AMERICAN MARKETING ASSOCIATION

Article

Journal of Marketing Research
2019, Vol. 56(1) 89-103

DOI: 10.1177/0022243718820548
journals.sagepub.com/home/mrj
SAGE

The Visual Asymmetry Effect: An Interplay of Logo Design and Brand Personality on Brand Equity

Jonathan Luffarelli, Antonios Stamatogiannakis, and Haiyang Yang

Abstract

Five studies using a variety of experimental approaches and secondary data sets show that a visual property present in all brand logos—the degree of (a)symmetry—can interact with brand personality to affect brand equity. Specifically, compared with symmetrical logos, asymmetrical logos tend to be more arousing, leading to increased perceptions of excitement. As such, consumers tend to perceive asymmetrical logos as more congruent with brands that have an exciting personality. This can boost consumers' evaluations and the market's financial valuations of such brands, a phenomenon referred to as the "visual asymmetry effect." The studies also show that this interplay between brand personality and logo design occurs only for the personality of excitement and the visual property of asymmetry. These findings add to theories of visual design and branding and offer actionable insights to marketing practitioners.

Keywords

visual design, logo design, brand personality, brand equity, arousal

Online supplement: https://doi.org/10.1177/0022243718820548

Strong brands offer major advantages in the marketplace (Mizik 2014; Rust et al. 2004). Two key elements of such brands are a distinctive, favorable brand personality (Aaker 1997; Keller 1993) and a well-designed logo (Cian, Krishna, and Elder 2014; Jiang et al. 2016). Because extant research on these two brand elements has largely advanced in parallel, the current understanding of their interplay is limited. Our research helps fill this gap in the literature.

We propose and test a mechanism underlying how brand personality and logo design can interact to affect brand equity. We focus on symmetry, a visual property that is commonly used in commercial designs and has been shown to enhance consumers' evaluations of marketing stimuli (Henderson and Cote 1998; Reber, Schwarz, and Winkielman 2004; Van der Lans et al. 2009). We demonstrate that, compared with symmetrical logos, asymmetrical logos—those consisting of halves that are not perfectly mirrored along a vertical, horizontal, or diagonal axis—tend to be more arousing and thus be perceived as more congruent with brands with an exciting personality. As such, asymmetrical logos can boost consumers' evaluations and the market's financial valuations of brands with an exciting personality, a phenomenon we refer to as the "visual asymmetry effect." We find that this interplay between brand personality and logo design occurs only for the brand personality of excitement and the visual property of asymmetry.

This research helps illustrate how and why logo design and brand personality can jointly affect brand equity. This research is also managerially important because the brand personality of excitement is widely used across industries and markets (Aaker 1997; Aaker, Benet-Martinez, and Garolera 2001; Aaker, Fournier, and Brasel 2004; Sundar and Noseworthy 2016). In fact, to gauge the prevalence of brands in the marketplace that are perceived to have an exciting personality, we conducted a survey on 509 U.S. consumers. This survey revealed that 38% of 172 top-ranked brands have an exciting personality, and 69% have a more exciting personality than other brands in the same product category (see Web Appendix A). We also conducted two pilot studies to probe whether commercial art designers were fully leveraging the benefits of asymmetrical logos for brands with an exciting personality. We found that, for brands with an exciting personality, designers either more strongly advocated for using a symmetrical logo (vs. asymmetrical logo;

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$p < .02$) or were indifferent when asked to choose between an asymmetrical and a symmetrical logo (52% vs. 48%, respectively; $p > .90$; see Web Appendix B). Thus, our research on the visual asymmetry effect offers important theoretical implications and actionable managerial insights.

Conceptual Background

Brand Personality and Logo Design

"Brand personality" refers to enduring and human-like characteristics of a brand and is typically conceptualized as consisting of five dimensions: competence, sophistication, ruggedness, sincerity, and excitement (Aaker 1997). For example, the personality of excitement is characterized by human-like traits such as "daring," "young," and "imaginative." The effects of brand personality on brand equity are well documented. A distinctive and favorable brand personality can positively affect consumers' satisfaction, loyalty (Brakus, Schmitt, and Zarantonello 2009), and willingness to pay (Sonnier and Ainslie 2011). Research also has shown that the brand personality of excitement can influence various aspects of consumer behavior (Aaker, Fournier, and Brasel 2004; Sundar and Noseworthy 2016). For instance, Lovett, Peres, and Shachar (2013) show that an exciting brand personality can increase word of mouth because consumers tend to talk more about brands when they experience arousal. Swaminathan, Stilley, and Ahluwalia (2009) show that an exciting brand personality can positively affect brand attachment for consumers primed to think about anxiety-inducing relationships that they want to avoid.

A separate stream of literature shows that the design properties of visual marketing stimuli can also considerably influence brand equity (Bloch 1995; Orth and Malkewitz 2008; Schmitt, Simonson, and Marcus 1995). For example, colors (Gorn et al. 2004; Van Tilburg et al. 2015), forms, and patterns (Hagtvedt and Patrick 2008; Sundar and Noseworthy 2014) can all influence consumer responses to visual brand elements. In the logo design literature, it is well documented that logos—visual designs that uniquely identify brands—can affect consumers' brand perceptions (Henderson et al. 2003; Henderson, Giese, and Cote 2004; Van der Lans et al. 2009). For instance, logo dynamism (Cian, Krishna, and Elder 2014), incompleteness (Hagtvedt 2011), and circularity (Jiang et al. 2016) can make brands appear more modern, innovative, and customer-sensitive, respectively. Logos can thus improve brand image (Schechter 1993), facilitate brand identification (Henderson and Cote 1998), and lead to more favorable brand attitudes (Brasel and Hagtvedt 2016).

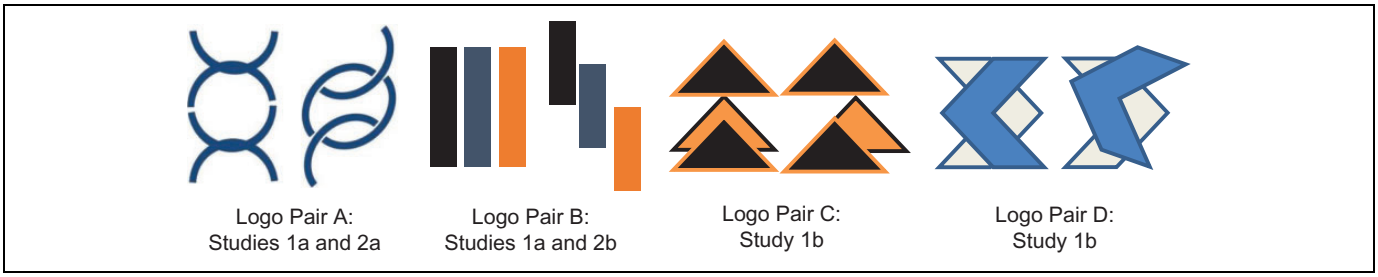
In summary, prior work has provided important insights into the independent effects of brand personality and logo design. However, the current understanding of the interplay of these two brand elements is incomplete. Our research helps fill this gap in the literature by investigating the visual asymmetry effect and its underlying mechanism.

The Visual Asymmetry Effect

Prior research has suggested that asymmetrical visual stimuli can be more arousing than symmetrical stimuli (Berlyne 1960, 1971; Locher and Nodine 1987, 1989). For instance, Krupinski and Locher (1988) manipulated the degree of asymmetry of visual stimuli and found that individuals were significantly more aroused when viewing more asymmetrical (vs. symmetrical) stimuli. Specifically, they noted that "symmetrical arrays . . . produce less arousal" (p. 358). This pattern has been attributed to the fact that the processing of asymmetrical stimuli requires more extensive visual exploration, which leads individuals to experience higher levels of arousal (Berlyne 1960, 1971; Krupinski and Locher 1988; Locher and Nodine 1987). Along these lines, Locher and Nodine (1989) found that while "symmetry restricts exploration" (p. 475), asymmetry enhances visual exploration. It is important to note that visual asymmetry can also increase visual complexity because, for example, asymmetrical stimuli can sometimes include more visual information than symmetrical stimuli (Krupinski and Locher 1988; Pieters, Wedel, and Batra 2010). However, complexity and asymmetry are two conceptually and empirically distinct design properties, which can be manipulated orthogonally (Eisenman 1968; Eisenman and Rappaport 1967; Grove and Eisenman 1970; Henderson and Cote 1998). Following this stream of research, we conceptualize and operationalize asymmetry as a design property that is distinct from complexity. Building on the aforementioned literature, we propose that because asymmetrical logos can be more arousing than symmetrical ones, and because excitement is associated with higher levels of arousal (Russell 2003), asymmetrical logos can be perceived as more exciting than symmetrical ones. We thus hypothesize:

> **H_1: (a)** Compared with symmetrical logos, asymmetrical logos tend to be perceived as more exciting. **(b)** This effect is mediated by arousal.

If asymmetrical (vs. symmetrical) logos tend to be perceived as more exciting, they should also be perceived as more congruent with brands that possess human-like characteristics relating to the notion of excitement (i.e., the brand personality of excitement). Higher levels of congruence among brand elements can lead to more favorable consumer responses (Bloch 1995; Keller 1993; Schmitt, Simonson, and Marcus 1995) such as higher purchase intentions (Batra and Homer 2004) and more favorable product evaluations (Krishna, Elder, and Caldara 2010). For example, logos that are more dynamic are perceived as more congruent with brands characterized by modernity (vs. traditionalism), thus boosting consumer attitudes toward those brands (Cian, Krishna, and Elder 2014). Adding to this literature, we propose that because asymmetrical (vs. symmetrical) logos tend to be perceived as more congruent with brands with an exciting personality, they can positively influence consumers' evaluations of those brands (i.e., customer-based brand equity).



	Asymmetry	Fluency	Liking	Dynamism	Complexity	JPEG File Size (in KB)	Arousal	Excitement
Logo Pair A								
Symmetrical version	*1.87*	3.5	3.56	2.95	2.55	5.19	*2.55*	*.61*
Asymmetrical version	*2.67*	3.27	3.53	3.31	2.38	5.15	*3.27*	*.77*
Logo Pair B								
Symmetrical version	*2.06*	4.06	3.15	2.32	1.84	2.77	*3.88*	*.78*
Asymmetrical version	*2.84*	4.04	3.32	2.68	1.6	2.54	*4.66*	*1.08*
Logo Pair C								
Symmetrical version	*3.13*	3.57	2.43	2.98	2.1	6.06	*3.43*	*3.49*
Asymmetrical version	*3.77*	3.53	2.58	2.85	2.22	5.58	*3.82*	*4.22*
Logo Pair D								
Symmetrical version	*2.57*	3.9	3.45	3.37	2.2	4.73	*3.6*	*3.66*
Asymmetrical version	*3.97*	3.53	3.22	3.32	2.08	5.14	*3.98*	*4.11*

Notes: The symmetrical logo version of each logo pair is presented to the left of its asymmetrical counterpart. These measures were obtained using the procedures and scales described in Studies 1 and 2. Italicized ratings indicate statistically significant differences ($p < .05$) between the symmetrical and asymmetrical logo version of a logo pair.

Figure 1. Examples of logo pairs used in Studies 1 and 2.

Moreover, building on studies that have examined how products' visual designs affect brands' financial performance (Landwehr, Labroo, and Herrmann 2011; Landwehr, McGill, and Herrmann 2011; Landwehr, Wentzel, and Herrmann 2013), we posit that because asymmetrical logos boost consumers' evaluations of brands with an exciting personality, they can also positively influence the market's financial valuations of those brands (i.e., financial-based brand equity). This occurs because consumers' more favorable brand evaluations can increase brands' financial performance (Datta, Ailawadi, and Van Heerde 2017; Mizik 2014; Mizik and Jacobson 2008, 2009). More formally:

> **H_2: (a)** Compared with symmetrical logos, asymmetrical logos can positively affect consumers' evaluations of brands with an exciting personality. **(b)** This effect is mediated by perceptions of logo–brand congruence.
>
> **H_3: (a)** Compared with symmetrical logos, asymmetrical logos can positively affect the market's financial valuations of brands with an exciting personality. **(b)** This effect is mediated by consumers' brand evaluations.

Study 1

In Study 1a, we examined whether asymmetrical (vs. symmetrical) logos tend to be perceived as more exciting (H_{1a}). In Study 1b, we tested the mediating role of arousal (H_{1b}).

Stimuli and Tests

We developed eight different pairs of logos (four for Study 1a and four for Study 1b; see Web Appendix C). Each pair comprised a symmetrical logo and its asymmetrical counterpart. As in all of our experiments, the logo pairs were developed to ensure that design properties other than asymmetry did not significantly differ across each pair: each logo pair was created by repositioning existing parts (not by adding new ones) so that no half of the logo perfectly mirrored the other half along any axis (see Figure 1 for examples). Moreover, the amount of visual information contained in the two logos of each pair, measured by the size of JPEG files (Pieters, Wedel, and Batra 2010), did not differ statistically. Specifically, a Mann–Whitney U test indicated that, across our studies, the asymmetrical logos, on average, did not differ in JPEG file size from their symmetrical counterparts ($U = 37.50$, $z = -.22$, $p > .80$).

In addition, tests (each with $n = 60$) confirmed that, for each logo pair used in Study 1, the asymmetrical logo was perceived to be significantly more asymmetrical than its symmetrical counterpart ($ps < .03$). Tests also confirmed that the two logos of each pair were not significantly different in perceived complexity, fluency, likability, and dynamism ($ps > .10$), thus allowing us to control for the potential effects of these design properties (Cian, Krishna, and Elder 2014, 2015; Reber, Schwarz, and Winkielman 2004). As all the other tests reported

in this research, these tests were conducted with participants from the same population as those of the main study.

Study 1a: Method

Three hundred six individuals (M_{age} = 35 years; 49% female) recruited from Amazon Mechanical Turk (MTurk) participated in this 2 (logo shape: symmetrical vs. asymmetrical) × 4 (logo pair replicate) within-participant design study. They completed the study in an average of about 12.5 minutes and, as in all of our studies, were paid based on a compensation rate of $7.25 per hour. Each participant saw the four symmetrical and four asymmetrical logos of four logo pairs in a random order. After viewing each logo, participants were asked to select from a list of 15 adjectives (presented in a random order) the 3 adjectives that best characterized their perceptions of the logo. These adjectives described five types of perceptions that mirror the five brand personality dimensions (excitement: cool, up-to-date, young; sincerity: family-oriented, wholesome, sentimental; competence: intelligent, technical, confident; sophistication: glamorous, feminine, charming; ruggedness: masculine, tough, western; see Aaker 1997). For each logo, we counted the number of adjectives related to perceived excitement (ranging from 0 to 3) that participants selected. This served as a measure of perceived excitement evoked by the logo. Similarly, we also counted the number of adjectives related to the other four types of logo perceptions that participants selected.

Study 1a: Results

Logo-evoked perceptions of excitement. We conducted a 2 × 4 repeated-measures analysis of variance (ANOVA) with logo shape (symmetrical vs. asymmetrical) and the four logo pair replicates as within-participant factors, and the numbers of excitement-related adjectives selected for the replicates as the repeated measure. This analysis revealed a significant main effect of logo pair replicate ($F(1, 305) = 10.84$, $p < .001$) and a significant logo shape × logo pair replicate interaction effect ($F(1, 305) = 7.20$, $p < .01$) on the number of excitement-related adjectives selected by participants. These results suggest that, not surprisingly, the four logo pair replicates differed in the extent to which they were perceived as exciting. More importantly, we found a main effect of logo shape on the number of excitement-related adjectives selected ($F(1, 305) = 28.62$; $p < .001$). Further analyses of this main effect showed that the number of excitement-related adjectives selected was higher for the asymmetrical ($M_{logo1} = .77$; $M_{logo2} = 1.08$; $M_{logo3} = .72$; $M_{logo4} = .77$; $M_{all\ logos} = .83$) than for the symmetrical logos ($M_{logo1} = .61$; $M_{logo2} = .78$; $M_{logo3} = .68$; $M_{logo4} = .75$; $M_{all\ logos} = .71$) for all four pairs (although, in this particular experimental setup, the individual pair differences reached statistical significance only in two of the pairs). These results indicate that asymmetrical logos tend to be perceived as more exciting than symmetrical logos.

Other logo-evoked perceptions. We conducted four additional ANOVAs similar to the one reported in the previous section. The only difference was that in each, we used the numbers of selected adjectives corresponding to the other four types of logo-evoked perceptions as the repeated measure. We observed that significantly fewer adjectives related to sincerity ($M_{symmetrical} = .57$ vs. $M_{asymmetrical} = .51$; $F(1, 305) = 7.22$, $p < .01$), competence ($M_{symmetrical} = 1.01$ vs. $M_{asymmetrical} = .94$; $F(1, 305) = 7.56$, $p < .01$), and ruggedness ($M_{symmetrical} = .45$ vs. $M_{asymmetrical} = .41$; $F(1, 305) = 5.63$, $p < .02$) were selected for asymmetrical logos than for symmetrical ones. Although unrelated to our hypotheses, these results indicate that logo asymmetry might make brands appear less sincere, competent, and rugged. We also observed that significantly more adjectives related to sophistication were selected for asymmetrical logos ($M = .30$) than for symmetrical ones ($M = .27$; $F(1, 305) = 4.09$, $p < .05$). However, the difference in the number of excitement-related adjectives selected for asymmetrical versus symmetrical logos ($M = .12$) was significantly greater than the corresponding difference for any of the other four types of perceptions ($M_{sophistication} = .03$; $F(1, 305) = 9.11$, $p < .01$; $M_{sincerity} = .06$; $F(1, 305) = 8.32$, $p < .01$; $M_{competence} = .07$; $F(1, 305) = 5.44$, $p < .02$; $M_{ruggedness} = .04$; $F(1, 305) = 10.64$, $p < .01$). These results suggest that asymmetrical logos affect perceptions of excitement significantly more than any of the other four types of perceptions.

Study 1b: Method

In Study 1a, we showed that logo asymmetry can affect perceptions of excitement. In Study 1b, we aimed to explore whether arousal mediates this effect and to replicate the findings of Study 1a using a different set of logo pairs as stimuli, a different type of dependent measure, and a between-participant design.

Two hundred twenty individuals (M_{age} = 31 years; 41% female) recruited from MTurk participated in this study for monetary compensation. They were randomly assigned according to a 2 (logo shape: symmetrical vs. asymmetrical) × 4 (logo pair replicate) between-participant design. We manipulated logo shape and logo pair replicate using the four symmetrical and four asymmetrical logos of four logo pairs described previously.

For each logo shown, participants first rated the logo on five excitement-related adjectives (trendy, cool, daring, imaginative, and exciting; 1 = "not at all," and 7 = "very"; Aaker 1997). These ratings were averaged into a measure of logo-evoked perception of excitement ($\alpha = .90$). Next, participants indicated how they felt when viewing the logo using five seven-point differential items adapted from an established scale ("aroused/unaroused," "stimulated/relaxed," "frenzied/sluggish," "jittery/dull," and "wide-awake/sleepy"; Mehrabian and Russell 1974). These responses were averaged into a single measure of logo-evoked arousal ($\alpha = .87$).

Study 1b: Results

Instructional manipulation check. Following an established procedure (Oppenheimer, Meyvis, and Davidenko 2009), six participants were excluded for failing to correctly answer a question that verified whether they had properly read the instructions. Including these participants in the following analyses yielded a similar pattern of results.

Logo-evoked perceptions of excitement. We conducted a 2 × 4 between-participant ANOVA with logo shape (symmetrical vs. asymmetrical) and the four logo pair replicates as fixed factors, and perceptions of excitement as the dependent variable. Replicating the core finding of Study 1a, and supporting H_{1a}, the asymmetrical logos ($M_{logo1} = 3.09$; $M_{logo2} = 4.22$; $M_{logo3} = 3.52$; $M_{logo4} = 4.11$; $M_{all\ logos} = 3.74$) were perceived as significantly more exciting than the symmetrical logos ($M_{logo1} = 2.08$; $M_{logo2} = 3.49$; $M_{logo3} = 3.22$; $M_{logo4} = 3.66$; $M_{all\ logos} = 3.11$), yielding a significant main effect of logo shape ($F(1, 206) = 12.85$, $p < .001$). The main effect of logo pair replicate was also significant ($F(3, 206) = 12.12$, $p < .001$), suggesting that the replicates differed in the perceptions they evoked. The logo shape × logo pair replicate interaction effect was not significant ($F(3, 206) = .80$, $p > .50$). Given the significant main effect of logo shape, these results indicate that the asymmetrical logos were perceived as more exciting than the symmetrical ones across replicates. As a robustness check, we performed an additional between-participant ANOVA, including the four logo pair replicates as a random (vs. fixed) factor. This analysis yielded similar results: the asymmetrical logos were perceived as more exciting than the symmetrical ones ($p < .03$), and the logo shape × logo pair replicate interaction effect was not significant ($p > .50$).

Mediation through arousal. Because logo pair replicate did not interact with logo shape, we followed an established practice (Cheema and Patrick 2008; Cryder, Botti, and Simonyan 2017) and collapsed data across the four logo pair replicates to conduct our mediation analysis. In this analysis, logo shape (symmetrical vs. asymmetrical) was the independent variable, logo-evoked arousal was the mediator, and perceptions of excitement was the dependent variable (PROCESS Model 4, Hayes 2017). This analysis showed that asymmetrical logos ($M = 3.77$) were significantly more arousing than symmetrical ones ($M = 3.36$; $\beta = .41$, $t(212) = 2.42$, $p < .02$). Higher levels of arousal, in turn, significantly boosted perceptions of excitement ($\beta = .72$, $t(211) = 12.43$, $p < .001$). The confidence interval (CI) of the indirect effect of logo shape excluded zero (95% CI = [.07, .54]) and the residual direct effect of logo shape on perceptions of excitement was positive and significant ($\beta = .33$, $t(211) = 2.30$, $p < .03$), indicating a partial mediation (Zhao, Lynch, and Chen 2010). Finally, the average variance extracted (AVE) for the mediator (arousal; AVE = .57) and dependent variable (perceptions of excitement; AVE = .62) exceeded the squared correlation between these two measures ($r^2 = .44$), showing discriminant validity (Fornell and Larcker 1981).

Discussion

In summary, the results of Studies 1a and 1b show that asymmetrical (vs. symmetrical) logos tend to be perceived as more exciting (H_{1a}), although the magnitude of this effect appeared to vary as a function of specific stimuli in these two studies, suggesting the possible existence of a moderator. Furthermore, Study 1b showed that logo-evoked arousal mediated the effect of logo asymmetry on perceptions of excitement (H_{1b}). This mediation was partial, suggesting the possible existence of another underlying factor. Finally, the results of Study 1a also suggested that logo asymmetry could potentially have a negative impact on perceptions of sincerity, competence, and ruggedness.

Study 2

In Study 2a, we aimed to show that asymmetrical (vs. symmetrical) logos can boost consumers' evaluations of brands with an exciting personality, but not of brands with another personality (H_{2a}). In Study 2b, we sought to demonstrate a process through which using an asymmetrical (vs. symmetrical) logo for an exciting brand personality can improve consumers' brand evaluations (H_{2b}).

Stimuli and Tests

We developed two different pairs of logos (one for Study 2a and one for Study 2b; see Figure 1). Each pair comprised a symmetrical logo and its asymmetrical counterpart. As noted in Study 1, the JPEG file sizes (and, thus, the amount of visual information) of the asymmetrical logos used in our studies did not statistically differ from those of their symmetrical counterparts ($U = 37.50$, $z = -.22$, $p > .80$). Tests (each with $n = 60$) confirmed that, for each pair, the asymmetrical logo was perceived to be significantly more asymmetrical and arousing than its symmetrical counterpart ($ps < .03$). Tests also confirmed that the two logos of each pair did not significantly differ in perceived complexity, fluency, likability, and dynamism ($ps > .10$).

For Study 2a, we developed two taglines that portrayed a brand of women's apparel as having either an exciting ("Be electrifying") or sophisticated ("Be charming") personality. A test ($n = 70$) confirmed that participants perceived that the brand had a significantly more exciting ($M = 5.14$ vs. $M = 3.60$; $F(1, 68) = 14.86$, $p < .001$) and less sophisticated ($M = 3.40$ vs. $M = 4.51$; $F(1, 68) = 8.44$, $p < .01$) personality when it had the tagline "Be electrifying" than when it had the tagline "Be charming." There were no significant differences in liking and perceived tagline-brand fit between the two taglines ($ps > .25$).

For Study 2b, we developed two versions of a description of a beverage brand. Following an established method to

manipulate brand personality (Aaker, Fournier, and Brasel 2004; Johar, Sengupta, and Aaker 2005), we embedded in these descriptions six traits related to either the personality of excitement (independent, unique, contemporary, imaginative, cool, and exciting) or the control brand personality, sincerity (real, original, small-town, wholesome, down-to-earth, and sincere; Aaker 1997). For example, participants in the in the exciting [sincere] condition read that the "Independent [Real] Juice Company's products are described as imaginative, cool, and exciting [wholesome, down-to-earth, and sincere]" (for details, see Web Appendix D). A test (n = 60) confirmed that participants perceived that the target brand had a significantly more exciting (M = 5.13 vs. M = 4.43; F(1, 58) = 7.99, $p < .01$) and less sincere (M = 4.59 vs. M = 5.93; F(1, 58) = 20.87, $p < .001$) personality in the exciting (vs. sincere) brand description.

Study 2a: Method

Given that the target product category was gender specific (women's apparel), 230 female participants (M_{age} = 36 years) recruited from MTurk participated in this study for monetary compensation. Seventeen male participants who mistakenly participated were excluded from our analyses, as were three female participants who failed an instructional manipulation check (Oppenheimer, Meyvis, and Davidenko 2009). Including them in the following analyses yielded a similar pattern of results. Participants were randomly assigned according to a 2 (logo shape: symmetrical vs. asymmetrical) × 2 (brand personality: sophistication vs. excitement) between-participant design. We manipulated logo shape and brand personality using the stimuli described previously. After participants saw their assigned logo and tagline, they evaluated the target brand on two seven-point scales (1 = "do not like at all/very unfavorable," 7 = "like a lot/very favorable"), which were averaged into a single measure (r = .79).

Study 2a: Results

We performed a 2 × 2 between-participant ANOVA with logo shape (symmetrical vs. asymmetrical) and brand personality (sophistication vs. excitement) as fixed factors, and brand evaluations as the dependent variable. The results revealed significant main effects of logo shape (F(1, 206) = 7.83, $p < .01$) and brand personality (F(1, 206) = 5.43, $p < .03$) on brand evaluations, with both the asymmetrical logo and exciting brand personality leading to more favorable evaluations. More importantly, these main effects were qualified by a significant logo shape × brand personality interaction effect (F(1, 206) = 4.94, $p < .03$), which we examined through a series of contrast analyses (see Figure 2, Panel A). In support of H_{2a}, participants evaluated the brand with an exciting personality significantly more favorably when it had the asymmetrical logo (M = 4.53) than when it had the symmetrical one (M = 3.74; F(1, 206) = 12.37, $p = .001$). However, when the brand had a sophisticated personality, there was no significant difference in brand evaluations between the asymmetrical (M = 3.81) and symmetrical logo conditions (M = 3.72; F(1, 206) = .17, $p > .65$).

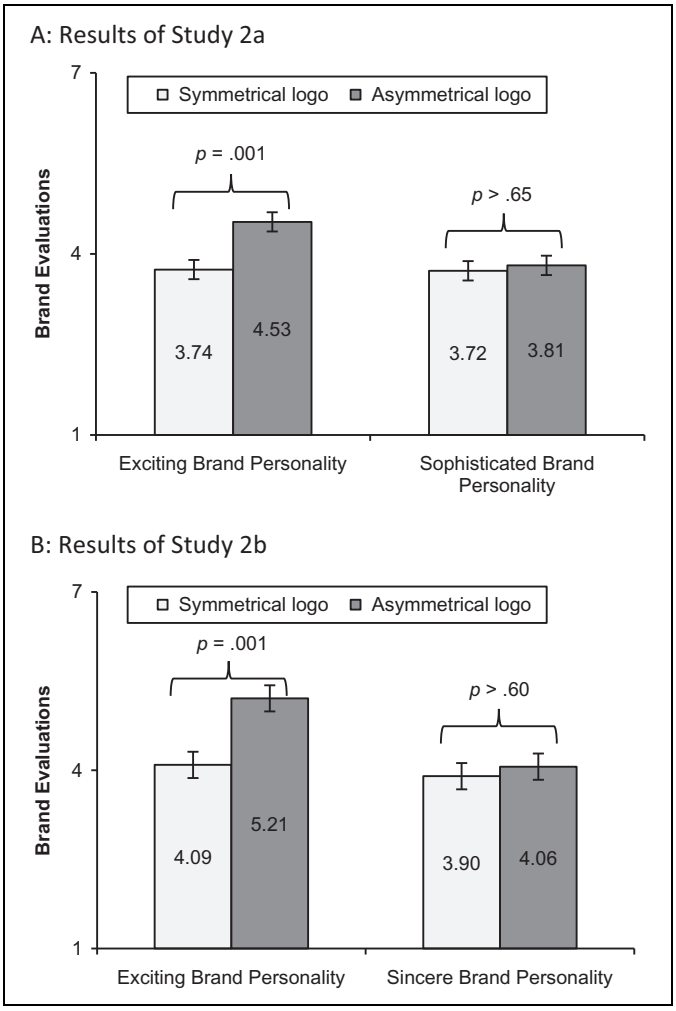


Figure 2. Study 2: The effect of logo asymmetry on brand evaluations.

Study 2b: Method

In Study 2a, we showed that asymmetrical logos can boost consumers' evaluations of brands with an exciting personality. In Study 2b, we aimed to demonstrate a mechanism that underlies this effect. Moreover, we sought to assess the generalizability of Study 2a's findings by replicating them using a different set of stimuli and control brand personality. Finally, to further demonstrate robustness and minimize the potential influence of common method variance (Podsakoff et al. 2003), we used different measurement approaches (i.e., grid, graphical scale, and Likert scale) to capture the different constructs (i.e., arousal, congruence, and brand evaluation) examined in Study 2b.

One hundred forty individuals (M_{age} = 37 years; 44% female) recruited from MTurk participated in this study for monetary compensation. They were randomly assigned according to a 2 (logo shape: symmetrical vs. asymmetrical) × 2

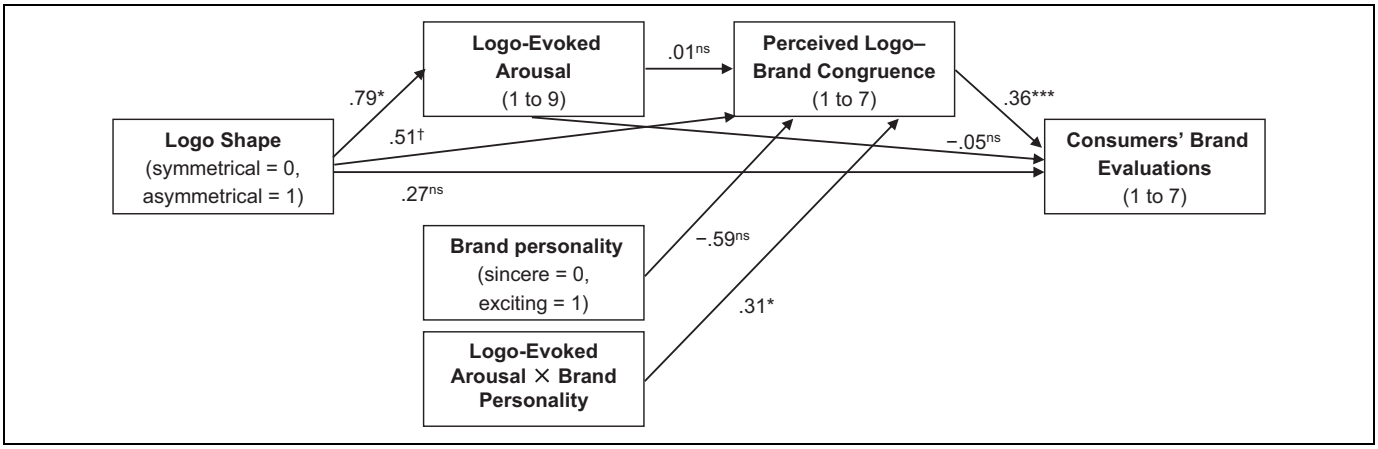


Figure 3. Study 2b: The effect of logo asymmetry on brand evaluations through arousal and congruence.
Notes: The ranges of each measure are in parentheses. See Table 1 for detail regarding this moderated mediation analysis.
$^{ns}p > .10$. $^{\dagger}p < .10$. $^{*}p < .05$. $^{***}p < .001$.

(brand personality: sincerity vs. excitement) between-participant design. We manipulated logo shape and brand personality using the stimuli described previously.

Participants first saw either the symmetrical or the asymmetrical version of the logo. Next, they were asked to indicate how they felt about the logo on a grid measure (Russell, Weiss, and Mendelsohn 1989). Specifically, they were asked to click on one of the squares of a 9 × 9 matrix, with the vertical axis capturing arousal (1 = "very relaxed," and 9 = "very stimulated") and the horizontal axis capturing valence (1 = "very unpleasantly," and 9 = "very pleasantly"). Then, participants saw the same logo alongside either the sincere or exciting brand description and rated the extent to which the logo and the brand were congruent using a graphical scale adapted from Bergami and Bagozzi (2000). This graphical scale depicted seven possible levels of overlap between two circles (coded as 1 = "far apart," and 7 = "complete overlap"), with one circle representing the logo and the other circle, the brand (Bergami and Bagozzi 2000). Participants were told that a higher level of overlap between the two circles indicated a higher level of congruence between the logo and the brand. Finally, participants evaluated the target brand on two seven-point scales (r = .81) identical to those used in Study 2a. Four participants were excluded from the analyses for failing an instructional manipulation check (Oppenheimer, Meyvis, and Davidenko 2009). Including these participants in the analyses yielded a similar pattern of results.

Study 2b: Results

Brand evaluations. We performed a 2 × 2 between-participant ANOVA with logo shape (symmetrical vs. asymmetrical) and brand personality (sincerity vs. excitement) as fixed factors, and brand evaluations as the dependent variable. We found significant main effects of logo shape ($F(1, 132) = 4.63$, $p < .04$) and brand personality ($F(1, 132) = 9.03$, $p < .01$) on brand evaluations, with both the asymmetrical logo and exciting brand personality leading to more favorable evaluations. More importantly, these effects were qualified by a significant logo shape × brand personality interaction ($F(1, 132) = 8.22$, $p < .01$), which we examined through a series of contrasts analyses (see Figure 2, Panel B). Providing additional support for H_{2a}, participants evaluated the brand with an exciting personality significantly more favorably when it had the asymmetrical logo ($M = 5.21$) than when it had the symmetrical logo ($M = 4.09$; $F(1, 132) = 12.41$, $p = .001$). When the brand had a sincere personality, there was no significant difference in brand evaluations between the asymmetrical ($M = 3.90$) and the symmetrical logo conditions ($M = 4.06$; $F(1, 132) = .26$, $p > .60$).

Serial moderated mediation. We proposed that consumers can evaluate brands with an exciting personality more favorably when their logos are asymmetrical (H_{2a}) because asymmetrical (vs. symmetrical) logos tend to be perceived as more arousing (H_{1b}) and thus more congruent with those brands (H_{2b}). To test this process, we conducted a serial moderated mediation regression analysis with logo shape (symmetrical vs. asymmetrical) as the independent variable, logo-evoked arousal as the first mediator, perceived logo–brand congruence as the second mediator, brand evaluations as the dependent variable, and brand personality (sincerity vs. excitement) as the moderator of the arousal–congruence link (PROCESS Model 91, Hayes 2017; see Figure 3). Analyses reported in Web Appendix E showed discriminant validity between the mediating and dependent variables.

This serial moderated mediation analysis (for details, see Table 1, Panels A–E) showed that the asymmetrical logo was significantly more arousing than the symmetrical one ($\beta = .79$, $t(134) = 2.39$, $p < .02$). There was no direct association between logo-evoked arousal (the first mediator) and perceived logo–brand congruence (the second mediator; $\beta = .01$, $t(131) = .09$, $p > .90$). Instead, as predicted, we found a positive and significant logo-evoked arousal × brand personality interaction effect on perceived logo–brand congruence ($\beta = .31$, $t(131) = 2.19$, $p < .04$). The conditional effects of arousal for the different brand personalities (sincerity vs. excitement) revealed

Table 1. Study 2b: The Effect of Logo Asymmetry on Brand Evaluations Through Two Sequential Mediators (Arousal and Congruence).

A: Logo-Evoked Arousal Model Summary	R	R^2	F	*p*-Value
	.20	.04	5.70	.018
Independent Variable	**β**	**SE**	**t**	***p*-Value**
Constant	3.87	.23	16.72	<.001
Logo shape (X)	.79	.33	2.39	.018
B: Perceived Logo–Brand Congruence Model Summary	**R**	**R^2**	**F**	***p*-Value**
	.43	.18	7.42	<.001
Independent Variable	**β**	**SE**	**t**	***p*-Value**
Constant	2.15	.47	4.56	<.001
Logo shape (X)	.51	.27	1.86	.065
Logo-evoked arousal (M1)	.01	.11	.09	.926
Brand personality (W)	−.59	.66	−.90	.368
M1 × W	.31	.14	2.19	.031
C: Brand Evaluations Model Summary	**R**	**R^2**	**F**	***p*-Value**
	.44	.20	10.82	<.001
Independent variable	**β**	**SE**	**t**	***p*-Value**
Constant	3.36	.29	11.62	<.001
Logo shape (X)	.27	.22	1.21	.228
Logo-evoked arousal (M1)	−.05	.06	−.81	.418
Perceived logo–brand congruence (M2)	.36	.07	5.22	<.001
D: Conditional Effects of (M1) at Values of (W) on Perceived Logo–Brand Congruence	**β**	**SE**	**LLCI**	**ULCI**
Sincere brand personality (W = 0)	.01	.11	−.21	.23
Exciting brand personality (W = 1)	.32	.09	.14	.50
E: Conditional Indirect Effects of (X) through (M1) and (M2) on Perceived Logo–Brand Congruence at Values of (W)	**β**	**SE**	**LLCI**	**ULCI**
Sincere brand personality (W = 0)	.01	.03	−.07	.06
Exciting brand personality (W = 1)	.09	.06	.01	.25

Notes: LLCI = lower limit of the 95% CI; ULCI = upper limit of the 95% CI. The statistical diagram representing this moderated mediation (PROCESS Model 91, Hayes 2017) appears in Figure 3.

that higher arousal resulted in significantly higher levels of perceived logo–brand congruence only when the brand had an exciting personality (95% CI = [.14, .50]). When the brand had a sincere personality, however, there was no significant relationship between logo-evoked arousal and perceived logo–brand congruence (95% CI = [−.21, .23]). Furthermore, the relationship between logo–brand congruence (the second mediator) and brand evaluations (the dependent variable) was positive and significant ($\beta = .36$, $t(132) = 5.22$, $p < .001$). As such, when the brand had an exciting personality, the asymmetrical (vs. symmetrical) logo had a significant, positive conditional indirect effect on brand evaluations through logo-evoked arousal and perceived logo–brand congruence (95% CI = [.01, .25]). However, the conditional indirect effect of logo shape was not significant when the brand had a sincere personality (95% CI = [−.07, .06]). Including the positivity versus negativity of the affect evoked by the logo (captured by the aforementioned grid) as a covariate yielded a similar pattern of results. Further analyses showed that neither of the two experimental factors nor their interaction had a significant effect on this measure.

Discussion and Replication Study

The results of Studies 2a and 2b demonstrate that asymmetrical (vs. symmetrical) logos can boost consumers' evaluations of

brands with an exciting personality (H_{2a}). The results of Study 2b show the complete process underlying this effect: asymmetrical logos tend to be more arousing (H_{1a}) and thus tend to be perceived as more congruent with brands with an exciting personality (H_{2b}). In these studies, we used different control brand personalities (i.e., sophistication and sincerity), demonstrating that the visual asymmetry effect is specific to the personality of excitement. We also used logo pairs that allowed us to control for the effects of design properties such as complexity and fluency, showing that potential alternative accounts based on those properties cannot easily explain the effect we document.

Studies 2a and 2b demonstrate the visual asymmetry effect using logo pairs each comprised of a symmetrical logo and its asymmetrical counterpart, and brands with either an exciting or a control personality. Because the degree to which logos are asymmetrical and the extent to which brands possess an exciting personality might vary, we conducted a replication study to examine whether the visual asymmetry effect is sensitive to such variations. In this replication study (for details, see Web Appendix F), participants saw either a moderately or a highly asymmetrical version of a logo and either a moderately or a highly exciting version of a brand statement. Participants rated the moderately (vs. highly) exciting brand as more congruent with the moderately (vs. highly) asymmetrical logo. A similar pattern emerged for brand evaluations. These results provided additional support for our proposed congruence-based mechanism and showed that the visual asymmetry effect is sensitive to variations in the degree of logo asymmetry as well as in the level of excitement of the brand personality. These findings also suggest that careful calibration and alignment of logo design and brand personality are needed to effectively harness the benefits of the visual asymmetry effect.

Study 3

Study 3 aimed to demonstrate that, compared with symmetrical logos, asymmetrical logos can positively influence the market's financial valuations of brands with an exciting personality (H_{3a}), and that this effect is mediated by consumers' evaluations of brands (H_{3b}). Moreover, Study 3 aimed to show that the visual asymmetry effect (1) can be observed in the marketplace for real brands, (2) can be found using a comprehensive measure of customer-based brand equity used by practitioners, (3) is specific to the brand personality of excitement and to logo asymmetry (vs. other brand personalities and logo design properties), and (4) is not fully leveraged by practitioners.

Data and Variables

Data sources. The data used in this study were collected in 2011 from three sources: Interbrand, Young & Rubicam (Y&R), and a survey of U.S. consumers we conducted. We describe the data and variables in detail in the following subsections.

Dependent variable: the market's financial valuations of brands. Interbrand, a leading branding consultancy agency, publishes an annual ranking of the top 100 most valuable brands based on calculations of the brands' financial valuations. Our dependent variable is the market's financial valuations (in billions of U.S. dollars) of the 100 brands listed on the 2011 Best Global Brands ranking (Interbrand 2011). This measure of financial-based brand equity is widely used in marketing research (Johansson, Dimofte, and Mazvancheryl 2012; Madden, Fehle, and Fournier 2006).

Mediator: consumers' brand evaluations. Y&R, another leading branding consultancy agency, has developed a comprehensive measure of consumers' brand evaluations (i.e., customer-based brand equity) using responses from a sample representative of the U.S. population. In 2011, this sample consisted of 14,516 U.S. consumers (Young & Rubicam 2011). This well-established measure, the Brand Asset Valuator (BAV), has been shown to be an important predictor of the financial valuations and performance of brands (Datta, Ailawadi, and Van Heerde 2017; Mizik 2014; Mizik and Jacobson 2008; 2009). We extracted BAV for each of the 100 brands listed on the 2011 Interbrand ranking from a proprietary data set compiled in 2011 by Y&R. Higher BAV scores reflect higher levels of customer-based brand equity and, in our data set, BAV ranges from .11 to 24.27 ($M = 5.44$, $SD = 5.33$).

Independent variable: brand personality. For each of the 100 brands listed on the 2011 Interbrand ranking, we extracted information on how consumers perceived the personality of the brands in 2011 from the Y&R data set. Y&R uses binary assessments to measure consumers' perceptions of brand personality traits. It then aggregated these assessments to determine the percentage of consumers who perceive a given brand as having a given personality trait. As a measure of brand personality perceptions (Aaker 1997), we averaged these percentages for the available traits corresponding to the brand personalities of excitement (daring, trendy, unique, independent, and up-to-date; $\alpha = .70$), competence (reliable, intelligent, leader; $\alpha = .83$), ruggedness (rugged), sincerity (friendly, original, down-to-earth; $\alpha = .90$), and sophistication (upper-class, glamorous, charming; $\alpha = .72$).

Independent variable: logo design properties. To measure design properties of the logos of the brands listed on the 2011 Interbrand ranking, we recruited 202 U.S. consumers ($M_{age} = 32$ years; 49% female) in 2011 on MTurk to respond to a survey for monetary compensation. They were presented with 10 logos randomly selected from the 100 target brands' logos and asked to rate the key visual properties of the logos: asymmetry (1 = "not at all," and 7 = "very"), complexity (1 = "few elements/very easy to identify elements," and 7 = "many elements/very difficult to identify elements"; $r = .63$), figure-ground contrast (1 = "very low," and 7 = "very high"), and fluency (1 = "not fluent at all/very difficult to view," and 7 = "very fluent/very easy to view"; $r = .78$).

Control variables. The control variables were directly taken from the Y&R data set: brand awareness (number of respondents

who were familiar with the brand), brand loyalty (percentage of respondents who feel loyal to the brand), and brand usage and purchase behavior (percentage of respondents who used or purchased the brand at least occasionally and would continue to do so in the future).

Analyses and Results

Four brands (Credit Suisse, Hermes, SAP, and Zurich) listed on the 2011 Interbrand ranking were not available in the data set we obtained from Y&R. Thus, they were not included in the analyses. We subjected the market's financial valuations of brands to a mediated moderation analysis with ratings of logo asymmetry, ratings of the personality of excitement, and their interaction term as independent variables, brand evaluations as the mediator, and all of the aforementioned control variables (PROCESS Model 8, Hayes 2017; see Table 2). The mediating and dependent variables were collected independently by two separate consulting firms using different data sources and procedures (Interbrand 2011; Young & Rubicam 2011). Common method variance is thus unlikely to be an issue in our analysis (see Podsakoff et al. 2003). The correlation between the mediating and dependent variables was moderate ($r = .49$), further suggesting that the two constructs are distinct. Finally, multicollinearity was also not an issue (variance inflation factors < 3).

This analysis (for details, see Table 2, Panels A–D) revealed a mediated moderation, significant at the 90% confidence level (90% CI for the mediated moderation index: [.07, 1.01]; marginally significant at the 95% level). Consistent with the findings of prior research (Henderson and Cote 1998; Reber, Schwarz, and Winkielman 2004; Van der Lans et al. 2009), we found a negative association between logo asymmetry and brand evaluations ($\beta = -3.19$, $t(89) = -2.09$, $p < .05$). However, in support of our propositions, the logo asymmetry × exciting brand personality interaction effect on brand evaluations was positive and significant ($\beta = .36$, $t(89) = 2.41$, $p < .02$). In addition, the standardized coefficient estimate of the negative effect of logo asymmetry (beta = −.42) was lower in magnitude than that of the positive logo asymmetry × exciting brand personality interaction (beta = .96).

We examined the effect of logo asymmetry at one standard deviation above and below the mean ratings of the personality of excitement using a spotlight analysis. As expected, this analysis showed that more asymmetrical logos increased the evaluations of brands rated higher on the personality of excitement ($\hat{y}_{\text{high asymmetry}} = 8.35$ vs. $\hat{y}_{\text{low asymmetry}} = 6.10$; $\beta = 1.14$, $t(89) = 2.33$, $p < .03$) but not those of brands rated lower on that personality ($\hat{y}_{\text{high asymmetry}} = 3.19$ vs. $\hat{y}_{\text{low asymmetry}} = 4.49$; $\beta = -.66$, $t(89) = -1.15$, $p > .25$). More favorable brand evaluations, in turn, resulted in higher financial valuations ($\beta = 1.19$, $t(88) = 3.34$, $p = .001$). In support of H_{3a}, logo asymmetry had a positive indirect effect on the market's financial valuations of brands with a more exciting personality through consumers' evaluations (90% CI = [.06, 3.70]) and a negative indirect effect for brands with a less exciting personality (90% CI = [−2.29, −.01]). These results indicated that compared with symmetrical logos, asymmetrical logos boosted consumers' evaluations of brands with an exciting personality and, in turn, boosted the market's financial valuations of those brands. There was no residual direct effect of the logo asymmetry × exciting brand personality interaction on the market's financial valuations of brands ($\beta = .61$, $t(88) = 1.20$, $p > .20$), indicating a mediation (Zhao, Lynch, and Chen 2010). In Web Appendix G, we present a series of additional analyses and robustness tests, which showed that taking into account the effects of the other four brand personalities and of other properties of logo design did not alter any of the conclusions reported previously. Furthermore, these analyses and tests showed that asymmetrical logos did not boost the equity of brands with any other personality. Finally, they showed that the brand personality of excitement did not interact with ratings of logo complexity, figure-ground contrast, and logo fluency to affect brand evaluations.

Next, we explored practitioners' use of the visual asymmetry effect. First, we conducted a binomial test, which revealed that the proportion of logos the participants of our survey rated above (57%) versus below (43%) the mean of the asymmetry scale did not differ significantly ($p > .15$). Thus, both symmetrical and asymmetrical logos were equally widely used by the brands in our data set. If the logos of the brands included in our data set were designed taking into account the visual asymmetry effect, brands with an exciting personality should have had logos that tend to be more asymmetrical. However, a correlation analysis revealed that ratings of logo asymmetry did not significantly correlate with ratings of the personality of excitement ($r(96) = -.11$, $p > .25$). This suggests that the practitioners involved in the design of the logos of the brands included in our data set might not have effectively leveraged the visual asymmetry effect.

Discussion

Study 3 showed that the combination of an asymmetrical logo and an exciting brand personality positively influenced the market's financial valuations of brands (i.e., financial-based brand equity) through consumers' evaluations (i.e., customer-based brand equity) for real brands in the marketplace (H_{3a} and H_{3b}). Study 3 also showed that this interaction effect did not occur with other logo design properties and brand personalities. Finally, consistent with the results of the pilot studies in Web Appendix B, this study also found that practitioners might not have effectively leveraged the visual asymmetry effect.

We acknowledge that Study 3 has limitations. First, our sample consisted of only 96 top-ranked brands. In addition, we were not able to directly control for some brand-level variables (e.g., advertising expenditure) because accurate data were not available for many of the brands in our sample. In particular, privately owned brands did not disclose advertising expenditures, which made it challenging to acquire such data. However, we were able to account for some of the consequences on consumer behavior of these brand-level variables (e.g., brand awareness). Moreover, the data we had did not

Table 2. Study 3: The Effect of Logo Asymmetry on the Market's Financial Valuations of Brands Through Consumers' Brand Evaluations.

A: Consumers' Brand Evaluations Model Summary	R	R^2	F	*p*-Value
	.76	.58	20.36	<.001
Independent Variable	**β**	**SE**	***t***	***p*-Value**
Constant	8.17	7.14	1.15	.255
Brand awareness	.01	.00	3.36	.001
Brand loyalty	.08	.10	.78	.439
Usage and purchase behavior	.10	.02	4.97	<.001
Exciting brand personality (W)	−.89	.68	−1.30	.198
Logo asymmetry (X)	−3.19	1.53	−2.09	.040
X × W	.36	.15	2.41	.018
B: Market's Brand Financial Valuations Model Summary	R	R^2	F	*p*-Value
	.56	.31	5.64	<.001
Independent Variable	**β**	**SE**	**t**	***p*-Value**
Constant	43.71	24.03	1.82	.072
Brand awareness	.01	.00	1.77	.080
Brand loyalty	.23	.34	.67	.506
Usage and purchase behavior	−.09	.08	−1.18	.243
Exciting brand personality (W)	−3.11	2.31	−1.35	.180
Logo asymmetry (X)	−7.79	5.24	−1.49	.141
X × W	.61	.51	1.20	.234
Consumers' brand evaluations (M)	1.19	.35	3.34	.001
C: Conditional Indirect Effects of (X) at Values of (W) Through (M) on Market's Brand Financial Valuations	**β**	**SE**	**LLCI**	**ULCI**
At −1 SD from mean of (W)	−.78	.69	−2.29	−.01
At +1 SD from mean of (W)	1.35	1.09	.06	3.70
D: Mediated Moderation Index	**β**	**SE**	**LLCI**	**ULCI**
	.42	.29	.07	1.01

Notes: LLCI = lower limit of the 90% CI; ULCI = upper limit of the 90% CI. Because there is a significant X × W interaction, the coefficient estimates for the effects of the variables X and W do not represent the average effects of X and W on the dependent variable. Rather, these estimates represent an extrapolation of the effect of "one variable conditioned on the other equaling zero" (Hayes, Glynn, and Huge 2012, pp. 10–11). For instance, in Panel B, the coefficient estimate of W represents the expected effect of the brand personality of excitement, if logo asymmetry took the value 0; even if this value is outside of the actual range (1-7) of the logo asymmetry measure (Hayes, Glynn, and Huge 2012; Irwin and McClelland 2001).

allow us to control for the relationships among different brand elements or for consumer–brand interactions. However, we were able to control for aspects such as brand loyalty and purchase intentions. Despite these limitations, the results of this study complemented those of the four experimental studies, providing converging evidence for the visual asymmetry effect.

General Discussion

We investigated how a visual design property present in all brand logos—the degree of (a)symmetry—interacts with brand personality to affect brand equity. We showed the visual asymmetry effect: asymmetrical logos can boost consumers' evaluations and the market's financial valuations of brands with an exciting personality, but not of brands with any other personality. We also showed that this effect occurs because asymmetrical logos tend to be more arousing than symmetrical ones and thus perceived as more congruent with brands with an exciting personality. Furthermore, we found that the visual asymmetry effect is sensitive to variations in the degree of logo asymmetry and in the level of excitement of the brand personality. We also found that this interplay between an exciting brand personality and logo design occurs only for the visual property of asymmetry. Finally, we showed that practitioners might not be effectively leveraging the benefits of asymmetrical logos for brands with an exciting personality.

Our findings add to the marketing literature in several ways. First, prior research has often examined the influence of visual

(a)symmetry on consumers' evaluations of marketing stimuli independently of other brand elements (Henderson and Cote 1998; Orth and Malkewitz 2008; Van der Lans et al. 2009). By examining the joint effect of logo asymmetry and brand personality, we delineate conditions under which the use of asymmetrical (vs. symmetrical) designs can positively affect brand equity. Our work also illustrates an arousal-based process through which logo design and brand personality jointly affect consumers' evaluations and the market's financial valuations of brands. This complements the extant understanding of how visual designs and other sensory elements can influence brand equity (Elder et al. 2010; Krishna 2012, 2013; Landwehr, Wentzel, and Herrmann 2013). By documenting that visual asymmetry (vs. symmetry) in marketing stimuli can increase perceptions of excitement and potentially influence perceptions of sincerity, competence, and ruggedness, our work complements extant research on the impact of the design properties of marketing stimuli on consumers' perceptions (Cian, Krishna, and Elder 2014; Hagtvedt 2011; Van Tilburg et al. 2015).

Our findings also extend existing theories on how congruence between brand elements affect consumers' brand evaluations (Bloch 1995; Keller 1993; Schmitt, Simonson, and Marcus 1995). We highlight the importance of considering congruence among brand elements that are more sensory (e.g., logos) versus more cognitive (e.g., brand personality) in nature. We show that responses such as the arousal experienced by consumers when viewing visual stimuli is a key input to the congruence mechanism. Finally, we illustrate the consequences of noncongruence. Although visual symmetry has been shown to enhance consumers' evaluations (Henderson and Cote 1998; Reber, Schwarz, and Winkielman 2004; Van der Lans et al. 2009), our research suggests that logo symmetry can negatively affect brand equity when it is not congruent with brand personality. Our work also demonstrates that downstream effects of perceived noncongruence are not limited to customer-based brand equity but can extend to the financial performance of brands.

Our research yields actionable insights for marketing practitioners. Specifically, our findings suggest that practitioners should consider using asymmetrical logos for brands with an exciting personality. More broadly, our results suggest that design properties that are generally considered favorable for brands (e.g., visual symmetry) may backfire when they are not congruent with brand personality. Thus, marketing practitioners should be cognizant of the alignment between logo design and the personality of their brands, as achieving a harmonious level of alignment can be beneficial to brand equity. Moreover, although we use brand logos to demonstrate the visual asymmetry effect, its implications likely extend to other visual brand elements, such as packaging, advertisements, and webpage and app interface designs. Thus, more generally, our work suggests that practitioners should carefully examine the perceptions evoked by the design properties of the visual stimuli they use, as an inconsistent alignment between these perceptions and brand personality can dampen consumers' evaluations and the market's financial valuations of brands.

Our findings suggest several directions for future research. Because the extant understanding of the interaction effects among logo design properties is limited, future studies could examine whether and how asymmetry and other logo design properties can interact to affect logo-evoked perceptions. Such investigation could help shed light on, for example, how and why different asymmetrical logos evoked different levels of perceptions of excitement in Study 1a, which suggests the possible existence of a moderator. Furthermore, in Study 1b, we found that arousal partially mediated the effect of logo asymmetry on perceptions of excitement (which suggests that there might be a potential additional mediator). It would thus be helpful for future research to explore other mechanisms that might underlie the visual asymmetry effect. The results of Study 1a suggest that logo asymmetry might influence perceived sincerity, competence, and ruggedness. Future research could thus investigate the impact of logo asymmetry on perceptions other than those of excitement. Moreover, visual properties other than asymmetry might interact with the visual asymmetry effect. For example, upward-pointing (vs. downward-pointing) shapes can be associated with more positive (vs. negative) emotions (Shen et al. 2015). Because the brand personality of excitement consists mostly of positively valenced traits (Aaker 1997), logo orientation might moderate the visual asymmetry effect. Investigating moderators such as this would help further the extant understanding of optimal logo designs for brands.

In our experiments, we used logo pairs that allowed us to control for the potential effects of visual complexity. Furthermore, in Study 3, we showed that logo complexity did not positively affect the equity of brands with an exciting personality. However, as complexity can enhance visual exploration (Krupinski and Locher 1988; Pieters, Wedel, and Batra 2010), future research could explore when and how logo complexity can affect the equity of brands with an exciting personality. In addition, given the limitations of Study 3, future research could also test the impact of the visual asymmetry effect on the market's financial valuations of brands using, for instance, different brands, logos, and empirical data sets. Relatedly, it would also be worthwhile to explore the conditions under which changes in logo design influence consumers' responses and the market's financial valuations of brands.

Finally, consumers' responses to visual stimuli can vary cross-culturally (Henderson et al. 2003; Van der Lans et al. 2009) and differ across individuals (Bloch 1995; Bloch, Brunel, and Arnold 2003). Indeed, a preliminary follow-up study we conducted showed that for a small portion of individuals, symmetrical logos can be perceived as more exciting than asymmetrical ones. Future work could thus explore whether and how culture and individual differences moderate the visual asymmetry effect. Exploring research directions such as the ones we discussed in this section would not only advance theoretical knowledge but also yield actionable insights for marketing practitioners.

Acknowledgments

This paper has benefited from comments by the *JMR* review team as well as Peter Bryant, Amitava Chattopadhyay, Dilney Gonçalves, Eda Sayin, and Shameek Sinha. Authorship order is alphabetical.

Associate Editor

Carolyn Yoon served as associate editor for this article.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The authors are grateful for the field data set provided by Young & Rubicam and financial support by Cass Business School, IE Business School, IE University, Johns Hopkins University, and the People Program (Marie Curie Actions) of the European Union's Seventh Framework Program (FP7/2007-2013) under REA grant agreement No. 298420.

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