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Abstract

This paper explores the implicit association between shape and gender and its influence on consumers' shape preferences. Through four experiments, the authors find that an implicit association exists between shape and gender, such that rounded shapes are more associated with femininity, while angular shapes are more associated with masculinity. This implicit association is extended to brand perception, resulting in the brand' s gender image influencing consumers' preferences for round or angular products, with perceived congruence playing a mediating role. These findings further enrich the existing literature on shape preferences and the symbolic meaning of shapes, and provide important practical guidance for shape design in visual marketing.

Full Text

The Shape-Gender Implicit Association and Its Impact on Consumer Shape Preference

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Abstract

This paper investigates the implicit association between shape and gender and its influence on consumer shape preferences. Across four experiments, we demonstrate that an implicit association exists between shape and gender: rounded shapes are more closely associated with femininity, while angular shapes are more closely associated with masculinity. This implicit association extends to brand perceptions, such that a brand' s gender image influences consumers' preferences for rounded versus angular products, with perceived congruency mediating this effect. These findings enrich the existing literature on shape preference and the symbolic meaning of shape, and provide important practical guidance for shape design in visual marketing.

Keywords: shape; gender; implicit association; product shape; brand gender identity

Traditional psychological and aesthetic research has shown that people generally prefer rounded shapes (e.g., circles and ovals) over angular ones (e.g., squares and triangles) [?, ?, ?]. Two primary explanations have been offered for this preference. First, from an aesthetic standpoint, curves are considered more beautiful than straight lines [?, ?, ?, ?, ?]. As Gordon (1909) observed, "Curves are more beautiful than straight lines. They are more graceful, more pliable, and avoid some of the severity that straight lines convey" (p. 169). Second, angular shapes evoke a sense of threat [?, ?, ?, ?, ?, ?, ?]. Consequently, preference for rounded shapes may stem from an aversion to angular ones [?, ?].

However, recent research has increasingly revealed that different shapes carry distinct symbolic meanings [?, ?, ?, ?, ?, ?, ?, ?], leading shape preferences to be influenced by contextual factors. For instance, Zhang, Feick, and Price (2006) found that rounded and angular shapes symbolize compromise and confrontation, respectively, in conflict resolution scenarios, leading individuals with interdependent self-construal to prefer rounded products, while those with independent self-construal prefer angular products. Wang, Fan, and Ouyang (2017) found that angular shapes convey uniqueness more effectively than rounded shapes. Since independent self-construal activates individuals' need for uniqueness, those with independent self-construal show stronger preference for angular brands than those with interdependent self-construal.

Building on this line of research, we propose a new factor influencing individual shape preference: gender. We argue that an implicit association exists between shape and gender in individuals' cognition, such that rounded shapes are subconsciously linked to femininity while angular shapes are linked to masculinity. This implicit association extends to consumption contexts, leading consumers to prefer rounded products when encountering feminine brands and angular products when encountering masculine brands. Our findings reveal the implicit shape-gender association, expand the symbolic meaning of shape, and enhance our comprehensive understanding of how individual shape preferences vary across contexts, thereby holding significant theoretical and practical value.

1.1 The Implicit Association Between Shape and Gender

Several streams of literature provide theoretical support for our proposed shape-gender association. First, research in social cognition has found that perceptions of biological gender depend heavily on body shape. This is because male and female body shapes differ significantly, particularly in waist-to-hip ratio [?, ?, ?]. For healthy premenopausal women, the average waist-to-hip ratio ranges between 0.67 and 0.80, giving female bodies an hourglass-like curved appearance. In contrast, healthy adult men have waist-to-hip ratios between 0.85 and 0.95, making male bodies appear more cylindrical [?, ?, ?, ?, ?]. This indicates that female body shapes are inherently more curvilinear than male body shapes.

Research on body shape preferences has reached similar conclusions. While societal preferences have shifted toward slimmer figures over recent decades, the preference for curvaceous female bodies has remained constant [?, ?, ?]. For men, V-shaped bodies with broad shoulders and moderate waists and hips have consistently been rated as more attractive than other body shapes [?, ?, ?]. According to Singh (1993, 1995), preferences for specific body shapes are biologically adaptive: hourglass and V-shaped figures are associated with greater reproductive capacity in women and lower health risks in men, respectively.

In summary, social cognition research reveals significant differences between male and female body shapes: female bodies exhibit more pronounced curvilinear features than male bodies, and these features enhance female attractiveness. We propose that when this physiological link between gender and body shape extends to more abstract shapes, people establish cognitive associations between shape and gender.

A second theoretical foundation comes from literature on shape symbolism. Early research on emotional expression in shapes found that people perceive curves as more serene, graceful, gentle, and sentimental, while angles are perceived as stronger, more energetic, and to some extent more noble [?, ?, ?]. Since typical feminine traits include gentleness, grace, and warmth, while typical masculine traits include robustness, strength, and dominance [?, ?], rounded and angular shapes align with stereotypical female and male personality characteristics, respectively. Furthermore, research has linked these shapes to different needs. Metaphorically, curves represent harmony between an entity and its surroundings [?, ?], symbolizing friendliness and belonging, thereby activating individuals' need for affiliation [?, ?]. Conversely, angles represent direct confrontation with surroundings [?, ?], symbolizing toughness and aggression, thus activating the need for uniqueness [?, ?]. Since women are more likely than men to have interdependent self-construal and stronger needs for belonging [?, ?], rounded shapes are metaphorically more associated with femininity and angular shapes with masculinity.

We further argue that the shape-gender association in cognition is implicit. Implicit associations are those of which individuals are consciously unaware; behavioral responses based on these associations are spontaneous and not under conscious control [?, ?, ?, ?, ?, ?]. For example, Becker, van Rompay, Schifferstein, and Galetzka (2011) found that angular packaging made yogurt taste more intense than rounded packaging. Spence (2012) noted that this shape-taste association is implicit and not consciously accessible. That is, although people can see different package shapes, they are unaware that shape influences their product evaluations and subsequent purchase behavior. Similarly, Elliot and Niesta (2008) argued that the association between red and sexuality is implicit. They found that men rated women against red backgrounds as more attractive than those against other colors, yet were unaware that background color influenced their judgments.

We contend that the shape-gender association is similarly implicit. Because

this association derives from both the abstract extension of physiological links and metaphorical symbolism, individuals do not consciously recognize that shapes carry gendered meanings or that this association influences their behavior. Based on this discussion, we propose:

H1: An implicit association exists between shape and gender. Rounded shapes are more closely linked to femininity than masculinity, while angular shapes are more closely linked to masculinity than femininity.

1.2 The Matching Effect Between Brand Gender Image and Product Shape Preference

How does the shape-gender implicit association influence consumer behavior? In this research, we extend the concept of gender from individuals to brand gender image, proposing that the implicit shape-gender association affects consumers' perceptions of congruency between brand gender image and product shape. Perceived congruency influences processing fluency when consumers evaluate products [**?**, **?**, **?**, **?**, **?**], which in turn affects product preferences.

Brand gender image is a dimension of brand personality that reflects the gender characteristics a brand possesses [**?**, **?**]. In practice, many brands have distinct gender images. For example, consumers typically perceive Marlboro as masculine and Chanel as feminine [**?**, **?**, **?**, **?**, **?**]. We argue that a brand' s gender image activates gender-related schemas in consumers' minds, influencing their preferences for differently shaped products. Schemas are cognitive structures that connect related concepts or existing knowledge in memory. Activation of a particular schema puts various related concepts in an active state, making it easier for individuals to process new information consistent with those active concepts [**?**, **?**]. When consumers encounter a gendered brand, gender schemas are activated, and concepts associated with that gender become active. These concepts include not only directly gender-related features such as physical structure, reproductive function, and personality traits, but also metaphorically linked features like abstract shapes [**?**, **?**]. Because consumers have established shape-gender associations, feminine brand images activate rounded rather than angular abstract shapes, leading consumers to perceive rounded products as more congruent with the brand' s gender image and process them more fluently. Conversely, masculine brand images activate angular rather than rounded shapes, making angular products appear more congruent and easier to process. Processing fluency generates positive emotional experiences, thereby enhancing consumer preference for the product [**?**, **?**, **?**, **?**, **?**, **?**]. This process aligns with Labroo and colleagues' findings that semantic priming can enhance perceptual fluency and improve product evaluations. For example, compared to control participants, those primed with the word "frog" were more likely to choose products with frog logos in a subsequent choice task [**?**, **?**, **?**, **?**]. Notably, because both the shape-gender association and the fluency mechanism operate implicitly, consumers are unaware that their positive experiences processing product information are influenced by processing fluency, or that this

fluency stems from pre-existing shape-gender associations.

In summary, we propose:

H2a: A matching effect exists between brand gender image and product shape preference. When facing masculine brands, consumers prefer angular over rounded products; when facing feminine brands, they prefer rounded over angular products.

H2b: Perceived congruency between product shape and brand gender image mediates this effect. Specifically, when facing masculine brands, consumers perceive angular shapes as more congruent with the brand' s gender image, leading to greater preference for angular over rounded products. When facing feminine brands, consumers perceive rounded shapes as more congruent, leading to greater preference for rounded over angular products.

We tested these hypotheses across four experiments. Study 1 used an Implicit Association Test (IAT) to investigate the implicit association between shape and gender. Studies 2 and 3 replicated this association in consumption contexts (purchasing for oneself and for others). Additionally, Study 3 demonstrated the implicit nature of the shape-gender association, showing that consumers are not consciously aware that their choices are influenced by user gender. Study 4 explored the marketing implications of the shape-gender implicit association by testing the congruency effect between brand gender image and product shape.

Experiment 1

The purpose of Experiment 1 was to test the implicit association between shape and gender. In this experiment, we placed male and female names inside circular or square frames and asked participants to categorize the names by gender. Based on prior literature, implicit associations in IAT tasks manifest as faster responses to more strongly linked concept pairs [**?**, **?**]. Therefore, if an implicit association between shape and gender exists, participants should identify male names faster when presented in square frames than in circular frames, with the opposite pattern expected for female names.

2.1 Participants and Stimuli

We recruited 93 undergraduate students (63 female, Mage = 21.92 years, SD = 2.68) from a key university in Beijing, who received monetary compensation for their participation. The main experiment used 40 names: 20 typical Chinese male names (e.g., Feipeng) and 20 typical Chinese female names (e.g., Jingwan). Research assistants obtained these names through online searches for "typical male names" and "typical female names," selecting those that were familiar and contained no rare characters. We randomly divided the 20 male names into two groups and randomly assigned these groups to circular and square frames. The same randomization procedure was applied to the 20 female names to minimize individual name differences affecting the results.

2.2 Procedure

The experiment employed a 2 (name gender: male vs. female) × 2 (frame shape: square vs. circle) within-subjects design. Each participant saw all four combinations: male names in square frames, male names in circular frames, female names in square frames, and female names in circular frames.

Upon arrival, participants were seated in individual cubicles and completed all tasks on computers. The experimenter explained that they should judge as quickly as possible whether the name on screen was male or female [**?**, **?**]. Half the participants pressed the left key for male names and the right key for female names; the other half used the opposite key mapping. Before the main experiment, participants completed a practice block with two male and two female names not used in the main task.

In the main experiment, names appeared in random order on screen for 800 ms each, during which participants made their gender judgments. After each response, a gray screen appeared for 500 ms before the next name. Our dependent variable was response latency. Finally, participants completed demographic questions, received compensation, and were dismissed.

2.3 Results

Participants achieved 95.09% accuracy in gender categorization. Following prior research [**?**, **?**], we excluded incorrect responses and conducted a 2 × 2 repeated-measures ANOVA on response latencies. Results revealed a significant interaction between name gender and frame shape, $F(1,\ 92) = 11.94$, $p = 0.001$. Specifically, participants classified male names faster in square frames ($M = 576$ ms, $SD = 77$ ms) than in circular frames ($M = 598$ ms, $SD = 122$ ms), $t(92) = -2.10$, $p = 0.04$, Cohen's $d = -0.22$. Conversely, they classified female names slower in square frames ($M = 587$ ms, $SD = 82$ ms) than in circular frames ($M = 561$ ms, $SD = 98$ ms), $t(92) = 2.53$, $p = 0.01$, Cohen's $d = 0.26$. Neither main effect was significant ($p$gender $= 0.11$, $p$shape $= 0.82$). These results support H1.

2.4 Discussion

Experiment 1 provided initial evidence for the implicit association between shape and gender using an IAT. Consistent with our hypothesis, participants responded faster to female names in circular frames than in square frames, with the opposite pattern for male names. This suggests that rounded shapes are more closely linked to femininity and angular shapes to masculinity in participants' cognition, facilitating faster responses when name gender matched frame shape.

Although these results support our hypothesis, a competing explanation exists. If participants perceived square frames as larger than circular frames, they might have matched male names (associated with larger body size) with square

frames. We ruled out this alternative through a post-test. We recruited 100 undergraduate students (78 female, Mage = 22.33 years, SD = 2.62) who had not participated in the main experiment. Participants viewed both frame types simultaneously (with left-right order counterbalanced) and rated relative size (1 = definitely square larger, 4 = no difference, 7 = definitely circle larger). A one-way ANOVA showed no significant effect of presentation order, $F(1, 98) = 1.29$, $p = 0.26$. Moreover, a one-sample t-test revealed that ratings significantly exceeded 4 ($M = 4.54$, $t(99) = 3.87$, $p < 0.001$), indicating that participants perceived circular frames as significantly larger than square frames. This result contradicts the competing explanation, thereby ruling it out.

Experiment 2

Experiment 2 aimed to replicate the shape-gender association using more concrete, realistic manipulations. If this association exists and applies to consumption contexts, consumers should match product shape to user gender. Since angular shapes are linked to masculinity and rounded shapes to femininity, male consumers should prefer angular products, while female consumers should prefer rounded products.

3.1 Participants

We recruited 96 participants (57 female, Mage = 40.03 years, SD = 13.06) through Amazon' s Mechanical Turk. All participants were American except for one Indian, one Japanese, and one British participant.

3.2 Procedure

Participants indicated their preferences for four common products. Sunglasses and perfume served as target products, while headphones, electric kettles, and photo frames were filler products designed to mask the study's purpose. For each product, participants imagined purchasing for themselves and saw two product images. All images were screenshots from Amazon.com with brand information removed to prevent pre-existing brand preferences from influencing choices.

For target products, participants chose between angular and rounded options (with left-right order randomized across product categories). A pretest (n = 93, 54 female, Mage = 27.42 years, SD = 9.38) confirmed that the alternatives differed significantly in shape (sunglasses: Mangular = 3.46, SD = 1.38, Mrounded = 4.80, SD = 1.56, $F(1, 91) = 19.30$, $p < 0.001$; perfume: Mangular = 2.27, SD = 1.20, Mrounded = 5.42, SD = 1.29, $F(1, 91) = 104.06$, $p < 0.001$; 1 = very angular, 7 = very rounded) but not in aesthetic appeal (sunglasses: Mangular = 3.81, SD = 1.35, Mrounded = 3.73, SD = 1.48, $p = 0.28$; perfume: Mangular = 4.02, SD = 1.51, Mrounded = 4.24, SD = 1.25, $p = 0.23$). Filler product alternatives differed in material or color but not shape. After completing the choice task, participants reported demographic information including their gender.

3.3 Results

Chi-square tests on product choices for sunglasses and perfume revealed significant gender differences (see Table 1). As predicted, 63.16% of female participants chose rounded sunglasses versus 36.84% who chose angular sunglasses. Among male participants, these proportions were 10.26% and 89.74%, respectively ($^2(1) = 26.66$, $p < 0.001$, $= 0.53$). Similarly, 57.89% of female participants chose rounded perfume versus 42.11% who chose angular perfume; among males, these proportions were 35.90% and 64.10% ($^2(1) = 4.48$, $p = 0.03$, $=$ 0.22). Participant gender did not significantly affect choices for filler products ($p$headphones = 0.70, $p$kettle = 0.31, $p$frame = 0.34).

Table 1 Product choice results for differently shaped sunglasses and perfume in Experiment 2

Product	Rounded (Female)	Angular (Female)	Rounded (Male)	Angular (Male)
Sunglasses	63.16%	36.84%	10.26%	89.74%
Perfume	57.89%	42.11%	35.90%	64.10%

3.4 Discussion

Experiment 2 found that when purchasing for themselves, male consumers tend to choose angular products while female consumers prefer rounded products. These results further support the shape-gender association. In the next experiment, we demonstrate that this association is implicit—that is, consumers are not consciously aware that their product choices are influenced by user gender.

Experiment 3

Experiment 3 differed from Experiment 2 in two ways. First, it retested the shape-gender association in a gift-giving context. We predicted that when buying gifts, consumers would be more likely to purchase angular products for male recipients and rounded products for female recipients. Second, we tested whether the shape-gender association is implicit. Prior research has often examined the implicit or explicit nature of cognitive associations by asking participants to explain their behavior [**?**, **?**, **?**, **?**, **?**, **?**]. For example, Elliot and Niesta (2008) argued that the red-sexuality association is implicit. They had male participants rate the attractiveness of women against different background colors, then asked them to indicate how much their ratings were influenced by facial expression, clothing, and background color. Participants rated background color as the least influential factor, suggesting the red-sexuality association is implicit. Following this approach, Experiment 3 asked participants to explain their choices after completing the product selection task, with content analysis used to determine whether they were aware of recipient gender' s influence.

4.1 Design and Participants

Experiment 3 used a single-factor design, with participants randomly assigned to conditions where the gift recipient was male or female. We recruited 97 undergraduate students (77 female, *M*age = 22.34 years, *SD* = 2.67) from a key university in China, who received monetary compensation.

4.2 Procedure

Participants imagined buying a gift for a close friend. In the female recipient condition, the friend' s name was Yang Qianyun; in the male recipient condition, it was Zhang Haoyu. These names were selected from the stimuli used in Experiment 1 as typical Chinese female and male names.

Participants then saw three product sets: a USB flash drive (target product) and two filler products (kettle and headphones). As in Experiment 2, participants chose between angular and rounded USB drives (with left-right order randomized), while filler products differed in material or color. After each choice set, participants wrote at least one reason for their selection [**?**, **?**]. Finally, participants rated the two USB drive options on shape and aesthetic appeal and recalled the recipient' s gender to verify our manipulation.

4.3 Results

Manipulation checks confirmed that all participants correctly identified their recipient' s gender. A repeated-measures ANOVA showed that the two USB drives differed significantly in shape perception (*M*angular = 2.26, *M*rounded = 5.29, $F(1, 95) = 216.79$, $p < 0.001$; 1 = very angular, 7 = very rounded) but not in aesthetic appeal (*M*angular = 4.48, *M*rounded = 4.45, $p = 0.91$).

A chi-square analysis on USB drive choice supported our hypothesis: recipient gender significantly influenced product choice ($^2(1) = 3.71$, $p = 0.05$, $= 0.20$). As predicted, 60.0% of participants chose the rounded product for a female friend versus 40.0% who chose the angular product; for male friends, these proportions were 40.38% and 59.62%, respectively. A logistic regression with recipient gender (0 = male, 1 = female) as the predictor and participant gender (0 = male, 1 = female) as a covariate showed that recipient gender remained significant ($= 0.81$, $p = 0.05$), while participant gender did not ($p = 0.21$).

Two research assistants blind to the study' s purpose coded participants' written reasons, categorizing them as either (1) mentioning recipient gender or (2) unrelated to recipient gender. The coders achieved perfect agreement. Only 5 out of 97 participants mentioned recipient gender in their reasons, suggesting that the vast majority were not consciously aware of its influence on their choices, supporting the implicit nature of the shape-gender association.

4.4 Discussion

Experiment 3 demonstrated that the shape-gender association persists in gift-giving contexts. Consumers tend to purchase angular products for male recipients and rounded products for female recipients, yet remain unaware that recipient gender influences their choices. These results confirm that the shape-gender association is implicit rather than explicit.

Experiment 4

Experiment 4 examined the practical implications of the shape-gender implicit association by extending individual gender to brand gender, testing whether brand gender image influences consumer preferences for differently shaped products. Based on the shape-gender implicit association, we predicted that consumers would prefer rounded over angular products when a brand' s gender image is more feminine, and angular over rounded products when it is more masculine (H2a). Perceived congruency between product shape and brand gender image would mediate this effect (H2b).

5.1 Design and Participants

Experiment 4 used a single-factor design, with participants randomly assigned to masculine or feminine brand conditions. We recruited participants through Amazon' s Mechanical Turk. The experiment consisted of two tasks separated by one week to minimize demand effects.

In the first task, 144 participants (73 female, Mage = 35.10 years, SD = 11.35) completed a brand evaluation survey. All participants were American. At the end, we informed them about a follow-up survey in one week and invited them to leave their email addresses if interested. One hundred thirty-six participants provided email addresses. One week later, we contacted these participants with a link to the follow-up survey. After two email reminders, 86 participants (48 female, Mage = 36.20 years, SD = 11.91) completed the second task and received additional compensation.

5.2 Procedure

The first task involved brand evaluation. Based on pre-experiment focus group discussions, we selected Chanel and Hugo Boss to represent feminine and masculine brands, respectively. Participants were randomly assigned to evaluate one brand. They rated the brand on several adjectives, with brand gender image measures embedded among other items to prevent hypothesis guessing. Three items measured feminine brand image ("affectionate," "feminine," "gentle") and three measured masculine brand image ("tough," "masculine," "strong") [**?**, **?**]. We averaged these six items (reverse-coding masculine items) to create a composite brand gender image measure (= 0.85), where higher scores indicated

more feminine brand image. We also measured brand familiarity and liking on 7-point scales (1 = not at all familiar/like, 7 = very familiar/like).

The second task, conducted one week later, involved product choice. Participants in the Chanel condition read: "To leverage its brand equity, Chanel plans to launch a limited-edition USB flash drive. The company has designed two versions and wants to understand consumer perceptions and attitudes." They then saw two images of USB drives engraved with the Chanel brand name (the same stimuli as in Experiment 3, but with brand names added). Left-right order was randomized. Participants in the Hugo Boss condition saw similar instructions and images with the Hugo Boss brand. After choosing their preferred product, participants rated the perceived congruency between product shape and brand gender image ("Which product is more consistent with Chanel/Hugo Boss' s gender image?" and "Which product better matches Chanel/Hugo Boss' s gender image?" 1 = definitely left product, 7 = definitely right product, = 0.94). Notably, we measured the mediator (congruency) after the dependent variable (choice) to avoid artificially priming participants to focus on the shape-gender relationship during decision-making. Measuring congruency first would have made it a salient cue in the decision process, compromising internal validity [**?**, **?**, **?**, **?**, **?**]. Therefore, following established procedures, we measured choice first, then congruency.

5.3 Results

Manipulation checks confirmed that the two brands differed significantly in perceived gender image. As expected, Chanel was rated as more feminine than Hugo Boss (MChanel = 5.88, MHugo Boss = 2.24, $F(1, 84) = 571.21$, $p < 0.001$). Participants also perceived Chanel as more upscale (MChanel = 6.00, MHugo Boss = 2.24, $F(1, 84) = 21.28$, $p < 0.001$). No significant differences emerged on other brand image dimensions ($p$warm = 0.88, $p$competent = 0.44, $p$sincere = 0.58, $p$sophisticated = 0.84, $p$rugged = 0.42, $p$exciting = 0.98).

To test our hypotheses, we coded product choice (angular = 0, rounded = 1) and conducted a chi-square test. Results showed that brand gender image significantly influenced product choice, $^2(1) = 5.29$, $p = 0.02$, = 0.25. Specifically, in the Chanel condition, 51.50% chose the rounded USB drive and 48.50% chose the angular version. In the Hugo Boss condition, these proportions were 26.80% and 73.20%, respectively.

We then tested the mediating mechanism. We recoded the congruency measure so that higher scores indicated greater congruency between the rounded product and brand gender image. Using Hayes' s (2009) bootstrapping method (see Figure 1 [Figure 1: see original paper]), we found that brand gender image positively influenced perceived congruency (= 0.88, $t = 2.03$, $p = 0.05$). As hypothesized, participants perceived the rounded product as more congruent with Chanel than with Hugo Boss. Perceived congruency increased the likelihood of choosing the rounded product (= 0.92, $z = 4.75$, $p < 0.001$). After controlling

for the direct effect of brand gender image (= 0.63, $z = 1.04$, $p = 0.30$), the indirect effect through perceived congruency was significant (95% CI = 0.01 ~ 1.82), indicating full mediation.

Figure 1 Mediation model

Note: * indicates p 0.05; *** indicates $p < 0.01$.

Finally, we included brand upscale-ness and participant gender as control variables. Logistic regression showed that brand gender image remained significant (= 1.12, $p = 0.04$), while brand upscale-ness and participant gender did not ($p$upscale = 0.49, $p$gender = 0.70). Mediation analysis with these controls showed that brand gender image still positively influenced perceived congruency (= 1.00, $t = 2.08$, $p = 0.04$), which in turn affected product choice (= 0.91, $z = 4.68$, $p < 0.001$). The indirect effect remained significant after controlling for the direct effect (= 0.62, $z = 1.02$, $p = 0.31$; 95% CI = 0.03 ~ 2.09). Neither control variable significantly influenced perceived congruency ($p$upscale = 0.17, $p$gender = 0.20) or product choice ($p$upscale = 0.83, $p$gender = 0.63). These results support H2a and H2b.

5.4 Discussion

Experiment 4 demonstrated the congruency effect between brand gender image and product shape preference. Using real masculine and feminine brands, we found that consumers prefer rounded products for feminine brands and angular products for masculine brands. Perceived congruency between product shape and brand gender image fully mediated this effect. These results show that the individual-level shape-gender association extends to brand gender image, influencing consumer preferences for differently shaped products.

General Discussion

6.1 Summary of Findings

This research examined the implicit association between shape and gender and extended it to brand perceptions, exploring how brand gender image influences consumer product shape preferences. Across four experiments, we confirmed that the shape-gender association is both real and implicit. People associate rounded shapes with femininity and angular shapes with masculinity (Experiment 1). This implicit association manifests in consumption contexts (purchasing for oneself and others) as consumers tending to purchase rounded products for female users and angular products for male users (Experiments 2 and 3), without conscious awareness of this influence (Experiment 3). Furthermore, the shape-gender association extends from individual gender to brand gender, such that consumers prefer rounded products for feminine brands and angular products for masculine brands. Perceived congruency between product shape and brand gender image drives this effect (Experiment 4).

6.2 Theoretical Contributions and Managerial Implications

This research makes important theoretical contributions to literature on shape and sensory marketing. First, in the shape literature, scholars have long explored shape symbolism. Early research examined shape-emotion links (e.g., curves associated with gentle, sad, quiet, and lazy feelings; angles with anxious, effortful, angry, and serious feelings) [?, ?, ?]. Recent work has investigated shape-cognition links, finding that rounded shapes connect to compromise, softness, and belonging, while angular shapes connect to confrontation, hardness, and uniqueness needs [?, ?, ?, ?]. Our research is the first to formally test the implicit cognitive association between shape and gender using implicit attitude measures, enriching the shape symbolism literature. We find that rounded shapes are more feminine and angular shapes more masculine—an association with both physiological roots (biological differences in male and female body shapes) and cognitive roots (metaphorical connections between gender stereotypes and abstract shapes).

Second, prior research has documented a general preference for rounded over angular shapes [?, ?, ?]. However, these studies typically used abstract stimuli without specific contexts, leaving the context-dependency of shape preferences underexplored. To our knowledge, only two papers have empirically examined contextual influences on shape preferences, demonstrating effects of self-construal [?, ?, ?]. Our research extends these findings by identifying gender as a new contextual factor and demonstrating that both user gender and brand gender image significantly influence shape preferences in marketplace contexts. This contributes importantly to understanding how shape preferences vary across situations.

Third, our research contributes to brand literature. Prior work has treated brand gender image as a dimension of brand personality, examining how congruency between brand gender and consumer gender affects evaluations and purchase behavior [?, ?, ?, ?, ?]. However, less research has examined how brand gender image influences preferences for product visual features. Our study fills this gap by showing that brand gender image affects preferences for rounded versus angular products.

Beyond theoretical contributions, our findings offer practical guidance for marketing strategies, particularly in product design. As companies increasingly focus on sensory experiences—especially visual ones—to build connections between visual features and consumer cognition, shape serves as a critical product attribute that consumers encounter first, influencing product perceptions and evaluations [?, ?, ?, ?, ?]. Our research suggests that managers should design product and package shapes according to target user gender and brand gender image. Specifically, angular shapes suit male users or masculine brands, while rounded shapes better match female users or feminine brands.

6.3 Future Research Directions

This research has limitations that suggest avenues for future investigation. First, we proposed physiological and metaphorical mechanisms for the shape-gender implicit association but did not empirically test them. Future research could examine the formation mechanisms of this association to deepen understanding of its development. Second, we proposed that the matching effect between brand gender image and product shape stems from perceived congruency, which enhances processing fluency and product preference. Although we demonstrated the mediating role of perceived congruency, we did not test processing fluency as a mediator. Future research could explore the complete psychological mechanism linking brand gender image to shape preference. Third, we found that brand gender image significantly influences shape preferences. Future research could investigate boundary conditions and moderators. For instance, the effect might be stronger for non-innovative products, while for innovative products, shape incongruity with brand gender image might attract more attention and increase preference. Finally, exploring other symbolic meanings of shape holds value. For example, rounded shapes may be associated with softness and smoothness, while angular shapes may relate to hardness and roughness. Thus, for products marketed on softness (e.g., diapers, underwear), consumers might prefer rounded shapes, while for products emphasizing hardness (e.g., kitchen knives), angular shapes might be preferred.

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The Shape-Gender Implicit Association and Its Impact on Consumer Preference for Product Shapes

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Abstract

Prior research in psychology and aesthetics has documented a general preference for rounded over angular shapes. However, recent studies examining the symbolic meanings of shape suggest that shape preference is context-dependent. Our research extends this literature by proposing gender as a new contextual factor influencing shape preference. We argue that shape is implicitly associated with gender, such that roundness is linked to femininity and angularity to masculinity. This implicit association extends to brand perceptions, leading consumers to prefer rounded products for feminine brands and angular products for masculine brands.

Four studies tested our hypotheses. Study 1 used an Implicit Association Test to examine the shape-gender association. Study 2 tested this association by having participants choose between rounded and angular products for themselves. Study 3 replicated the association in a gift-giving context and examined its implicit nature by asking participants to explain their choices. Study 4 demonstrated the marketing implications by testing the congruency effect between brand gender image and product shape. Participants saw either a feminine brand (Chanel) or masculine brand (Hugo Boss) and chose between rounded and angular USB drives, then rated perceived congruency.

As predicted, Study 1 showed that participants classified male names faster in angular than rounded frames ($t(92) = -2.10$, $p = 0.038$), with the opposite pattern for female names ($t(92) = 2.53$, $p = 0.013$). Study 2 found that female participants were more likely than males to choose rounded products (sunglasses: $^2(1) = 26.66$, $p < 0.001$; perfume: $^2(1) = 4.48$, $p = 0.03$). Study 3 showed similar effects when choosing gifts for others: participants were more likely to choose rounded products for female than male friends ($^2(1) = 3.71$, $p = 0.05$). Only 5 of 97 participants mentioned recipient gender as an influence, suggesting the association is implicit. Finally, Study 4 showed that a feminine brand increased choice of the rounded product compared to a masculine brand ($^2(1) = 5.29$, $p = 0.02$), with perceived congruency mediating this effect (95% CI = 0.01 ~ 1.82).

Our research is the first to formally test the implicit shape-gender association and demonstrates its implications by showing that brand gender identity affects shape preferences. These findings advance understanding of contextual influences on shape preference and provide guidance for enhancing product success through appropriate shape design.

Key Words: shape; gender; implicit association; product shape; brand gender identity

Note: Figure translations are in progress. See original paper for figures.

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