

# The Contingent Nature of the Symbolic Associations of Visual Design Elements: The Case of Brand Logo Frames

TATIANA M. FAJARDO  
JIAO ZHANG  
MICHAEL TSIROS

This research examines how situational factors influence the symbolic associations generated from visual design elements and their downstream consequences in terms of consumption intent. Specifically, this research focuses on a common and yet little studied brand design element: logo frames. The authors propose that a logo frame may be perceived as either protecting or confining, depending on the level of risk associated with a purchase. A high perception of risk increases the accessibility of a logo frame's association with protection and increases purchase intent, whereas a low perception of risk increases the accessibility of a logo frame's association with confinement and decreases purchase intent. The authors also propose that the logo frame effect may, under certain situations, extend to secondary brand identifiers (e.g., brand slogans) but will not extend to elements unrelated to brand identity (e.g., product descriptions). Six studies provide support for these propositions. The findings of this research contribute to the literature on symbolic associations by demonstrating the contingent nature of the symbolic associations triggered from a visual design element and by showing that design features can mitigate (and under certain circumstances reverse) the negative effect of increased risk perceptions on purchase intent.

*Keywords:* risk perceptions, motivated processing, visual design, branding

A logo is a visual representation of a brand. Corporations have proven willing to invest millions in designing their logos. For instance, in 2008 PepsiCo paid \$1 million to

---

Tatiana M. Fajardo (corresponding author) is an assistant professor of marketing, Marketing Department, College of Business, Florida State University, Tallahassee, FL 32306, e-mail: tfajardo@business.fsu.edu, phone: (850) 645-1021. Jiao Zhang is an assistant professor of marketing, Lundquist College of Business, University of Oregon, Eugene, OR 97403, e-mail: jzhang9@uoregon.edu, phone: (541) 346-8521. Michael Tsiros is a professor of marketing, School of Business Administration, University of Miami, Coral Gables, FL 33124, e-mail: tsiros@miami.edu, phone: (305) 284-5950. The present article is based on the first author's dissertation, conducted at the University of Miami under the supervision of the other two authors. The authors would like to thank the editor, associate editor, and three anonymous reviewers for their constructive and helpful feedback. [Supplementary materials](#) (including detailed study stimuli) will be included as an attachment in the online-only version of the article.

*Laura Peracchio and Gita Johar served as editors, and Rashmi Adaval served as associate editor for this article.*

*Advance Access publication September 10, 2016*

Arnell Group to have the Pepsi logo redesigned; similarly, the British Broadcasting Corporation (BBC) spent \$1.8 million when redesigning their logo in 1997 (Stampler 2012). Furthermore, corporations have proven furiously devoted to guarding their brand logos. Apple Inc., for example, has been involved in several lawsuits aimed at protecting its logo. They have taken legal action against both for-profit companies (e.g., Woolworths Limited) and not-for-profit entities (e.g., the New York City's GreeNYC initiative) attempting to implement logos similar in design to its own.

Brand logos are valuable because they influence how brands are perceived by consumers. Indeed, prior research has shown that visual design features of a brand logo, such as its shape (Grohmann 2008; Hagtvedt 2011; Jiang et al. 2016; Zhang, Feick, and Price 2006) and color (Labrecque and Milne 2007; Madden, Hewett, and Roth 2000), generate symbolic associations that consumers relate back to the brand. Thus brand logo design influences brand image. Given that brands with favorable images tend to produce

higher revenue and profits (Bharadwaj and Menon 1993; Margulies 1977), brand logo design is believed to influence the financial performance of a brand (Park et al. 2013).

In this research we examine how visual design features associated with a brand influence consumers' perceptions of the brand and their subsequent consumption of branded products. We contribute to the existing literature on design and symbolic associations in several ways. First, we study the symbolic associations generated from a fairly common, yet little studied design feature: frames. A frame is a visible boundary that encircles and surrounds a focal object. Given the importance of brand logos, we focus our investigation primarily on the use of frames in the design of brand logos. Although a significant proportion of brands utilize frames in their logos (e.g., General Electric, Coach, The J.M. Smucker Company), the addition of a frame remains relatively easy to implement and a potentially beneficial logo design strategy open to a majority of corporations. Still, with the exception of one study in Cutright (2012), little research has examined the symbolic associations of logo frames and how they influence consumers' perceptions of a brand, and no research, to our knowledge, has studied the downstream effects of logo frames on consumption.

Second, with the exception of Hagtvedt (2011), little research has explored the possibility that a logo design feature may trigger more than one type of symbolic association and how situational factors influence which specific symbolic association is triggered. We provide additional evidence for the contingent nature of the symbolic association of design features by showing that logo frames may trigger a symbolic association of either protection or confinement and that situational factors related to consumers' need at the time of purchase moderate the relative salience of the two associations.

Third, although perceived risk is one of the core concepts in consumer behavior that has been shown to influence consumers' evaluations and choices in almost all purchase situations (Bettman 1973; Cox 1967; Dowling and Staelin 1994; Grewal, Gotlieb, and Marmorstein 1994) and has become an important factor studied in the branding literature (Erdem 1998; Montgomery and Wernerfelt 1992), no research has explicitly and systematically examined how perceived risk may influence the symbolic associations of design features. Our research helps fill this knowledge gap by showing how perceived risk influences the type of symbolic association triggered by logo frames.

Fourth, we demonstrate that the ability of a design feature's symbolic value to influence purchase intent for branded products depends on how strongly connected the design feature is to the brand's core identity. When a design feature is associated with a primary brand identifier, such as the brand logo, its symbolic value will automatically impact a brand's image and consumers' purchase intent. However, when a design feature is associated with a

secondary brand identifier, more removed from the brand's core identity, consumers are less likely to draw symbolic inferences from the design feature, and, as a result, the design feature will have a more limited impact on consumers' purchase intent.

## THEORETICAL FRAMEWORK

### Symbolic Associations of Design Features

Visual elements (e.g., shape, color) are perceived in terms of both their technical properties and the symbolic associations they embody (e.g., softness of circular shapes or healthiness of the color green) (Blank et al. 1984). These symbolic associations lead consumers to perceive an object as having abstract properties that it may or may not objectively possess (Jiang et al. 2016; Zhang et al. 2006). While the literature on design and symbolic associations is extensive, little research has examined the contingent nature of the associations triggered by a visual design element. The idea is that most design features can generate various, conceptually distinct, associations and which association is evoked depends on internal (consumer-related) and external (situational) factors.

Initial evidence for the contingent nature of symbolic associations comes from Hagtvedt's (2011) work on incomplete typeface logos (i.e., logos with parts of the typefaces blanked out). He found that firms with incomplete typeface logos (vs. those with complete typeface logos) were perceived as both less trustworthy and more innovative, and that the relative strength of these two associations depended on consumers' regulatory focus, with the negative (positive) association of untrustworthiness (innovativeness) being stronger among prevention-focused (promotion-focused) participants or for firms associated with prevention (promotion) goals, such as insurance companies (entertainment companies).

As the preceding discussion illustrates, past research has examined how different design features impact brand associations, and researchers have begun to examine the contingent nature of the multiple symbolic associations triggered by a specific design feature. We add to this nascent research by examining the contingent nature of the symbolic associations of logo frames.

### Symbolic Associations of Logo Frames

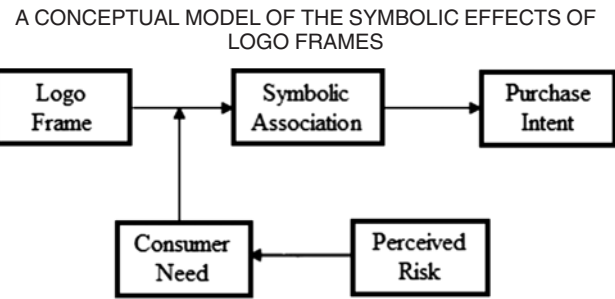
A logo frame is a graphic representation of a physical boundary surrounding a brand logo. Little research has examined whether and how logo frames influence consumers' perceptions of the brand or downstream behaviors. The only exception, to our knowledge, is a study by Cutright (2012). She asked respondents to choose between pairs of framed versus unframed brand logos and found that respondents with a low (vs. high) trait need for structure (Thompson, Naccarato, and Parker 1989) were more

likely to choose framed logos. She interpreted this finding as showing that logo frames produce the same sense of structure and order that other physical boundaries produce.

In line with this, we propose that logo frames may evoke other symbolic associations that may be reasonably attributed to physical boundaries. Specifically, we consider how logo frames, like physical boundaries, can be associated with either protection or confinement. A physical boundary surrounding a focal object isolates it from the external environment. Such isolation is desirable when it protects the object from negative environmental forces, suggesting that a physical boundary may be associated with protection but may be undesirable when it prevents the object from enjoying the benefits of positive environmental forces, suggesting that a physical boundary may be associated with confinement. Indeed, prior research supports the idea that physical boundaries can be either protecting or confining. On the one hand, research shows that physical boundaries mitigate feelings of emotional discomfort triggered by threatening environments (Belk, Seo, and Li 2007; Ger and Yenicioğlu 2004) or personal control threats (Cutright 2012), suggesting that physical boundaries may be perceived as protecting. On the other hand, research shows that physical boundaries may generate feelings of confinement. In general, small and contained spaces make people feel confined and restricted (Hall 1996), and the feelings of being confined triggered within contained spaces have been shown to encourage disengagement (Grossbart et al. 1990; Harrell, Hutt, and Anderson 1980; Palinkas 2003; Smith 2006), and influence how consumers process stimuli (Meyers-Levy and Zhu 2007) and make choices (Grossbart et al. 1990; Levav and Zhu 2009).

A critical question, then, is what influences whether a logo frame will be perceived as protecting or confining. Theories of motivated processing suggest that motivations create biases in individuals' information processing (Strachman and Gable 2006), most notably attentional biases, leading them to emphasize some aspects of a situation or stimulus over others. Attentional biases due to motivated processing may lead individuals to emphasize either the positive (Alter and Balcetis 2011; Balcetis and Dunning 2006; Erdelyi 1974) or negative, potentially threatening, aspects of a stimulus (Ditto and Lopez 1992; Kunda 1990; Mata, Ferreira, and Sherman 2013). Drawing from these previous findings on motivated information processing, we propose that consumers' primary need at the time of purchase will influence the relative salience of a logo frame's two symbolic associations. When individuals' primary need is safety and security, the association of protection will be more salient because it is more relevant to that need—it helps to satisfy it. When individuals' primary need is freedom, liberty, or self-expression, however, the association of confinement will be more salient because it is more relevant to that need—it hinders consumers' ability to satisfy it.

FIGURE 1



A general situational factor that influences the relative salience of the two different needs is consumers' risk perceptions. According to Maslow (1943), needs for safety and security are more fundamental than needs for freedom, liberty, and autonomy (Glasser 1998). Thus it is reasonable to assume that when perceived risk is high, consumers will be primarily concerned with satisfying the need for safety and security. In contrast, when perceived risk is low, and consumers are not concerned about risk reduction or protection, higher-order needs such as the need for freedom, liberty, and autonomy may become more active (Glasser 1998; Maslow 1943). This suggests that when perceived risk is high (low), consumers' need for safety (freedom) will be relatively salient, and they will be motivated to interpret a logo frame as protecting (confining). Given that an association of protection is desirable (Belk et al.; Cutright 2012; Ger and Yenicioğlu 2004), whereas an association of confinement is undesirable (Grossbart et al. 1990; Harrell et al. 1980; Levav and Zhu 2009; Palinkas 2003; Smith 2006), the preceding analysis indicates that when risk perceptions are high (low), the presence of a logo frame will increase (decrease) purchase intent. Figure 1 illustrates this conceptual model.

It is worth noting that Hagtvedt's (2011) finding that companies with incomplete (vs. complete) typeface logos are perceived to be less trustworthy under a prevention focus but more innovative under a promotion focus is in line with the idea that risk perceptions moderate the symbolic association of incomplete typeface logos. Prevention-focused consumers are generally more risk averse than promotion-focused ones (Crowe and Higgins 1997; Friedman and Förster 2001), and firms with prevention goals (e.g., insurance companies) are more closely related to risk reduction than firms with promotion goals (e.g., entertainment companies). Thus Hagtvedt's (2011) findings can be interpreted as showing that an incomplete logo's association of untrustworthiness (innovativeness) is more salient when the concept of risk reduction is more (less) prevalent.

Building on and extending Hagtvedt (2011), our research explicitly and systematically manipulates perceived risk and shows how perceived risk moderates the symbolic associations of design features and their downstream effect on consumption behavior. Furthermore, our research demonstrates that design features may interact with perceived risk to mitigate the negative effect of high perceived risk on purchase intent. Indeed, while Hagtvedt's (2011) work suggests that when consumers' risk concerns are strong, a design feature (i.e., an incomplete typeface) may trigger a symbolic association (low trustworthiness) that negatively influence consumers' evaluation of the brand, we show that when consumers' risk concerns are strong, a design feature (i.e., a logo frame) may trigger a symbolic association (protection) that positively influences consumers' evaluation of the brand.

## OVERVIEW OF STUDIES

Next, we present six studies that test our theory. Studies 1 and 2 establish the basic effect. Study 1 manipulates perceived risk and the presence or absence of a logo frame and shows that when perceived risk is high (low) a logo frame increases (decreases) purchase intent for a branded product. Study 2 extends study 1 by measuring perceived risk at the individual level, allowing us to treat perceived risk as a continuous variable and examine the effect of a logo frame at different levels of perceived risk. Studies 3 and 4 examine the mechanism underlying the basic effect of a logo frame on purchase intent and provide support for our proposed mechanism through mediation and moderation. Specifically, study 3 provides process evidence for our theorization by showing that the positive (negative) effect of a logo frame on purchase intent under high (low) risk is mediated by an increase in perceptions of how protecting (confining) the logo frame is perceived to be. Study 4 then identifies an individual-difference variable, personality trait openness, which moderates the basic effect of a logo frame on purchase intent by influencing the magnitude of the confinement effect under low risk.

A central premise of our theory is that a frame has symbolic value. However, we speculate that the more removed a design element is from the brand's core identity, the less likely consumers are to infer symbolic meaning from it. Based on this intuition, in studies 5 and 6 we examine the conditions under which the effects of a logo frame can and cannot extend to other types of visual frames. Specifically, study 5A examines visual frames surrounding a secondary brand identification element, the brand slogan, and shows that the effects of a logo frame do not unconditionally generalize to ancillary brand identifiers. Subsequently, study 5B shows that the effects of a logo frame can generalize to a secondary brand identifier such as the brand slogan, but only when symbolic value of the frame is emphasized by

having the secondary brand identifier directly manipulate a consumer's relative need for safety versus his or her need for freedom. Study 6A shows that the effects of a logo frame do not unconditionally generalize to visual frames surrounding ad features objectively unrelated to brand identification; study 6B shows that the effects of a logo frame do not generalize to these frames even when their symbolic value is emphasized. Thus studies 5 and 6 (1) help rule out the mere-exposure-to-visual-frames alternative explanation of our basic effect; (2) illustrate both the uniqueness and the generality of the logo frame effect; and (3) provide evidence for our conceptual model (figure 1), which posits that perceived risk moderates the effect of a logo frame on purchase intent through influencing the relative salience of consumers' primary need at the time of purchase, by demonstrating that participants' primary need at the time of purchase moderates the symbolic association of a frame the same way perceived risk does.

## STUDY 1

Study 1 examines how risk perceptions influence the effect of a logo frame on purchase intent. We tested the hypothesis that when perceived risk is high a logo frame will increase purchase intent, but when perceived risk is low a logo frame will decrease purchase intent.

### Method

*Participants and Design.* A total of 131 participants (57.3% female; mean age = 35) from an online panel (Amazon's Mechanical Turk [MTurk]) completed the study in exchange for nominal payment. Participants were randomly assigned to one of four conditions in a 2 (Risk Perceptions: Low, High)  $\times$  2 (Logo Frame: Absent, Present) between-subjects design.

*Procedure.* Participants were asked to imagine being in the market for a scented candle and shown an advertisement for a \$25 scented candle; the brand of the candle was "Tropical Candles," a fictitious brand. The advertisement showed the brand logo, a picture of the candle, and a brief description of the candle; the candle description was adopted from Ghoshal, Boatwright, and Cagan (2011). In the frame-absent condition, the brand logo consisted of the brand name and a small picture of a palm tree beneath it. In the frame-present condition, the brand name and the picture of a palm tree were surrounded by a frame.

In the low-risk condition, participants were informed that the product carried a satisfaction guarantee and that consumers would receive a full refund if they were dissatisfied with their purchase. In the high-risk condition, participants were told that the product was a final sale and thus could not be returned (the online appendix shows the stimuli). In a pretest of this risk manipulation, another



group of participants from the same population ( $n = 51$ ; 49.0% female; mean age = 31) was randomly assigned to either the low-risk (satisfaction guarantee) condition or the high-risk (final sale) condition and asked to rate how risky purchasing the candle would be (1 = Not at all risky, 7 = Extremely risky); the brand logo was unframed in both conditions. As expected, participants rated the purchase as riskier in the high-risk condition ( $M_{\text{high risk}} = 4.81$  vs.  $M_{\text{low risk}} = 2.76$ ,  $t(49) = 3.63$ ,  $p < .01$ ).

The dependent measure was purchase intent. All participants were asked to indicate how likely they were to purchase the advertised candle (1 = Absolutely would not purchase, 9 = Absolutely would purchase).

## Results

A 2 (Risk Perceptions)  $\times$  2 (Logo Frame) analysis of variance (ANOVA) on purchase intent revealed a significant two-way interaction,  $F(1, 127) = 12.04$ ,  $p < .01$ . The pattern of results was as predicted (figure 2). In the low-risk conditions, participants were less willing to purchase the scented candle if the brand logo was framed ( $M = 4.75$ ,  $SD = 2.66$ ) than unframed ( $M = 6.21$ ,  $SD = 2.09$ ;  $F(1, 127) = 8.05$ ,  $p < .01$ ); in the high-risk conditions, participants were more willing to purchase the scented candle if the brand logo was framed ( $M = 6.08$ ;  $SD = 2.13$ ) than unframed ( $M = 4.63$ ,  $SD = 2.12$ ;  $F(1, 127) = 4.78$ ,  $p < .05$ ).

## Discussion

The results of study 1 provide initial support for our hypothesis that brand logo frames influence consumers' purchase intent for branded products and that whether the influence is positive or negative depends on consumers' risk perceptions. Consistent with our hypothesis, we found that under high risk a logo frame increased purchase intent,

but under low risk it decreased purchase intent. We interpret these results as showing that perceived risk influences the symbolic association of a logo frame, such that under high risk consumers perceive the logo frame as protecting, but under low risk consumers perceive it as confining.

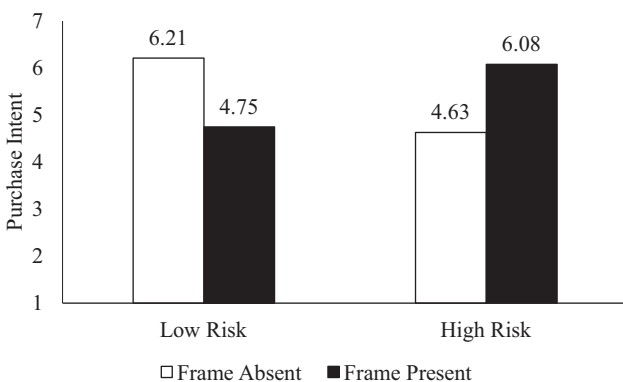
It is worth considering several alternative explanations for our basic finding. One alternative explanation is that this design element (i.e., the logo frame) directed participants' attention away from the risk manipulation. This could possibly explain why under high risk the presence of a logo frame decreased purchase intent; however, it cannot explain why under low risk the presence of a logo frame decreased purchase intent or why when a logo frame was present purchase intent was higher in the high-risk condition than in the low-risk condition.

Another alternative explanation is that a frame influenced the attractiveness of the ad or that of the brand logo. To address this, we ran a posttest involving another group of participants from the same population ( $n = 105$ ; 54.3% female; mean age = 33), who were randomly assigned to one of the four conditions of study 1 and asked to rate the attractiveness of the ad and the brand logo (1 = Not at all attractive, 7 = Extremely attractive). A 2 (Risk Perceptions)  $\times$  2 (Logo Frame) ANOVA on the attractiveness rating for the ad found no significant results ( $p$ 's  $> .18$ ). A similar ANOVA on the attractiveness rating for the logo found a significant main effect of perceived risk ( $F(1, 101) = 6.98$ ,  $p = .01$ ); participants rated the logo as less attractive under high risk ( $M = 3.80$ ) than under low risk ( $M = 4.52$ ). However, no other effects were significant ( $F$ 's  $< 1$ ). Thus there is no evidence that the presence of a logo frame influenced the perceived attractiveness of either the overall ad or the logo.

A third alternative explanation is that the wording, "purchase is final," used in high-risk conditions primed the concept of closure, and since a framed logo could be interpreted as a closed logo, the positive effect of the logo frame on purchase intent in the high-risk condition might have been driven by perceptions of congruency. We address this alternative explanation in the remaining studies by using manipulations of risk that do not prime the concept of closure.

FIGURE 2

STUDY 1: INTERACTION BETWEEN RISK PERCEPTIONS AND LOGO FRAME ON PURCHASE INTENT



## STUDY 2

In study 2 we provide additional evidence for the basic effect documented in study 1. According to Dowling and Staelin (1994), perceived risk in purchasing a product varies across individuals, depending on their knowledge and past experiences. Thus following Dowling and Staelin (1994), in study 2 we used a two-stage design to examine how the effect of a logo frame is influenced by perceived risk. In the first stage, we presented participants a set of products that included a target product embedded therein, and measured how risky they perceived the purchase of each product to

be. In the second stage, we asked participants to imagine a purchase scenario involving the target product, manipulating the presence or absence of a logo frame. We subsequently examined how participants' perception of risk (measured in stage 1) influenced the effect of a logo frame on their purchase intent (as reported in stage 2).

This two-stage design extends the findings of study 1 in two respects. First, perceived risk is measured at the individual level, not at the aggregate level. Thus perceived risk is represented as a continuous variable, allowing us to examine the moderating role of risk at multiple levels of perceived risk, from the very low levels to the very high levels. Second, because perceived risk is measured instead of manipulated, the findings of study 2 are not susceptible to alternative explanations that would attribute findings to the specific features of any particular risk manipulation.

## Method

**Participants and Design.** A total of 421 students (45.1% female) from a large US university participated in the study in exchange for partial course credit.

**Procedure.** The study consisted of two stages, separated by a 45 minute break. In the first stage, participants were asked to rate how risky they thought purchasing an MP3 player (price unspecified) would be (1 = Not at all risky, 9 = Extremely risky). To disguise the purpose of the initial task, participants were also asked to rate how risky they thought purchasing a variety of other, unrelated products would be (e.g., a toaster, an alarm clock). Each participant received a unique 9-digit identification number that was used to track the participant between the two stages. In the second stage, participants were asked to imagine being in the market for a new MP3 player and shown an advertisement for an MP3 player manufactured by the (fictitious) brand "Source." The advertisement page showed the brand logo, a picture of the MP3 player, and a brief verbal description of the MP3 player; the price was not specified either here or in the first stage. In the frame-absent condition, the logo was just the brand name; in the frame-present condition, the logo was the brand name surrounded by a frame (online appendix).

The dependent measure was purchase intent. Participants were asked to indicate how likely they were to purchase the MP3 player on the same scale used in study 1.

## Results

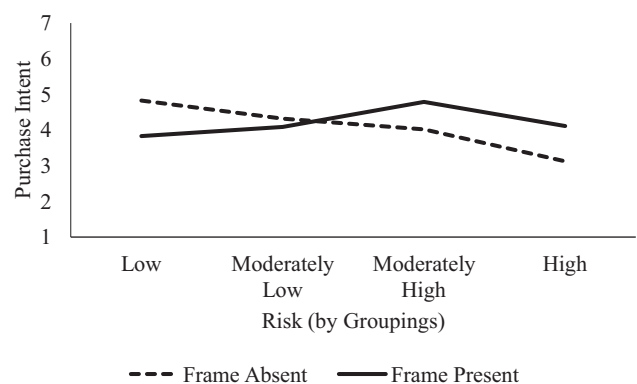
We first ran a regression analysis using purchase intent as the dependent variable, and risk perception (a continuous variable, mean centered [ $M = 4.16$ ;  $SD = 2.08$ ]), logo frame (dummy coded; 0 = Absent, 1 = Present), and the interaction between the two as independent variables. As predicted, the analysis found a significant two-way interaction ( $B = .38$ ,  $t = 3.74$ ,  $p < .01$ ). We probed the pattern of

the two-way interaction by examining the effect of a logo frame at different levels of perceived risk. To allow us to see the effect of the logo frame across the whole spectrum of perceived risk, we divided the participants into four groups, based on their perceived risk ratings: (1) a low-risk group (perceived risk rating: 1–2); (2) a moderately low-risk group (perceived risk rating: 3–4); (3) a moderately high-risk group (perceived risk rating: 5–6); and (4) a high-risk group (perceived risk rating: 7–9). We chose this grouping because it allowed for the most even distribution of participants across groups and ensured that each cell in the resulting 4 (Risk Perceptions)  $\times$  2 (Logo Frame) design had at least 25 participants. Moreover, given the mean risk rating, 4.16, and the SD, 2.08, the four groups accurately reflect significant changes in the degree of risk perception, with two groups below the mean risk rating and two groups above it, and with two groups within 1 SD from the mean risk rating and two groups outside of it.

A 4 (Risk Perceptions)  $\times$  2 (Logo Frame) ANOVA on purchase intent found a significant two-way interaction,  $F(3, 413) = 4.66$ ,  $p < .01$  (figure 3). In the low-risk condition, purchase intent was lower if the logo was framed ( $M = 3.83$ ,  $SD = 2.08$ ) than unframed ( $M = 4.83$ ,  $SD = 2.02$ ;  $F(3, 413) = 5.69$ ,  $p < .05$ ). In the moderately low-risk condition, purchase intent was similar regardless of whether the logo was framed ( $M = 4.09$ ,  $SD = 1.94$ ) or unframed ( $M = 4.32$ ,  $SD = 1.92$ ;  $F < 1$ ). In the moderately high-risk condition, purchase intent was higher if the logo was framed ( $M = 4.79$ ,  $SD = 2.12$ ) than unframed ( $M = 4.02$ ,  $SD = 1.89$ ;  $F(3, 413) = 3.91$ ,  $p < .05$ ). In the high-risk condition, purchase intent remained higher if the logo was framed ( $M = 4.11$ ,  $SD = 2.25$ ) than unframed ( $M = 3.12$ ,  $SD = 2.26$ ;  $F(3, 413) = 4.02$ ,  $p < .05$ ).

FIGURE 3

STUDY 2: INTERACTION BETWEEN RISK PERCEPTIONS AND LOGO FRAME ON PURCHASE INTENT



## Discussion

The findings of study 2 provide additional support for our hypothesis that a logo frame will increase purchase intent under high risk and decrease purchase intent under low risk. Measuring perceived risk at the individual level, we found that among the participants who viewed an MP3 player as a high-risk purchase, a brand logo frame increased purchase intent, whereas among those who viewed the MP3 player as a low-risk purchase, a brand logo frame decreased purchase intent. Moreover, since perceived risk was a continuous variable and the ratings of perceived risk ranged from very low to very high, the findings of study 2 provide a more fine-grained picture of how the effect of a logo frame depends on the level of perceived risk. A logo frame has a negative effect on purchase intent when perceived risk is very low; once perceived risk reaches a moderately high level, the logo frame has a positive effect on purchase intent.

The first two studies have established the basic effect of how perceived risk moderates the effect of a logo frame on purchase intent. In the next two studies, we examine the mechanism underlying this basic effect. We provide direct evidence for our proposed mechanism that perceived risk moderates the effect of a logo frame on purchase intent by influencing whether consumers are motivated to interpret the logo frame as protecting or confining.

## STUDY 3

Study 3 examines the psychological mechanism underlying the basic effect found in studies 1 and 2. We aim to provide process evidence for our proposition that under high risk the positive effect of a logo frame on purchase intent is driven by its association with protection, whereas under low risk the negative effect of a logo frame on purchase intent is driven by its association with confinement. Study 3 employed a different way of manipulating perceived risk; participants were primed with a sense of high or low risk before they were shown a purchase scenario. This manipulation of risk is more general and clean than that used in study 1.

## Method

**Participants and Design.** A total of 127 participants (54.3% female; mean age = 35) from Amazon's MTurk completed the study in exchange for nominal payment. Participants were randomly assigned to one of four conditions in a 2 (Risk Perceptions: Low, High)  $\times$  2 (Logo Frame: Absent, Present) between-subjects design.

**Procedure.** The study had two parts. The first part, labeled "Writing Task," served as a manipulation of risk perceptions. In the low-risk (high-risk) condition, participants were asked to spend one minute writing about things that

made them feel safe (unsafe). In a pretest, another group of participants from the same population ( $n = 52$ ; 46.2% female; mean age = 35) was randomly assigned to either the low-risk or high-risk condition and asked to rate how risky purchasing a \$90 MP3 player would be (1 = Not at all risky, 7 = Extremely risky); the logo was unframed in both conditions. As expected, participants rated the purchase as riskier in the high-risk condition ( $M_{\text{high risk}} = 5.35$  vs.  $M_{\text{low risk}} = 3.86$ ,  $t(50) = 2.61$ ,  $p = .01$ ).

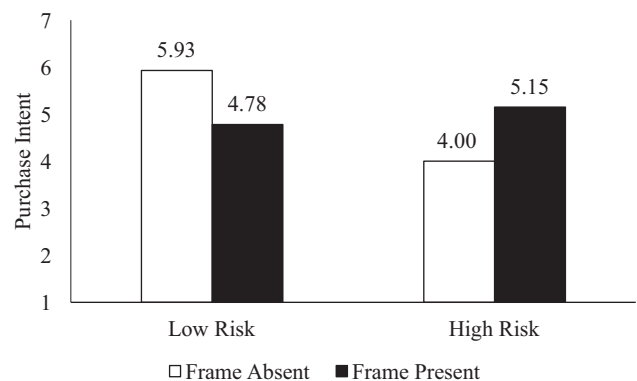
In the second part, participants were asked to imagine being in the market for a new MP3 player and saw an advertisement that was identical to that in study 2 except that the price for the MP3 player was listed (\$90). The dependent measure was purchase intent; participants indicated how likely they were to purchase the advertised product on the same scale used in studies 1 and 2. Afterward, participants were shown just the brand logo and asked to rate how attractive (1 = Not at all attractive, 7 = Extremely attractive), protecting (1 = Not at all protecting, 7 = Extremely protecting), and confining (1 = Not at all confining, 7 = Extremely confining) the logo seemed, with the order of these three measures counterbalanced.

## Results

**Purchase Intent.** A 2 (Risk Perceptions)  $\times$  2 (Logo Frame) ANOVA on purchase intent revealed a significant two-way interaction,  $F(1, 123) = 9.07$ ,  $p < .01$ . The pattern was as predicted (figure 4). In the low-risk condition purchase intent was lower if the brand logo was framed ( $M = 4.78$ ,  $SD = 2.35$ ) than unframed ( $M = 5.93$ ,  $SD = 1.94$ ;  $F(1, 123) = 5.21$ ,  $p < .05$ ). However, in the high-risk condition, purchase intent was higher if the brand logo was framed ( $M = 5.15$ ,  $SD = 1.61$ ) than unframed ( $M = 4.00$ ,  $SD = 2.20$ ;  $F(1, 123) = 4.01$ ,  $p < .05$ ).

FIGURE 4

STUDY 3: INTERACTION BETWEEN RISK PERCEPTIONS AND LOGO FRAME ON PURCHASE INTENT



*Logo Perceptions.* A 2 (Risk Perceptions)  $\times$  2 (Logo Frame) ANOVA on the rating of how protecting the logo was revealed a significant two-way interaction,  $F(1, 123) = 3.65, p = .05$ . Under low risk, participants perceived the framed ( $M = 2.93, SD = 1.34$ ) and unframed logos ( $M = 3.21, SD = 1.47$ ) as similarly protecting ( $F < 1$ ). However, under high risk, participants perceived the framed logo as more protecting ( $M = 3.24, SD = 1.41$ ) than the unframed logo ( $M = 2.43, SD = 1.43; F(1, 123) = 4.70, p < .05$ ). A similar 2  $\times$  2 ANOVA on the rating of how confining the logo was revealed a marginal two-way interaction,  $F(1, 123) = 2.98, p = .08$ . Under low risk, participants perceived the framed logo as more confining ( $M = 3.57, SD = 1.91$ ) than the unframed logo ( $M = 2.70, SD = 1.56; F(1, 123) = 4.20, p < .05$ ). Under high risk, participants perceived the framed ( $M = 2.73, SD = 1.44$ ) and unframed logos ( $M = 2.98, SD = 1.58$ ) as similarly confining ( $F < 1$ ). A similar 2  $\times$  2 ANOVA on logo attractiveness ratings found no significant results ( $p$ 's  $> .25$ ).

*Mediation Analysis.* We predicted that the negative effect of a logo frame on purchase intent under low risk is driven by an increase in perceptions of how confining the brand logo is, whereas the positive effect of a logo frame on purchase intent under high risk is driven by an increase in perceptions of how protecting the brand logo is. To test this, we ran the mediation analysis suggested by Hayes (2013; PROCESS model 8) to estimate mediated moderation for two-way interactions. We entered both perceptions of confinement and protection as mediators in the model. The results of a bias-corrected (BC) bootstrapping analysis (based on 5000 bootstraps) revealed that perceptions of confinement mediated the effect of a logo frame on purchase intent under low risk (95% BC bootstrap confidence interval [CI],  $-.87$  to  $-.05$ ) but not under high risk (95% BC bootstrap CI,  $-.45$  to  $.20$ ). Perceptions of protection, in contrast, mediated the effect of a logo frame on purchase intent under high risk (95% BC bootstrap CI,  $.02$ – $.83$ ) but not under low risk (95% BC bootstrap CI,  $-.14$  to  $.39$ ).

## Discussion

The findings of study 3 replicated the basic effect documented in study 1. Furthermore, the findings provide direct process evidence for our proposition that the effect of a logo frame on purchase intent is driven by the type of symbolic association the logo frame triggers: the association of confinement under low risk and the association of protection under high risk. Consistent with our proposition, the negative effect of a logo frame on purchase intent under low risk was mediated by perceptions of how confining the brand logo was, whereas the positive effect of a logo frame on purchase intent under high risk was mediated by perceptions of how protecting the brand logo was.

The findings of study 3 also help to further rule out alternative explanations that attribute the effect of a frame on purchase intent to its impact on perceptions of logo attractiveness. In study 3, we found no significant effects of logo frame, risk perception, or their interaction on ratings of logo attractiveness.

We propose that when perceived risk is low, a consumer's need for freedom, self-expression, and variety will be relatively active; this in turn makes a frame's (undesirable) symbolic association of confinement more salient, leading to a decrease in purchase intent. In study 3, we provided support for this theorization through mediation. Next, we provide support through moderation. Specifically, we examine the potential moderating role of an individual-difference variable that should influence the likelihood a consumer will be motivated to perceive a frame as confining under low-risk conditions—individuals' trait openness.

## STUDY 4

Researchers believe that variations in behavior can be summarized in terms of five broad dimensions of personality, known as the Big Five: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Openness is related to active imagination, aesthetic sensitivity, attentiveness to inner feelings, preferences for variety, intellectual curiosity, and independence of judgment. Individuals high in openness (vs. those low in openness) are more curious about both inner and outer worlds and are more willing to entertain novel ideas and unconventional values (Costa and McCrae 1992). Indeed, highly open people display more intellectual curiosity, creativity, and flexible thinking (Digman 1990).

We propose that when perceived risk is low, people high in openness (vs. those low in openness) will have a stronger need for freedom and will, therefore, be more likely to perceive a logo frame as confining. Consequently, the negative effect of a logo frame will be stronger among people high in openness than among those low in openness. When perceived risk is high, people will have a strong need for safety and thus are likely to perceive a logo frame as protecting, regardless of their trait openness. This is in line with the notion that the need for safety is a more basic, fundamental need than the need for freedom (Maslow 1943) and with empirical findings showing that consumers are naturally motivated to reduce perceived risk (Cox 1967; Cox and Rich 1964). Therefore, the positive effect of logo frames under high-risk conditions should not be influenced by people's trait openness. The preceding analysis suggests that the risk perceptions by logo frame two-way interaction will be stronger among people high in openness than among those low in openness. We test this prediction in study 4 by measuring participants' trait openness using the scale developed by John, Donahue, and Kentle (1991).



In this study we also address another alternative explanation for the positive effect of a logo frame on purchase intent under high-risk conditions, which attributes this positive effect of a logo frame to participants' desire for structure and order (Cutright 2012). We do so by measuring participants' trait need for structure (Thompson et al. 1989). If this alternative explanation were true, then the positive effect of a logo frame on purchase intent under high-risk conditions should be stronger among participants high in need for structure than among those low in need for structure.

## Method

**Participants and Design.** A total of 245 participants (49.8% female; mean age = 31) from Amazon's MTurk completed the study in exchange for nominal payment. Participants were randomly assigned to one of four conditions in a 2 (Risk Perceptions: Low, High)  $\times$  2 (Logo Frame: Absent, Present) between-subjects design.

**Procedure.** Participants were asked to imagine being in the market for a new car and shown an advertisement for a car from the (fictitious) brand, "Neo," and priced at \$20,000. The advertisement included the brand logo, a brief verbal description of the features of the car, and a picture of the car. The brand logo was either the brand name only (frame-absent condition) or the brand name surrounded by a frame (frame-present condition).

We manipulated the perceived risk of purchasing this car. All participants were informed that Neo automobiles had been sold overseas for 25 years. In the low-risk condition, participants were told that no safety recalls had ever been issued for this brand. In the high-risk condition, participants were told that in its 25-year history two major safety recalls had been issued, the last in 2013 (the advertised model was a 2015 one) (online appendix). In a pretest of the risk manipulation, participants from the same population ( $n = 64$ ; 44.4% female; mean age = 30) were randomly assigned to either the low-risk or high-risk condition of the main study and asked to rate how risky purchasing the car would be (1 = Not at all risky, 7 = Extremely risky); the logo was unframed in both conditions. As expected, participants rated the purchase as riskier in the high-risk condition ( $M_{\text{high risk}} = 4.85$  vs.  $M_{\text{low risk}} = 3.54$ ,  $t(62) = 2.13$ ,  $p < .05$ ).

The dependent measure was purchase intent. All participants were asked to indicate how likely they were to purchase the advertised product on the same scale used in the previous studies. Afterward, participants completed two scales. The first scale was a subset of the Big Five Inventory scale created by John et al. (1991); this subset included the 10 items measuring openness. The second scale was the 12 item personal need for structure scale developed by Thompson et al. (1989) and used in Cutright (2012). The order of the two scales was counterbalanced.

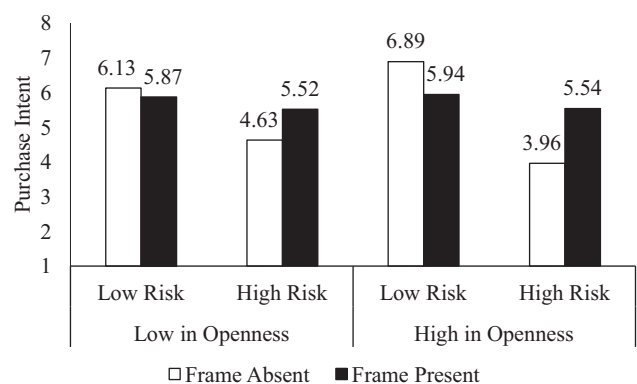
## Results

We first averaged each participant's ratings on the 10 items measuring openness to create an openness index ( $M = 3.62$ ,  $SD = .63$ ). A 2 (Risk Perceptions)  $\times$  2 (Logo Frame) ANOVA on this index found no significant results ( $F$ 's  $< 1$ ). We then ran a regression analysis to test our hypothesis. The dependent variable was purchase intent. The independent variables included the openness index (a continuous variable, mean centered), risk perceptions (dummy coded; 0 = Low risk, 1 = High risk), logo frame (dummy coded; 0 = Present, 1 = Absent), and all the interactions between these three variables. The analysis revealed a significant three-way interaction between openness, risk perceptions, and logo frame ( $B = -1.85$ ,  $t = -2.80$ ,  $p < .01$ ).

We probed the three-way interaction by running spotlight analyses to examine the risk perceptions by logo frame interaction among the participants high in openness and those low in openness separately. The pattern of results was as predicted (figure 5). Among the participants low in openness (1 SD below the mean openness index), there was a significant risk perceptions by logo frame interaction ( $B = -1.15$ ,  $t = -1.94$ ,  $p = .05$ ). Under high risk, purchase intent was higher if the brand logo was framed ( $M = 5.52$ ,  $SD = 1.57$ ) than unframed ( $M = 4.63$ ,  $SD = 1.64$ ;  $F(1, 237) = 4.32$ ,  $p < .05$ ). Under low risk, purchase intent was similar regardless of whether the brand logo was framed ( $M = 5.87$ ,  $SD = 1.75$ ) or unframed ( $M = 6.13$ ,  $SD = 1.86$ ;  $F < 1$ ). Among the participants high in openness (1 SD above the mean openness index), there was also a significant risk perceptions by logo frame interaction ( $B = -2.52$ ,  $t = -4.22$ ,  $p < .01$ ). Under high risk, purchase intent was higher if the brand logo was framed ( $M = 5.54$ ,  $SD = 1.79$ ) than unframed ( $M = 3.96$ ,  $SD = 1.94$ ;  $F(1, 237) = 12.95$ ,  $p < .01$ ). Under low risk, however, purchase

FIGURE 5

STUDY 4: INTERACTION BETWEEN RISK PERCEPTIONS AND LOGO FRAME ON PURCHASE INTENT



intent was lower if the logo was framed ( $M = 5.94$ ,  $SD = 1.71$ ) than unframed ( $M = 6.89$ ,  $SD = 1.22$ ;  $F(1, 237) = 5.07$ ,  $p < .05$ ).

To test the potential moderating role of participants' need for structure, we averaged each participant's ratings on the 12 items measuring need for structure to create a need-for-structure index ( $M = 3.97$ ,  $SD = .80$ ). A 2 (Risk Perceptions)  $\times$  2 (Logo Frame) ANOVA on the index found no significant results ( $p$ 's  $> .10$ ). A regression analysis similar to that involving trait openness found no significant effects involving need for structure ( $p$ 's  $> .15$ ).

## Discussion

The findings of study 4 provide direct support for our proposition that the negative effect of a logo frame in low-risk situations is due to the logo frame's association with confinement. We found that when perceived risk was low, the negative effect of a logo frame on purchase intent was found among participants high in openness but not among those low in openness. This is in line with the previous findings showing that people high in openness (vs. those low in openness) are more concerned with curiosity, creativity, and variety seeking (Costa and McCrae 1992; Dingman 1990), and thus are more motivated to perceive the frame as confining under low-risk conditions.

The findings of study 4 also help rule out the alternative explanation that a frame increases purchase intent in high-risk conditions because people have a strong need for structure and a framed logo is perceived as more structured than an unframed logo (Cutright 2012). This alternative explanation would predict the positive effect of a logo frame on purchase intent under high-risk conditions to be stronger among participants with a high need for structure than among those with a low need for structure. However, our data did not support this prediction.

A central premise of our theory is that consumers make inferences about the symbolic meaning of visual design elements. Based on this assumption, in our final studies, we investigate the conditions under which the effects of a logo frame can and cannot be extended to other visual frames. These studies also provide support for our proposition that consumers' primary need at the time of purchase (need for safety vs. need for freedom) drives the moderating effect of perceived risk on the impact of a logo frame on purchase intent.

## STUDY 5A

We speculate that the more removed an object is from the brand's core identity, the less likely consumers are to make inferences about the visual design of that object. This suggests that whether a frame has symbolic value depends on the degree to which the element it surrounds is connected to a brand's core identity. Consumers are expected

to make symbolic inference about a logo frame because this type of frame is linked to a primary brand identifier, the brand logo. The close tie to the brand's identity ensures consumers recognize the symbolic value of a logo frame, allowing the logo frame to have strong and seemingly automatic impact on consumers' perceptions of the brand and their desire for branded products.

The slogan of a brand is considered a secondary brand identifier and, as such, is known to exert some influence on brand perceptions (Keller 2003). The relationship between slogan perceptions and brand image perceptions suggests that the symbolic value of a frame might be integrated into consumers' decision-making process if the frame is featured as part of a brand's slogan. However, given that a brand slogan is less intertwined with the brand's identity than its logo, we hypothesize that consumers are less likely to infer symbolic meaning from a framed slogan, and, as such, the unframed slogan will have a weaker effect on purchase intent than a framed logo. In studies 5A and 5B we examine the effects of slogan frames.

## Method

*Participants and Design.* A total of 211 participants (54.0% female; mean age = 35) from Amazon's MTurk completed the study for nominal payment. Participants were randomly assigned to one of six conditions in a 2 (Risk Perceptions: Low, High)  $\times$  3 (Frame: Absent, Logo Frame, Slogan Frame) between-subjects design.

*Procedure.* Risk perceptions were first manipulated using the same writing task from study 3. Participants then saw an advertisement for a mobile wallet app. According to the advertisement, the app would digitally store consumers' bank account and credit card information, and it could be used to electronically transfer and receive funds from friends and family, and to pay for transactions at various retail locations, making the physical presence of a credit or debit card unnecessary. The description and list of services created closely matched that of other mobile wallet apps currently available in the marketplace. This description of the app was displayed at the top of the advertisement, followed by the app logo, which was its name "FastPay," the app slogan ("Convenient. Fast. Easy."), and an image of a smartphone. We either framed the app logo (logo-frame condition), framed the slogan (slogan-frame condition), or framed neither (frame-absent condition) (online appendix).

The dependent measure was product usage intent. All participants were asked to indicate how likely they were to download and use the advertised app (1 = Absolutely would not, 9 = Absolutely would).

## Results

A 2 (Risk Perceptions)  $\times$  3 (Frame) ANOVA on usage intent found a significant two-way interaction,  $F(2, 205) = 5.61, p < .01$  (figure 6). Under low risk, usage intent in the frame-absent condition ( $M = 5.36, SD = 1.95$ ) was higher than that in the logo-frame condition ( $M = 4.27, SD = 2.18; F(1, 205) = 5.36, p < .05$ ), but it was not higher than that in the slogan-frame condition ( $M = 5.15, SD = 1.96; F < 1$ ). Under high risk, usage intent in the frame-absent condition ( $M = 4.31, SD = 2.19$ ) was lower than that in the logo-frame condition ( $M = 5.56, SD = 1.87; F(1, 205) = 5.97, p < .05$ ), but it was not lower than that in the slogan-frame condition ( $M = 4.92, SD = 2.29; F(1, 205) = 1.41, p > .22$ ).

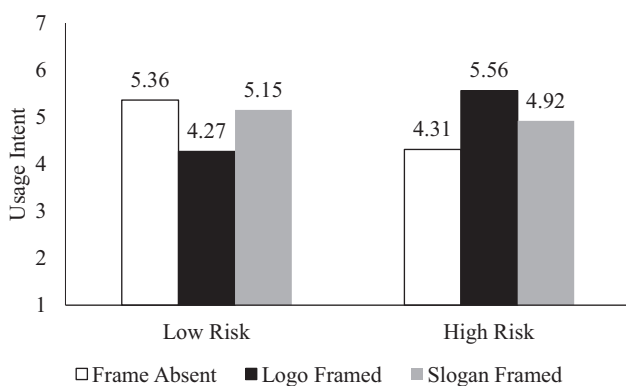
## Discussion

The results of study 5A suggest that the logo frame effect does not unconditionally extend to visual frames surrounding secondary brand identification elements such as the brand slogan. This finding illustrates the uniqueness of brand logo frames and rules out an alternative explanation that posits mere exposure to any visual frame is sufficient to replicate the effects of a logo frame.

We reason that a key difference between brand logo frames and brand slogan frames is that brand logos, which typically include the brand name, are more strongly connected to brand identity than are other brand identifiers. Thus for a slogan frame to trigger an association with protection or confinement, as a brand logo frame does, the slogan itself must influence the relative salience of consumers' need for safety versus need for freedom. We tested this possibility in study 5B.

FIGURE 6

STUDY 5A: INTERACTION BETWEEN RISK PERCEPTIONS AND FRAME ON USAGE INTENT



## STUDY 5B

Study 5B examines whether the brand logo frame effect can extend to brand slogan frames when a brand slogan itself influences the relative salience of consumers' need for protection versus need for freedom. We tested the prediction that a slogan frame will increase (decrease) purchase intent when the slogan directly triggers a need for protection (freedom).

## Method

**Participants and Design.** A total of 185 participants (47.0% female; mean age = 35) from Amazon's MTurk completed the study for nominal payment. Participants were randomly assigned to one of six conditions in a 3 (Consumer Need: Control, Protection, Freedom)  $\times$  2 (Slogan Frame: Absent, Present) between-subjects design.

**Procedure.** Participants saw an advertisement for a free mobile wallet app similar to that used in study 5A. We manipulated consumer's need via the app slogan. The slogan was "Convenient. Fast. Liberating." (the need-for-freedom condition), or "Convenient. Fast. Secure." (the need-for-safety condition), or "Convenient. Fast. Easy." (the control condition; identical to the slogan used in study 5A). The app slogan was either surrounded by a frame (frame-present condition) or not (frame-absent condition). The dependent measure was usage intent, the same as that in study 5A.

## Results

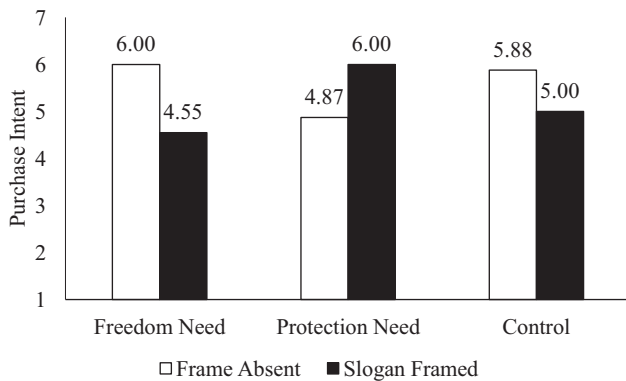
A 3 (Consumer Need)  $\times$  2 (Slogan Frame) ANOVA on usage intent found a significant two-way interaction,  $F(2, 179) = 5.53, p < .01$  (figure 7). As predicted, when the slogan primed a need for freedom, participants indicated a lower usage intent if the slogan was framed ( $M = 4.55, SD = 2.09$ ) than unframed ( $M = 6.00, SD = 2.21; F(1, 179) = 6.11, p = .01$ ). In contrast, when the slogan primed a need for safety, participants indicated a higher usage intent if the slogan was framed ( $M = 6.00, SD = 1.98$ ) than unframed ( $M = 4.87, SD = 2.17; F(1, 179) = 3.96, p < .05$ ). When the slogan did not prime either need (control condition), usage intent was similar regardless of whether the slogan was framed ( $M = 5.00, SD = 2.50$ ) or unframed ( $M = 5.88, SD = 2.53; F(1, 179) = 2.05, p = .15$ ), replicating the results of study 5A.

## Discussion

The findings of study 5B show that the brand logo frame effect can generalize to nonlogo frames; specifically, it can generalize to visual frames surrounding a secondary brand identifier, such as a brand slogan, provided that the secondary brand identifier directly primes a relevant consumer

FIGURE 7

STUDY 5B: INTERACTION BETWEEN CONSUMER NEED AND SLOGAN FRAME ON USAGE INTENT



need. In our last study we examine whether the effects of a brand logo frame can extend to visual frames surrounding features of an ad unrelated to brand identification, such as a picture or a verbal description of a branded product. We speculate that consumers view such frames as temporary visual devices used to emphasize certain parts of the ad as opposed to long-term visual elements connected to the brand identity or image. Consequently, we do not expect the effects of a brand logo frame to extend to these visual frames.

## STUDY 6A

Studies 6A and 6B examine whether the brand logo frame effect can extend to visual frames surrounding ad features unrelated to brand identification, such as a picture or a verbal description of a branded product. Following the procedure we used in examining whether the brand logo frame effect extends to brand slogan frames, in study 6A we first tested whether the brand logo frame effect would unconditionally extend to a product-picture frame or a product-description frame. Then in study 6B, we tested whether the brand logo frame effect would extend to a product-description frame if the product description itself triggered consumers' need for safety or freedom.

### Method

**Participants and Design.** A total of 297 participants (48.1% female; mean age = 35) from Amazon's MTurk completed the study in exchange for nominal payment. Participants were randomly assigned to one of eight conditions in a 2 (Risk Perceptions: Low, High)  $\times$  4 (Frame: Absent, Logo Frame, Product Picture Frame, Product Description Frame) between-subjects design.

**Procedure.** Participants were asked to imagine being in the market for a scented candle and saw an advertisement similar to that used in study 1. The frame-absent and the logo-frame conditions were identical to those in study 1. In the product-picture-frame condition, a frame was placed around the picture of the candle. In the product-description-frame condition, a frame was placed around the description of the candle (online appendix).

We manipulated perceived risk by manipulating the price of the candle: in the low-risk condition the price was \$12.50; in the high-risk condition the price was \$25 (same as in study 1). In a pretest, another group of participants from the same population ( $n = 54$ ; 57.4% female; mean age = 32) was randomly assigned to the low-risk (\$12.50) condition or the high-risk (\$25) condition and asked to rate how risky purchasing the candle would be (1 = Not at all risky, 7 = Extremely risky); the logo was unframed in both conditions. As expected, participants rated the purchase as riskier in the high-risk condition ( $M_{\text{high risk}} = 3.25$  vs.  $M_{\text{low risk}} = 2.04$ ,  $t(52) = 2.03$ ,  $p < .05$ ), consistent with prior research indicating higher prices are associated with higher perceptions of risk (Kaplan, Szybillo, and Jacoby 1974; White and Truly 1989).

The dependent measure was purchase intent. Participants were asked to indicate how likely they were to purchase the advertised product using the same scale featured in prior studies.

### Results

A 2 (Risk Perceptions)  $\times$  4 (Frame) ANOVA on purchase intent revealed a significant two-way interaction,  $F(3, 289) = 3.72$ ,  $p = .01$ . The pattern was consistent with our prediction (figure 8). Under low risk, purchase intent in the frame-absent condition ( $M = 6.30$ ,  $SD = 1.65$ ) was higher than that in the logo-frame condition ( $M = 5.15$ ,  $SD = 2.05$ ;  $F(1, 289) = 5.03$ ,  $p < .05$ ), but it was not higher than that in the product-picture-frame condition ( $M = 5.47$ ,  $SD = 1.93$ ;  $F(1, 289) = 2.27$ ,  $p = .13$ ) or that in the product-description-frame condition ( $M = 5.93$ ,  $SD = 2.22$ ;  $F < 1$ ). Under high risk, purchase intent in the frame-absent condition ( $M = 5.19$ ,  $SD = 2.75$ ) was lower than that in the logo-frame condition ( $M = 6.55$ ,  $SD = 2.06$ ;  $F(1, 289) = 7.32$ ,  $p < .01$ ), but was not lower than that in the product-picture-frame condition ( $M = 5.43$ ,  $SD = 2.68$ ;  $F < 1$ ) or that in the product-description-frame condition ( $M = 5.97$ ,  $SD = 2.55$ ;  $F(1, 289) = 2.06$ ,  $p = .15$ ).

### Discussion

The results of study 6A replicated the basic effect of logo frame and showed that the logo frame effect does not unconditionally extend to product-picture frames or product-description frames. Next, we examine if the logo frame effect can extend to product-description frames if



FIGURE 8

STUDY 6A: INTERACTION BETWEEN RISK PERCEPTIONS AND LOGO FRAME ON PURCHASE INTENT

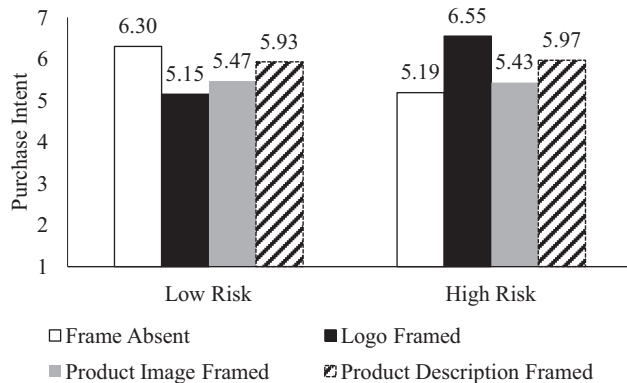
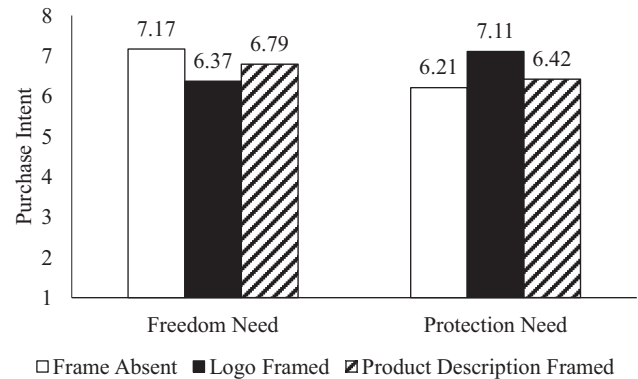


FIGURE 9

STUDY 6B: INTERACTION BETWEEN CONSUMER NEED AND FRAME PRESENCE ON PURCHASE INTENT



the product description itself triggers a need for safety or a need for freedom.

## STUDY 6B

In study 6B, we manipulated whether a product description triggered a need for safety or a need for freedom and manipulated whether the brand logo was framed, or the product description was framed, or neither was framed.

### Method

**Participants and Design.** A total of 213 participants (46.5% female; mean age = 35) from Amazon's MTurk completed the study for nominal payment. They were randomly assigned to one of six conditions in a 2 (Consumer Need: Protection, Freedom)  $\times$  3 (Frame: Absent, Logo Frame, Product Description Frame) between-subjects design.

**Procedure.** Participants saw an advertisement for a scented candle similar to that used in studies 1 and 6A. We manipulated consumer need by adding one sentence to the beginning of the product description. In the need-for-freedom (need-for-protection) condition, this sentence emphasized that the candle was meant to "liberate you from the stresses of everyday life" ("protect you from the stresses of everyday life"). We either framed the brand logo (logo-frame condition), or framed the product description (product-description-frame condition), or framed neither (frame-absent condition). The dependent measure was purchase intent, measured on the same scale as in prior studies.

## Results

A 2 (Consumer Need)  $\times$  3 (Frame) ANOVA on purchase intent ratings found a significant two-way interaction,  $F(2, 207) = 5.61, p < .01$  (figure 9). When the product description primed a need for freedom, purchase intent in the frame-absent condition ( $M = 7.17, SD = 1.18$ ) was higher than that in the logo-frame condition ( $M = 6.37, SD = 1.06; F(1, 207) = 4.23, p < .05$ ), but it was not higher than that in the product-description-frame condition ( $M = 6.79, SD = 1.17; F < 1$ ). When the product description primed a need for protection, purchase intent in the frame-absent condition ( $M = 6.21, SD = 2.11$ ) was lower than that in the logo-frame condition ( $M = 7.11, SD = 1.31; F(1, 207) = 6.81, p = .01$ ), but was not lower than that in the product-description-frame condition ( $M = 6.42, SD = 1.83; F < 1$ ).

## Discussion

The findings of study 6B suggest that the contingent-symbolic-association effect of logo frames does not extend to visual frames surrounding product descriptions, even when the product description directly triggers a relevant consumer need. Taken together, the findings of studies 5A and 6B are consistent with the idea that individuals will be more likely to view a visual frame as having symbolic associations if it surrounds a primary symbol of a brand, such as the brand logo, than if it surrounds a secondary symbol of the brand, such as the brand slogan, and will be even less likely to view a visual frame as having symbolic associations if it surrounds something that is not a symbol of the brand, such as a description of the features of a branded product.

Furthermore, the findings of studies 5B and 6B provide evidence for our proposition that consumer's primary need

influences the symbolic association of a logo frame, such that when the need for safety is more salient, individuals will perceive a logo frame as protecting, but when the need for freedom is salient, individuals will perceive the logo frame as confining.

## GENERAL DISCUSSION

In this research we examined the contingent nature of the symbolic associations of a common and yet little studied brand logo design element, a frame. We propose that a brand logo frame can be perceived as protecting or confining, and which of the two symbolic associations consumers will perceive is influenced by their primary need at the time of purchase. Specifically, we propose that when consumers perceive a high level of risk, they will exhibit a need for safety and security that will lead them to interpret a logo frame as protecting. In this case, the logo frame will have a positive effect on their purchase intent. In contrast, when consumers perceive a low level of risk, they will emphasize a need for freedom and autonomy that will lead them to interpret a logo frame as confining. In this case, the logo frame will have a negative effect on their purchase intent.

The results of six studies corroborate our conceptualization. These studies, which featured target products from across several distinct product categories and employed a variety of risk manipulations, would indicate that our basic effect is highly robust. Furthermore, these studies provide direct evidence for our proposed mechanism by showing that the positive (negative) effect of a logo frame on purchase intent is mediated by an increase in participants' perceptions of how protecting (confining) the logo frame is and that the negative effect of a logo frame on purchase intent under low risk is stronger among participants with a higher trait openness than among those with a lower trait openness. Finally, we show that the contingent-symbolic-association effect of logo frames can extend to visual frames surrounding other, secondary brand identifiers, such as the brand slogan, provided that the secondary brand identifier itself evokes a relevant consumer need.

### Theoretical Contributions

The findings of our research make several theoretical contributions. First, we identify logo frames as a design element that systematically influences consumers' brand perceptions and purchase intentions. The only other work on logo frames is a study in [Cutright \(2012\)](#) showing that logo frames are symbolically associated with structure and order, thereby providing initial evidence that logo frames generate the same symbolic associations as physical boundaries. We extend her work in several respects. First, we have identified two new symbolic associations of logo frames, protection and confinement, and shown that the effect of logo frames goes beyond preferences for logos and

influences downstream behaviors such as purchase intent for the branded products. Second, we have shown the contingent nature of these two symbolic associations, more specifically, which of the two associations is triggered depends on consumers' risk perceptions; when perceived risk is high, consumers are motivated to associate the frame with protection, but when perceived risk is low, consumers are motivated to associate the frame with confinement. Third, our research is the first to identify circumstances under which a logo frame may have a negative rather than a positive effect on consumers' perceptions of the brand. We maintain that a logo frame has a negative effect on purchase intent under low risk because under low risk consumers are motivated to perceive the frame as confining and perceptions of confinement negatively impact purchase intent ([Grossbart et al. 1990](#)). In support of this we found that consumers rated a logo frame as more confining under low-risk conditions than high-risk conditions and that consumers high in trait openness demonstrated a more adverse reaction to logo frames under low risk than those low in trait openness. Interestingly, [Levav and Zhu \(2009\)](#) show that some types of consumption (e.g., consumption of variety) may help reduce feelings of confinement. Based on this finding, we would also expect the negative effect of a logo frame on purchase intent to be moderated by whether consumption itself helps reduce feelings of confinement.

A second, broader, contribution of our research is the demonstration that perceived risk can moderate the symbolic associations of a visual design feature. According to our theorization, risk perceptions moderate the type of association a visual cue generates by influencing which consumer need is most salient at the time of purchase. When risk is high, consumers are motivated to seek protection, making the need for safety and security more salient and encouraging consumers to perceive a logo frame as protecting. When risk is low and the need for safety has been met, the need for freedom, liberty, and autonomy is activated, making consumers more alert to threats against their perceived liberty and leading consumers to perceive a logo frame as confining. The findings of studies 5B and 6B support this theorization by showing that the effect of risk perceptions on logo frame interpretation are replicable with direct manipulations of consumers' need. When consumers are primed to seek safety and security, they view the logo frame as protecting, which increases purchase intent. In contrast, when consumers are primed to seek freedom, they view the frame as confining, which decreases purchase intent. These findings build on the work of [Hagtvedt \(2011\)](#), who first demonstrated the contingent nature of a design feature's symbolic associations and is consistent with his finding that consumers' regulatory focus can influence how a particular design feature is interpreted.

A third contribution of our research is demonstrating that design features can mitigate the negative effect of increased risk on purchase intent. Across all our studies, we

found that in the absence of a logo frame, purchase intent consistently decreased as perceived risk increased, which is in line with the previous research showing that perceived risk has negative effects on purchase intent (Cox 1967; Cox and Rich 1964). When a brand logo was framed, however, we did not find such a negative linear relationship between risk and purchase intent. In fact, in the majority of studies involving manipulated or measured perceived risk (studies 1, 2, 5A, and 6A) we found a positive relationship between risk perceptions and purchase intent when a framed logo was utilized. The finding that in the presence of a logo frame purchase intent can increase with perceived risk is novel, and it is worth knowing when this effect is more likely or less to occur.

In the presence of a logo frame, an increase in perceived risk is expected to produce two countervailing effects—a negative, direct effect on purchase intent, and a positive, indirect effect on purchase intent through the frame's symbolic value. For the presence of a logo frame to result in an increase in purchase intent between relatively low- and high-risk conditions, the indirect effect of risk on purchase intent through the frame's symbolic value must be stronger than its direct effect on purchase intent. We speculate that this is more likely to occur at the lower end of the risk continuum. Consider the results of study 2, in which perceived risk was a continuous variable that covered the entire spectrum of risk perceptions. In the frame-present condition, we found that purchase intent increased from low risk to moderately high risk ( $F(3, 413) = 5.69, p < .05$ ) but did not significantly increase from moderately high risk to high risk ( $F(3, 413) = 1.93, p = .16$ ). This suggests that the indirect effect of perceived risk hit a ceiling at moderately high-risk perceptions. Beyond this level, the indirect effect of perceived risk no longer grows and, as such, cannot fully overcome the direct negative effect of perceived risk on purchase intent, which continues to increase.

To further test our proposition, we ran a follow-up study for study 3, in which we manipulated whether the price for the MP3 player was \$90, as in study 3, or left unspecified. We reasoned that the default level of perceived risk would be lower in the latter case than in the former, and the results of a pretest confirmed this assumption. Consistent with our proposition, regardless of the price manipulation, we found a significant perceived risk by logo frame two-way interaction, replicating the findings of study 3. More importantly, in the framed-logo condition, priming a sense of high risk only directionally increased purchase intent when the price of the MP3 player was \$90 but significantly increased purchase intent when the price was unspecified (lower risk condition). These findings again support our proposition that the indirect effect of perceived risk is stronger at the lower end of the risk continuum and suggest that there is a limit to the protective effect of a logo frame. Indeed, it is worth noting that the two studies (studies 3 and 4) in which risk was manipulated and the presence of a

frame did not result in a significant increase in purchase intent between low- and high-risk conditions utilized purchase scenarios in which the default perception of risk was already moderately high. Specifically, study 3 asked participants to consider the purchase of what they perceived to be an expensive (potentially overpriced) MP3 player. Study 4 subsequently asked participants to consider an expensive automobile purchase, in which the car was from a foreign brand with a relatively short (25 year) history.

## Managerial Implications

In our studies, a brand logo is part of an advertisement for the branded product; the advertisement includes other information about the product, such as a picture and a description of its features. Thus our findings appear generalizable to real-world purchase situations. Given the amount of resources firms spend designing and protecting their brand logos (Stamper 2012), and the presumed effect of brand logos on the financial performance of a corporation (Bharadwaj and Menon 1993; Margulies 1977; Park et al. 2013), our findings should be highly relevant to marketing practitioners.

We have shown that a simple logo design feature, such as a frame, can impact brand perceptions and purchase intentions. We contend that our results are applicable to many marketing professionals. Indeed, there is great opportunity among the vast majority of companies to exploit a potentially useful logo design element capable of improving sales and overall market position. From this viewpoint our most important finding is that the effect of a logo frame on purchase intent is moderated by the type of association it triggers. A logo frame can decrease purchase intent by signaling confinement. This would imply that brands, particularly those whose industry is incompatible with confinement (e.g., an art supply store like Michael's), should avoid the use of logo frames. However, a logo frame may increase purchase intent if it signals protection. Our work suggests a logo frame signals protection under high-risk perceptions, implying that companies selling products associated with high risk (e.g., an insurance company like State Farm) would benefit from the use of a framed logo. In addition, new product introductions are likely associated with a high degree of risk, particularly when the product is being launched under a new brand name. Under such circumstances the use of a framed logo could improve sales by signaling protection and lowering the risk typically associated with new product introductions. Thus our findings suggest that a new company may benefit from using a framed logo in the initial stages of its life. This is in line with our observation that it is more likely for a brand to be introduced with a logo frame that is later dropped (e.g., Starbucks in 2011 and Yoplait in 2012) than the other way around.

## Public Policy Implications

There are several industries where consumption reduces risk to consumers' overall welfare. Take pharmaceutical companies, for instance. In recent years there has been an epidemic rise in health conditions ranging from depression and anxiety to obesity, autism, diabetes, Alzheimer disease, and attention deficit disorder. This is in addition to preexisting health conditions like high cholesterol, elevated blood pressure, heart disease, and cancer that have been prominent in our society for many decades (Menon, Raghurir, and Agrawal 2007). An integral part of treatment for the majority of health conditions is the prescription of medication. Yet most medications suffer from noncompliance—consumers' failing to consume prescribed medication as directed. Indeed, noncompliance (nonconsumption in particular) is often identified as an important contributing factor in treatment failures (Hughes et al. 2001; Menon et al. 2007). Given the serious consequences of noncompliance, both pharmaceutical companies and public policymakers are interested in techniques to reduce it. Our research suggests that a relatively small aesthetic change to a pharmaceutical brand's logo may increase consumer compliance. Medication should be associated with risk mitigation. Thus exposure to medicines should make consumers' need for protection relatively salient, suggesting that adding a frame around the medication's logo may increase compliance and consumption. Admittedly, the dependent measure in most of our studies was purchase intent, which is fundamentally different from consumer compliance. However, in studies 5A and 5B the dependent measure was product usage, suggesting that our findings could potentially apply to the area of consumer compliance.

One might also consider national organizations (e.g., the American Medical Association, Centers for Disease Control and Prevention) as well as international organizations (e.g., the World Health Organization) tasked with protecting and improving consumer welfare. These not-for-profit organizations traditionally stress the protective stance they take toward consumers. As a result, they too should be perceived as operating in high-risk environments and may benefit from the use of logo frames. Similarly, not-for-profit organizations seeking funds to alleviate world diseases (e.g., the United Way, March of Dimes, the American Heart Association) are likely to be seen as protecting, suggesting they may be more effective in raising donations by framing their logos. Conversely, organizations emphasizing creativity, innovation, and freedom (e.g., American Creativity Association, International Association of Innovation Professionals) may opt to avoid logo frames.

## DATA COLLECTION INFORMATION

The first author managed data collection for study 1 and (its associated pretest and posttest) using participants from

Amazon's MTurk panel. Data for study 1 (and its associated pretest) were collected in the spring of 2014; data for study 1's associated posttest was collected in the spring of 2016. The third author managed data collection for study 2 using participants from the University of Miami's Canes Behavioral Lab during the spring of 2016. The first author managed data collection for studies 3, 4, 5A, 5B, and 6B (and their associated pretest) using participants from Amazon's MTurk panel. Data for study 3 were collected in the spring of 2014; data for study 3's pretest were collected in the spring of 2016. Data for study 4 (and its associated pretest) were collected in the spring of 2015. Data for studies 5A, 5B, and 6B were collected in the spring of 2016. Data for study 6A were collected in the spring of 2014; data for study 6A's associated pretest were collected in the spring of 2016. Data collection for a follow-up to study 3, reported only in the General Discussion (GD), was collected by the second author using participants from the University of Oregon in the fall of 2015. The first author analyzed all data under the supervision of the second and third authors. Sample sizes were based on subject availability as well as other unrelated research projects run in conjunction with these experiments. All conditions are reported within the article. Across all studies we excluded participants who recalled participating in similar studies in the past (i.e., participants who indicated yes to the following question: "Have you participated in this [or a similar study] in the past?").

## REFERENCES

- Alter, Adam L. and Emily Balcetis (2011), "Fondness Makes the Distance Grow Shorter: Desired Locations Seem Closer Because They Seem More Vivid," *Journal of Experimental Social Psychology*, 47 (January), 16–21.
- Balcetis, Emily and David Dunning (2006), "See What You Want to See: Motivational Influences on Visual Perception," *Journal of Personality and Social Psychology*, 91 (October), 612–25.
- Belk, Russell W., Joon Y. Seo, and Eric Li (2007), "Dirty Little Secret: Home Chaos and Professional Organizers," *Consumption Markets and Culture*, 10 (2), 133–40.
- Bettman, James R. (1973), "Perceived Risk and Its Components: A Model and Empirical Test," *Journal of Marketing Research*, 10 (May), 184–90.
- Bharadwaj, Sundar G. and Anil Menon (1993), "Determinants of Success in Service Industries: A PIMS-based Empirical Investigation," *Journal of Services Marketing*, 7 (4), 19–40.
- Blank, Paula, Christine Massey, Howard Gardner, and Ellen Winner (1984), "Perceiving What Paintings Express," *Advances in Psychology*, 19, 127–43.
- Costa, Paul T. and Robert R. McCrae (1992), "Four Ways Five Factors Are Basic," *Personality and Individual Differences*, 13 (June), 653–65.
- Cox, Donald F. (1967), *Risk Taking and Information Handling in Consumer Behavior*, ed. Donald F. Cox, Boston: Harvard University Press, 1–22, 604–39.



- Cox, Donald F. and Stuart U. Rich (1964), "Perceived Risk and Consumer Decision-Making: The Case of Telephone Shopping," *Journal of Marketing Research*, 1 (November), 32–39.
- Crowe, Ellen and E. Tory Higgins (1997), "Regulatory Focus and Strategic Inclinations: Promotion and Prevention in Decision-Making," *Organizational Behavior and Human Decision Processes*, 69 (February), 117–32.
- Cutright, Keisha M. (2012), "The Beauty of Boundaries," *Journal of Consumer Research*, 38 (February), 775–90.
- Digman, John M. (1990), "Personality Structure: Emergence of the Five-Factor Model," *Annual Review of Psychology*, 41 (February), 417–40.
- Ditto, Peter H. and David F. Lopez (1992), "Motivated Skepticism: Use of Differential Decision Criteria for Preferred and Nonpreferred Conclusions," *Journal of Personality and Social Psychology*, 63 (October), 568–84.
- Dowling, Grahame R. and Richard Staelin (1994), "A Model of Perceived Risk and Intended Risk-Handling Activity," *Journal of Consumer Research*, 21 (June), 119–34.
- Erdelyi, Matthew H. (1974), "A New Look at the New Look: Perceptual Defense and Vigilance," *Psychological Review*, 81 (January), 1–25.
- Erdem, Tulin (1998), "An Empirical Analysis of Umbrella Branding," *Journal of Marketing Research*, 35 (August), 339–51.
- Friedman, Ronald S. and Jens Förster (2001), "The Effects of Promotion and Prevention Cues on Creativity," *Journal of Personality and Social Psychology*, 81 (December), 1001–13.
- Ger, Guliz and Baskin Yeniciglu (2004), "Clean and Dirty: Playing with Boundaries of Consumer's Safe Havens," *Advances in Consumer Research*, 31, 462–67.
- Ghoshal, Tanuka, Peter Boatwright, and Jonathan Cagan (2011), "Unwrapping Packaging: Does It Pay, and "How"! The Role of Aesthetically Appealing Packaging in Product Valuation," working paper, Carnegie Mellon University.
- Glasser, William (1998), *Choice Theory: A New Psychology of Personal Freedom*, New York: HarperCollins.
- Grewal, Druv, Jerry Gotlieb, and Howard Marmorstein (1994), "The Moderating Effects of Message Framing and Source Credibility on the Price-Perceived Risk Relationship," *Journal of Consumer Research*, 21 (June): 145–53.
- Grohmann, Bianca (2008), "The Effect of Logo Design on Brand Personality Perceptions," *ASAC*, 29 (May), 143–51.
- Grossbart, Sanford, Ronald Hampton, B. Rammohan, and Richard S. Lapidus (1990), "Environmental Dispositions and Customer Response to Store Atmospherics," *Journal of Business Research*, 21 (November), 225–41.
- Hagtvedt, Henrik (2011), "The Impact of Incomplete Typeface Logos on Perceptions of the Firm," *Journal of Marketing*, 75 (July), 86–93.
- Hall, Edward T. (1966), *Hidden Dimension*, Garden City, NY: Doubleday.
- Harrell, Gilbert D., Michael D. Hutt, and James C. Anderson (1980), "Path Analysis of Buyer Behavior Under Conditions of Crowding," *Journal of Marketing Research*, 17 (February), 45–51.
- Hayes, Andrew F. (2013), *An Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, New York: Guilford.
- Hughes, Dyfrig A., Adrian Bagust, Alan Haycox, and Tom Walley (2001), "The Impact of Non-Compliance on the Cost-Effectiveness of Pharmaceuticals: A Review of the Literature," *Health Economics*, 10 (October), 601–15.
- Jiang, Yuwei, Gerald J. Gorn, Maria Galli, and Amitava Chattopadhyay (2016), "Does Your Company Have the Right Logo? How and Why Circular and Angular Logo Shapes Influence Brand Attribute Judgments," *Journal of Consumer Research*, 42 (5), 709–26.
- John, Oliver P., Eileen M. Donahue, and Robert L. Kentle (1991), "The Big Five Inventory-Versions 4a and 54," Technical Report, Institute of Personality and Social Research, University of California, Berkeley.
- Kaplan, Leon B., George J. Szybillo, and Jacob Jacoby (1974), "Components of Perceived Risk in Product Purchase," *Journal of Applied Psychology*, 59 (June), 287–91.
- Keller, Kevin Lane (2003), *Strategic Brand Management: Building, Measuring and Managing Brand Equity*, 2nd ed., Upper Saddle River, NJ: Prentice Hall.
- Kunda, Ziva (1990), "The Case for Motivated Reasoning," *Psychological Bulletin*, 108 (November), 480–98.
- Labrecque, Lauren I. and George R. Milne (2007), "Exciting Red and Competent Blue: The Importance of Color in Marketing," *Journal of the Academy of Marketing Science*, 40 (5), 711–27.
- Levav, Jonathan and Rui Juliet Zhu (2009), "Seeking Freedom Through Variety," *Journal of Consumer Research*, 36 (December), 600–10.
- Madden, Thomas J., Kelly Hewett, and Martin S. Roth (2000), "Managing Images in Different Cultures: A Cross-National Study of Color Meanings and Preferences," *Journal of International Marketing*, 8 (Winter), 90–107.
- Margulies, Walter P. (1977), "Make Most of Your Corporate Identity," *Harvard Business Review*, 55 (July/August), 66–74.
- Maslow, Abraham Harold (1943), "A Theory of Human Motivation," *Psychological Review*, 50 (4), 370–96.
- Mata, André, Mário B. Ferreira, and Steven J. Sherman (2013), "The Metacognitive Advantage of Deliberative Thinkers: A Dual-Process Perspective on Overconfidence," *Journal of Personality and Social Psychology*, 105 (September), 353–73.
- Menon, Geeta, Priya Raghuram, and Nidhi Agrawal (2007), "Health Risk Perceptions and Consumer Psychology," in *The Handbook of Consumer Psychology*, Curtis Haugtvedt, Paul Herr and Frank Kardes, eds., Lawrence Erlbaum and Associates, 981–1010.
- Meyers-Levy, Joan and Rui (Juliet) Zhu (2007), "The Influence of Ceiling Height: The Effect of Priming on the Type of Processing People Use," *Journal of Consumer Research*, 34 (August), 174–86.
- Montgomery, Cynthia A. and Birger Wernerfelt (1992), "Risk Reduction and Umbrella Branding," *Journal of Business*, 65 (January), 31–50.
- Palinkas, Lawrence A. (2003), "The Psychology of Isolated and Confined Environments: Understanding Human Behavior in Antarctica," *American Psychologist*, 58 (May), 353–63.
- Park, C. Whan, Andreas B. Eisingerich, Gratiana Pol, and Jason Whan Park (2013), "The Role of Brand Logos in Firm Performance," *Journal of Business Research*, 66 (February), 180–87.
- Smith, Peter Scharff (2006), "The Effects of Solitary Confinement on Prison Inmates: A Brief History and Review of the Literature," *Crime and Justice*, 34 (1), 441–528.

- Stampler, Laura (2012), Kraft Reveals 4th New Logo in Four Years, *Business Insider*, October 4.
- Strachman, Amy and Shelly L. Gable (2006), "What You Want (and Do Not Want) Affects What You See (and Do Not See): Avoidance Social Goals and Social Events," *Personality and Social Psychology Bulletin*, 32 (11), 1446–58.
- Thompson, Megan M., Michael E. Naccarato, and K. E. Parker (1989), "Assessing Cognitive Need: The Development of the Personal Need for Structure and Personal Fear of Invalidity Scales," presented at the Annual Meeting of the Canadian Psychological Association, Halifax, NS, Canada.
- White, J. Dennis and Elise L. Truly (1989), "Price-Quality Integration in Warranty Evaluation a Preliminary Test of Alternative Models of Risk Assessment," *Journal of Business Research*, 19 (September), 109–25.
- Zhang, Yinlong, Lawrence Feick, and Lydia J. Price (2006), "The Impact of Self-Construal on Aesthetic Preference for Angular versus Rounded Shapes," *Personality and Social Psychology Bulletin*, 32 (June), 794–805.