further research might experimentally manipulate the learning sequence of brands to examine the effect of processing direction on association asymmetry.

Finally, in a brand portfolio, brands may be linked by semantic similarities, such as common attributes or a shared product category (e.g., KitKat–Smarties), but they may also be linked through more superficial lexical similarities, such as phonetically or orthographically similar brand names (e.g., Nescafé–Nestea). Brand linkages based on these two types of relationships (semantic versus lexical) may have different levels of strength, depending on the way brand information was learned. For example, when brand information is learned intentionally, consumers tend to rely on semantic relationships to establish links between brands. However, when brand information is learned incidentally, consumers tend to rely on heuristics (e.g., lexical cues) to associate brands. Further studies might investigate the relative strength of these two types of relationships under different learning environment.

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