

# The Case for Compatibility: Product Attitudes and Purchase Intentions for Upper versus Lowercase Brand Names

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## Abstract

Although retailers know that brand names are important conveyors of product benefits, little is known about how subtle characteristics of brand names affect consumer attitudes and purchase intentions. This research proposes and shows that the letter case of brand names affects product attitudes and purchase intentions but that these effects depend on congruity between brand case and the gender of consumption benefits. Studies 1 and 2 show that lowercase brand names are associated with feminine characteristics while uppercase brand names are associated with masculine characteristics, as measured through judgments of name gender, gendered brand personality traits, and overall brand gender perceptions. Three additional studies demonstrate that greater congruity between brand case and the gender of consumption benefits increases product evaluations and purchase intentions. Study 3 demonstrates that greater congruity between brand case and the gender of a female consumer's consumption goal leads her to have more favorable product attitudes. Study 4 replicates these effects by manipulating the gender of product benefits, shows that effects on purchase intentions are moderated by the consumer's biological sex, and identifies processing fluency as the underlying mechanism. Study 5 demonstrates that brand case, rather than letter shape, drives these results. This work advances understanding of how seemingly subtle brand name characteristics affect gender perceptions and consumer behavior, with implications for brand design and positioning in the retailing industry.

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*Keywords:* Letter case; Gender; Processing fluency; Congruity; Evaluations; Purchase intentions

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## Introduction

Brand names play crucial roles in consumer perceptions and evaluations (Ailawadi and Keller 2004; Keller 1993). A brand name captures brand personality (Aaker 1997), is a signifier of consumer identity (Reed et al. 2012), serves as a judgment heuristic (Maheswaran, Mackie, and Chaiken 1992), signals product quality (Dawar and Parker 1994), helps identify the corresponding product category (Keller, Heckler, and Houston 1998), influences evaluations of brand extensions (Aaker and Keller 1990), and affects preferences (Gunasti and Ross 2010). While extant research has covered a wide range of topics related to brand names, little is known about how subtle changes in brand names affect consumer behavior.

One subtle change to a brand name is its letter case—that is, whether a brand name appears in all lowercase or uppercase letters. Despite substantial variation and lack of consensus in brand case used in marketing practice, and the call for additional research on brand case (Childers and Jass 2002), little empirical research to date has examined the effects of different forms of brand typography on consumer evaluations and purchase behaviors. Although there is some research showing that lowercase brands are perceived as more friendly while uppercase brands are perceived as more authoritative (Xu, Chen, and Liu 2017), little is known about downstream effects of brand case. We add to this research by showing that brand case affects perceptions of whether a brand is male or female but that effects on product attitudes and purchase intentions depend on the congruity between brand gender and the gender of consumption benefits determined by consumption goals and product attributes.

Wide variations in the use of brand case in the marketplace highlight its practical relevance. In the retailing industry, both upper- and lower-case brands are used across a wide variety of product categories and for products that target males, females,

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or both genders. Examples include adidas versus NIKE, head & shoulders versus PANTENE, always versus TAMPAX, progene versus BIOXGENIC, facebook versus VK, accenture versus IBM, bp versus EXXON, bloomingdales versus NORDSTROM, citi versus HSBC, acer versus DELL, and lyft versus UBER (see online Appendix in Supplementary material). Some brands, such as “PEPSI” (1962–2004) now “pepsi,” have switched brand case (see online Appendix in Supplementary Material). The apparent variety of brand letter cases, even for gender-specific products such as tampons (females) or testosterone-boosting products (males), suggests there is little consensus among brand management practitioners regarding which type of letter case should be used in a particular product category.

Building on prior research on brand symbolism (Escalas and Bettman 2005), and the effect of letter case on human perception (Tinker 1932; Xu et al. 2017), we propose that brand case affects the extent to which a product is seen as male or female. Further, drawing on compatibility-fluency-response models in marketing (Lee and Labroo 2004), we propose that consumer attitudes and purchase intentions are likely to be affected by the interplay between the product gender elicited through brand case and the gender of consumption benefits. Following prior research (Meyvis and Janiszewski 2002; Van Osselaer and Janiszewski 2001), we define the gender of consumption benefits as the salient gender of a product that comes into play in a specific consumption context.

Although gender is traditionally thought of as a fixed and binary construct linked to biological sex, we treat gender as flexible and distinct from physical anatomy (Curran and Saguy 2013). That is, in the same way that a person can have multiple gender identities and move between masculine and feminine depending on the context, the gender of consumption benefits is malleable and able to change depending on the consumption situation. Specifically, we propose that the gender of consumption benefits can be made salient in two ways. One way is through consumption goals. For example, a female consumer might purchase a multi-vitamin to help her achieve a more masculine goal such as running a marathon or to achieve a more feminine goal of getting pregnant. Another is through featured product benefits. For instance, a multi-vitamin might highlight breast health (feminine benefits) versus muscle strength (masculine benefits). In other words, the same consumer may seek different gendered benefits based on her goals at the time of purchase. Similarly, the same product may be perceived as providing different gendered benefits depending on which product attributes are highlighted.

We posit that effects of brand case on product attitudes and purchase intentions depend on the congruity between brand case and the gender of consumption benefits. Greater congruity between the gender evoked by brand case and the gender of consumption benefits enhances processing fluency, leading to more favorable product attitudes and greater purchase intentions. We refer to this as the case-gender compatibility effect. In addition, we further predict that a consumer’s biological sex moderates the case-gender compatibility effect for purchase intentions but not for product attitudes given that, relative to product evaluations, purchase intentions may be more influenced by biological sex due to greater self-relevance (Bargh and Pratto 1986).

Five studies test these ideas. Studies 1–2 examine the relationship between brand case and gender perceptions. Study 3 shows that a lowercase brand coupled with a feminine consumer goal or an uppercase brand coupled with a masculine goal lead to more favorable product attitudes than other combinations of case and gendered goals. Study 4 shows similar effects for the gender of product benefits, extends the investigation to purchase intentions, and finds support for processing fluency as the underlying mechanism for the case-gender compatibility effect. Study 4 also demonstrates that a consumer’s biological sex moderates the case-gender compatibility effect for purchase intentions but not product evaluations. Finally, because prior research suggesting that a round (vs. straight) shape can activate greater soft (vs. hard) associations (Jiang et al. 2016)—and because lowercase (uppercase) letters tend to involve more round (straight) surfaces—one might argue that the proposed effects are due to differences in the shapes of lowercase and uppercase letters. Thus, Study 5 tests an alternative explanation based on letter shape and suggests that brand case, rather than letter shape differences, drive these effects.

This research enriches understanding of how consumers respond to brand design characteristics in several ways. First, it extends previous research that has focused on how letter case affects aesthetics (Perea et al. 2015), letter clarity (Tinker 1932), and human perceptions (Xu et al. 2017), to show that brand case affects consumers’ evaluations and purchase behavior. In contrast to prior research (e.g., Xu et al. 2017), this research proposes and shows that effects of letter case depend on the congruity between brand letter case and the gender of consumption goals or product benefits. Consistent with research on social identity (Roccas and Brewer 2002; Stets and Burke 2000), that suggests that people have multiple identities whose salience changes with context, our findings demonstrate that brand gender can be similarly malleable. In particular, seemingly subtle changes to brand names through the use of lowercase versus uppercase letters can change the gender association of a product and, depending on the gender of consumption benefits, enhance or harm consumer evaluations and purchase intentions. As such, this research adds to research on the impact of typography elements on consumer behavior.

Second, this research contributes to branding research by demonstrating that slight changes to brand name characteristics can significantly affect consumer behavior. Prior branding research has examined brand name meaning (Keller et al. 1998), language (Yorkston and Menon 2004), and non-gendered effects of letter case (Xu et al. 2017). Although recent research has begun to examine brand gender perceptions (Browne 2017; Grohmann 2016; Lieven et al. 2015), it has mainly focused on the impact of substantial changes to brand design—such as logo shape, type font, or color. By contrast, this research examines how seemingly innocuous changes in brand case, without changes to other—more noticeable—brand name components, systematically affects brand gender perceptions, consumer evaluations, and buying intentions.

Finally, this work helps identify determinants for divergence between brand attitude and purchase intentions. We add to research on attitude–behavior relations (Ajzen and Fishbein

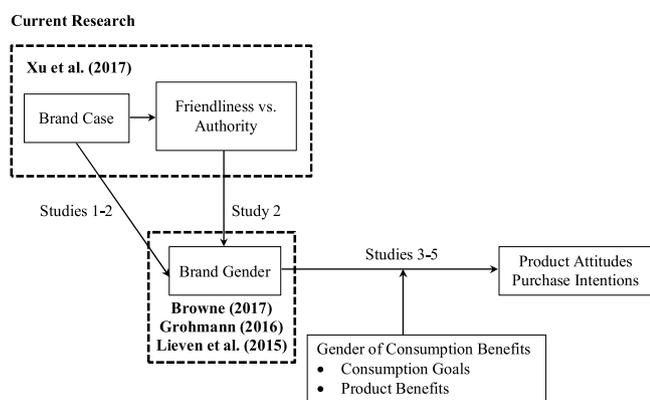


Fig. 1. Conceptual framework and relevant studies.

2000) by suggesting that, in addition to contextual factors, self-relevance—such as a person’s biological sex—can lead to attitude-intention inconsistency. For retailers, our findings provide important insights into how to better connect to consumers in an era in which traditional notions of gender are changing. Fig. 1 outlines our conceptual framework, identifies studies used to test its components, and shows how we add to extant research on brand case and brand gender.

### Theoretical Background

Branding research has shown that elements of brand names; such as sounds (Yorkston and Menon 2004), colors (Tavassoli 2001), and typefaces (Henderson, Giese and Cote 2004); have a significant influence on consumer perceptions and evaluations. For example, Yorkston and Menon (2004) find that the phonetic structure of brand names affects consumer evaluations of products and underlying attributes. Tavassoli (2001) shows that brand names appearing in blue (vs. orange) are negatively (vs. positively) evaluated. Henderson et al. (2004) show that natural typefaces lead to more reassuring and pleasing impressions. On the other hand, typography research has explored the role of letter case but focused on its impact on perceived aesthetics and letter clarity. For example, lowercase text is more legible (Phillips 1979), more inviting and easy to read (Tinker 1932), and processed more rapidly (Fisher 1975); by contrast, uppercase text is often used in headlines for emphasis or highlight and is seen as “shouting” or “yelling” in online contexts (Robb 2014). Recent research has begun to examine effects of letter case in marketing contexts; for instance, Xu et al. (2017) find that lowercase brands are associated with friendliness while uppercase brands are associated with authority. In summary, although prior research has examined the impact of design characteristics of brand names, an understanding of the role of letter case in product evaluations and purchase behavior remains limited. Further, there has been scant study of contextual factors that moderate the effects of brand name characteristics, including letter case, on consumer responses. The current work addresses these issues by investigating how, why, and under what conditions, brand case affects consumer evaluations and purchase behavior.

### Letter Case and Gender Perceptions

The use of lowercase versus uppercase letters can be traced to the 3rd century AD. Historians believe that uppercase “majuscule” (meaning large) letters came first and, over time, lowercase “miniscule” (meaning small) letters were developed (Nesbitt 1998). Beyond their differences in appearance, lowercase versus uppercase letters have different symbolic connotations. For example, it is believed that handwriting using all uppercase (vs. lowercase) letters represents a stronger ego, confidence, and sense of self-esteem (Kumar 2005).

In marketing settings, research suggests that brands often take on human characteristics including gender (Aaker 1997; Grohmann 2009). For example, Yorkston and Menon (2004) suggest that high front sounding vowels are more feminine, whereas low back sound vowels are more masculine. Relatedly, Klink (2000) finds that brand names containing fricatives (e.g., f, s, v, and z) are perceived as more feminine while those containing stops (e.g., p, t, d, and k) are seen as more masculine. This raises the question: Can brand names that have the same sound and meaning but different cases activate different gender perceptions?

Across many contexts, female and male genders invoke different associations.<sup>1</sup> For example, males are more likely to be associated with strength and power (Carothers and Reis 2013). In terms of personality, males are typically characterized as authoritative, powerful, tough, aggressive, forceful, assertive, and achievement oriented, while females are often classified as friendly, warm, caring, and kind (Lyness and Heilman 2006). Female-dominated jobs, such as kindergarten teachers or dental hygienists, are characterized as delicate and gentle, whereas male-dominated jobs, such as truck mechanics or automotive service technicians, are perceived as rough and hard (Elkins 2015).

Together, these difference in associated physical, psychological, and professional traits suggest that, among others, friendliness is associated as a female trait while authoritative is a quality ascribed as more male. Building on prior research, suggesting that lowercase brands are associated with friendliness while uppercase brands are associated with authority (Xu et al. 2017); and that all consumption, either consciously or unconsciously, conveys symbolic meanings (Escalas and Bettman 2005)—we further predict that letter cases used in a brand name carry gendered symbolic connotations such that lowercase brands have greater feminine associations while uppercase brands have greater masculine associations.

### The Compatibility Model: Brand Case and Gender of Consumption Benefits

A small but growing body of research has begun examining the influence of consumption gender on consumer behavior (He,

<sup>1</sup> We do not claim that these characteristics are, in fact, more male or female; rather that they are stereotypical associations that may become more accessible in particular contexts.

Inman, and Mittal 2008; Winterich, Mittal, and Ross Jr. 2009). For example, Winterich et al. (2009) demonstrate that when gender identity matches the social group setting, willingness-to-donate is increased. He et al. (2008) find that, in the context of risky decisions, fit between gender identity, goal orientation, and task can significantly increase purchase intent. However, there has been limited research on the interplay between brand names and consumption gender. Extending the connection between brand case and gender perceptions, the current research examines how brand case interacts with contextual factors; namely gender of consumption benefits, to affect consumer evaluations and purchase intentions.

Past research suggests that congruity between features of a brand can enhance processing fluency, which raises evaluations of marketer-provided information (Lee and Labroo 2004). For example, greater fit between consumption goals (e.g., prevention vs. promotion) and the concreteness of a product message improves processing fluency, nurturing positive product evaluations (Lee and Labroo 2004). Building on this research, we propose that greater congruity between the gender evoked by brand case and the gender of consumption benefits will enhance processing fluency and, in turn, product evaluations and purchase intentions. We refer to this as the case-gender compatibility effect.

An interesting question is whether the case-gender compatibility effect is further moderated by a consumer's biological sex. For product evaluations based on expectations and beliefs (Ajzen 2008), the case-gender compatibility effect may not be sensitive to biological sex—that is to say, as long as there is congruity between brand case and benefit gender, positive evaluations should arise among both women and men. However, effects of brand case and benefit gender on behavioral intentions might be different than for product evaluations (Eagly and Chaiken 1998). For instance, it is reasonable that, when making purchases for themselves, women prefer feminine benefits while men prefer masculine benefits because of greater self-relevance (Bargh and Pratto 1986). Further, effects of case-gender compatibility for purchases for the opposite sex may be different for males and females. Thus, biological sex may moderate compatibility effects of brand case and benefit gender to affect purchase intentions.

Based on this discussion, we propose that lowercase (uppercase) brands are perceived as more feminine (masculine). We further propose that greater congruity between brand case and the gender of consumption benefits enhances processing fluency which, in turn, leads to more favorable product attitudes and purchase intentions. Further, biological sex moderates the effect of brand case and benefit gender on purchase intentions. Five studies test these ideas.

### Study 1: Letter Case and Judgments of Baby Gender

The goal of Study 1 is to assess the proposed connection between letter case and gender perceptions. Following prior research (Wilkie and Bodenhausen 2012; Yan 2016), we test this idea by asking participants to guess the gender of a newborn baby who has the unisex name Chris—used by both males (e.g.,

Christopher, Christian) and females (e.g., Christine, Christina). If lowercase (uppercase) letters evoke more feminine (masculine) associations, then a lowercase (uppercase) baby name should lead to a higher probability that the baby is judged as a girl (boy).

### Design and Procedure

One hundred and twenty-seven U.S. participants ( $M_{\text{age}} = 32$ ,  $SD = 8.63$ ; 49.6% female) were recruited from Amazon's Mechanical Turk (MTurk). Participants were randomly assigned to one of two letter case conditions, in which they were asked to imagine they had just received a baby announcement from a friend (see online Appendix in Supplementary material). In the lowercase (uppercase) condition, the baby's name was written in all lowercase (uppercase) letters (chris m. cooper vs. CHRIS M. COOPER). Other information was identical across conditions. After reading the announcement, participants indicated whether the baby was a boy or girl (choice order was randomized).

### Results and Discussion

Following prior research (Yan 2016), to examine whether biological sex affects judgments of baby gender, we included participant sex, letter case, and their interaction in a logistic regression. Results revealed a significant main effect of letter case (Wald  $\chi^2(1) = 12.76$ ,  $p < .001$ ). Follow-up chi-square analyses showed that participants in the lowercase condition were more likely to judge the baby as a girl (41/65 [63%];  $\chi^2(1) = 4.45$ ,  $p < .05$ ) while those in the uppercase condition tended to judge the baby as a boy (49/62 [79%];  $\chi^2(1) = 20.90$ ,  $p < .001$ ). These effects did not depend on participant's biological sex. Neither the main effect of participant sex (Wald  $\chi^2(1) = 1.97$ ,  $p > .16$ ) nor the interaction of participant sex and letter case (Wald  $\chi^2(1) < 1$ ,  $p > .39$ ) was significant.

Study 1 supports the proposed connection between letter case and gender perceptions. Results suggest that, regardless of a judge's biological sex, lowercase (vs. uppercase) letters increase judgments that a name is for a female (vs. male) baby. Having shown the connection between letter case and gender perceptions in a non-brand setting, Study 2 consists of four experiments that sequentially test the effect of brand name letter case on gender perceptions as measured through brand personality traits as well as overall perceptions of masculinity and femininity. Examining effects on trait perceptions provides insights into the mechanism through which brand case affects gender perceptions. Examining overall perceptions of masculinity and femininity tests the proposal that brand case affects gender perceptions as a whole.

### Study 2a: Brand Case and Gender Trait Perceptions (Studio Name Study)

#### Method

One hundred and sixty-two undergraduates ( $M_{\text{age}} = 20$ ,  $SD = 2.56$ ; 50% female) completed the study at a computer

behavioral lab in exchange for course credit. Participants were told that the owner of a personal training studio, Dr. Green, was interested in consumers' perceptions of the studio's name. A pretest ( $n = 50$ ; 46% female), in which participants rated the extent to which "Green" sounded like a woman's or a man's last name on seven-point scales (1 = not at all, 7 = very much so), showed that Green was perceived equally as a woman's ( $M = 4.56$ ) and man's last name ( $M = 4.59$ ;  $F(1, 48) < 1, p = .84$ ). There were no significant main or interaction effects of participant sex.

In the lowercase (uppercase) condition, the studio's name was written as "green's studio" ("GREEN'S STUDIO"). Font style, size, and character spacing were identical across conditions. To examine effects on gendered trait perceptions, participants were randomly assigned to evaluate either green's studio or GREEN'S STUDIO, using two different sets of scales. The first was Grohmann's (2009) gendered brand personality scale—in which femininity is assessed as the mean descriptiveness of six items, "express tender feelings," "fragile," "graceful," "sensitive," "sweet," and "tender" ( $\alpha = .87$ ), and masculinity is assessed as the mean of six items, "adventurous," "aggressive," "brave," "daring," "dominant," and "sturdy" ( $\alpha = .89$ ) on nine-point scales (1 = not at all descriptive, 9 = extremely descriptive). The second was Xu et al.'s (2017) brand friendliness-authority scale—in which perceived friendliness is assessed through the mean score of two items, "friendly" and "amiable" ( $r = .68$ ), and perceived authority is assessed through the mean score of three items, "formal", "authoritative", and "influential" ( $\alpha = .76$ ) on nine-point scales (1 = not at all, 9 = very much). The order of the two sets of scales was counterbalanced. (Across all dependent measures, the main and interaction effects of scale order were non-significant and results were collapsed across order conditions.)

## Results and Discussion

We conducted separate GLM repeated measures analyses on the gendered brand personality scale (Grohmann 2009) and the brand friendliness-authority scale (Xu et al. 2017). For the gendered brand personality scale, a GLM repeated measures analysis, with femininity versus masculinity as a within-subjects factor, and brand case and participant sex as between-subjects factors, revealed a significant interaction between brand case and perceived femininity-masculinity ( $F(1, 158) = 373.40, p < .001$ , partial  $\eta^2 = .70$ ). Planned comparisons showed that the lowercase name (i.e., green's studio) was perceived as more feminine than the uppercase name (i.e., GREEN'S STUDIO;  $M_{\text{lowercase}} = 5.43$  vs.  $M_{\text{uppercase}} = 2.84$ ;  $F(1, 158) = 169.40, p < .001$ , partial  $\eta^2 = .52$ ), while the uppercase name was perceived more masculine than the lowercase name ( $M_{\text{uppercase}} = 5.69$  vs.  $M_{\text{lowercase}} = 3.02$ ;  $F(1, 158) = 162.29, p < .001$ , partial  $\eta^2 = .51$ ).<sup>2</sup> Other effects were not significant

Table 1  
Study 2a: factor loadings and communalities of brand trait scales.

	Loadings		Communality
	Factor 1 Masculinity	Factor 2 Femininity	
Scales adapted from Grohmann (2009)			
Express tender feelings	-.27	<b>.76</b>	.47
Fragile	-.23	<b>.76</b>	.58
Graceful	-.03	<b>.75</b>	.53
Sensitive	-.19	<b>.66</b>	.62
Sweet	-.22	<b>.73</b>	.62
Tender	-.34	<b>.65</b>	.56
Adventurous	<b>.74</b>	-.25	.60
Aggressive	<b>.71</b>	-.34	.67
Brave	<b>.75</b>	-.07	.59
Daring	<b>.77</b>	-.13	.59
Dominant	<b>.79</b>	-.20	.52
Sturdy	<b>.76</b>	-.12	.49
Scales adapted from Xu et al. (2017)			
Friendly	.12	<b>.76</b>	.57
Amiable	.10	<b>.71</b>	.50
Formal	<b>.68</b>	-.16	.47
Authoritative	<b>.75</b>	.05	.58
Influential	<b>.70</b>	.06	.53
Eigenvalue	5.27	4.47	
% of Total variance	31.00%	26.27%	

Note: Total variance explained = 57.27%.

Factor loadings greater than .40 are shown in bold.

( $p$ 's > .10). These findings show that lowercase (vs. uppercase) letters evoke greater feminine (vs. masculine) personality traits.

For the brand friendliness-authority scale (Xu et al. 2017), a GLM repeated measures analysis, with friendliness versus authority as a within-subjects factor, and brand case and participant sex as between-subjects factors, showed a significant interaction between brand case and perceived friendliness-authority ( $F(1, 158) = 97.23, p < .001$ , partial  $\eta^2 = .38$ ). Consistent with prior research (Xu et al. 2017), planned comparisons showed that the lowercase name was perceived as more friendly than the uppercase name ( $M_{\text{lowercase}} = 5.18$  vs.  $M_{\text{uppercase}} = 3.44$ ;  $F(1, 158) = 30.28, p < .001$ , partial  $\eta^2 = .16$ ), while the uppercase name was perceived as more authoritative than the lowercase name ( $M_{\text{uppercase}} = 5.34$  vs.  $M_{\text{lowercase}} = 3.48$ ;  $F(1, 158) = 44.02, p < .001$ , partial  $\eta^2 = .22$ ). Other effects were not significant ( $p$ 's > .14). That is, results using the brand friendliness-authority scale (Xu et al. 2017) are consistent with those using the gendered brand personality scale (Grohmann 2009).

To further compare the two trait scales, we conducted a principal component analysis (PCA). The PCA analysis yielded two factors explaining a total of 57.27% of the variance for the entire set of items (see Table 1). Factor 1 was labeled masculinity due to high loadings on Grohmann's (2009) six masculinity items: adventurous, aggressive, brave, daring, dominant, and sturdy; and Xu et al.'s (2017) three authority items: formal, authoritative, and influential. This first factor explained 31% of the variance. The second factor was labeled femininity due to high loadings on Grohmann's (2009) six femininity items: express tender feelings, fragile, graceful, sensitive, sweet, and tender; and the two

<sup>2</sup> Differences from scale midpoints were also significant.

friendliness items from Xu et al. (2017): friendly and amiable. The variance explained by this factor was 26.27%. In other words, the Grohmann and Xu scales demonstrate convergent validity.

In sum, this study suggests that lowercase (vs. uppercase) letters are associated with greater perceived femininity (vs. masculinity)—whether measured through gendered brand personality (Grohmann 2009) or perceived friendliness (vs. authority; Xu et al. 2017). The PCA analysis further shows that perceived friendliness is correlated with femininity while perceived authority is correlated with masculinity. These findings provide further support for the connection between letter case and gender perceptions.

### Study 2b: Overall Gender Perceptions (Studio Flyer Study)

#### Method

One-hundred and two MTurk participants ( $M_{\text{age}} = 34$ ,  $SD = 9.79$ ; 40% female) were told that this study was about consumers' perceptions of a new promotional flyer created by a personal training studio (see online Appendix in Supplementary material). Participants were randomly assigned to evaluate a studio flyer with the same studio name either written in lowercase or uppercase as used in Study 2a. General product gender perceptions were measured by asking participants to indicate the extent to which the flyer seemed feminine or masculine, on a seven-point scale (1 = extremely feminine, 7 = extremely masculine).

#### Results and Discussion

A 2 (brand case: lowercase vs. uppercase)  $\times$  2 (participant sex: female vs. male) ANOVA showed that the studio flyer designed with an uppercase brand name was perceived as more masculine ( $M = 5.14$ ) than the flyer with a lowercase brand name ( $M = 4.40$ ;  $F(1, 98) = 6.27$ ,  $p < .05$ , partial  $\eta^2 = .06$ ). Compared with the scale midpoint (4.0), the uppercase flyer was perceived as more masculine ( $M = 5.14$ ;  $t(53) = 5.70$ ,  $p < .001$ ). This difference was not significant for the lowercase flyer ( $M = 4.40$ ;  $t(47) = 1.78$ ,  $p = .08$ ). Other effects were not significant ( $p$ 's  $> .33$ ). These results suggest that products with uppercase brands are perceived as more masculine regardless of a consumer's biological sex.

Studies 2a and b provide evidence for the relationship between brand case and product gender perceptions in a service context. However, the non-significant difference between the lowercase brand and scale midpoint detected in Study 2b could be driven by: (1) the masculine nature of the product (a personal training studio) and (2) scale usage (given that the midpoint was not labeled). In particular, one might argue that masculinity and femininity are not opposite ends of the same dimension and should be measured separately (Palan, Areni, and Kiecker 1999). To address these concerns, Studies 2c and d extend Studies 2a and b to: (1) examine a real branded and gender-neutral product—shampoo, (2) assess product gender perceptions using separate items measuring masculinity and femininity, and (3)

rule out an alternative account for the results based on font size. Because Studies 2a and b used the same size font for both the uppercase and lowercase conditions, the uppercase text (e.g., "GREEN") appeared larger than the lowercase text (e.g., "green"). This was addressed in Studies 2c and d by modifying the font size of the lowercase and uppercase brand names to ensure they were of equal size.

### Study 2c: Brand Case and Gender Trait Perceptions (Shampoo Brand Study)

#### Method

One hundred and twenty-three MTurk participants ( $M_{\text{age}} = 39$ ,  $SD = 10.90$ ; 47% female) were randomly assigned to one of two brand case conditions. Participants in the lowercase (uppercase) condition were told that the study about consumers' perceptions of a new shampoo's brand name: "qaba" ("QABA"). (Qaba is an Australian shampoo brand for women and men of all hair types.) Font size and character spacing were adjusted to ensure that both forms of letter case were equivalent in appearance. As an additional check, participants were asked to rate the size of the brand name on a seven-point scale (1 = very small, 7 = very large). Results did not reveal a significant effect of letter case on perceived size ( $M_{\text{lowercase}} = 3.82$  vs.  $M_{\text{uppercase}} = 4.10$ ;  $F(1, 121) < 1$ , *ns*). Finally, participants were asked to indicate the perceived femininity-masculinity of the shampoo's brand name using the same feminine ( $\alpha = .92$ ) and masculine brand personality ( $\alpha = .91$ ) scales (Grohmann 2009) as in Study 2a.

#### Results and Discussion

As in Study 2a, a GLM repeated measures analysis revealed a significant interaction between letter case and perceived femininity-masculinity ( $F(1, 119) = 96.24$ ,  $p < .001$ , partial  $\eta^2 = .45$ ). Consistent with the earlier results, the lowercase shampoo name (i.e., qaba) was perceived as more feminine than the uppercase shampoo name (i.e., QABA,  $M_{\text{lowercase}} = 5.71$  vs.  $M_{\text{uppercase}} = 3.07$ ;  $F(1, 119) = 57.06$ ,  $p < .001$ , partial  $\eta^2 = .32$ ), while the uppercase shampoo name was perceived as more masculine than the lowercase shampoo name ( $M_{\text{uppercase}} = 5.48$  vs.  $M_{\text{lowercase}} = 2.92$ ;  $F(1, 119) = 64.85$ ,  $p < .001$ , partial  $\eta^2 = .35$ ; differences from the scale midpoints were significant). Other effects were not significant ( $p$ 's  $> .30$ ). These results provide additional evidence that lowercase (vs. uppercase) letters are associated with greater feminine (vs. masculine) personality traits.

### Study 2d: Overall Gender Perceptions (Shampoo Study)

#### Method

One hundred and five MTurk participants ( $M_{\text{age}} = 33$ ,  $SD = 11.32$ ; 58% female) were told that the study was about consumers' perceptions of a newly launched product, and were randomly assigned to one of two brand case conditions

(“qaba” shampoo vs. “QABA” shampoo). Next, participants were instructed to take their time perusing an ad containing a picture of the product (see online Appendix in Supplementary material). After perusing the ad, participants rated the extent to which the shampoo seemed feminine or masculine on two seven-point scales (1 = not at all feminine/masculine; 7 = extremely feminine/masculine). As an additional measure, participants rated how familiar they were with the brand on a seven-point scale (1 = not at all familiar, 7 = extremely familiar). Results confirmed that, compared with the scale midpoint (4.0), participants were unfamiliar with the shampoo brand ( $M = 2.90$ ;  $t(104) = 8.37$ ,  $p < .001$ ).

### Results and Discussion

Consistent with Study 2b results, a 2 (brand case: lowercase vs. uppercase)  $\times$  2 (participant sex: female vs. male) ANOVA results showed that the lowercase shampoo was perceived as more feminine ( $M_{\text{lowercase}} = 5.07$  vs.  $M_{\text{uppercase}} = 2.79$ ;  $F(1, 101) = 94.82$ ,  $p < .001$ , partial  $\eta^2 = .48$ ) and less masculine ( $M_{\text{lowercase}} = 3.33$  vs.  $M_{\text{uppercase}} = 5.17$ ;  $F(1, 101) = 53.85$ ,  $p < .001$ , partial  $\eta^2 = .35$ ) than the uppercase shampoo.<sup>3</sup> Other effects were not significant ( $p$ 's  $> .15$ ). These results further suggest that the connection between the lowercase (uppercase) brand and perceived femininity (masculinity) exists in a gender-neutral product setting. Having shown that brand case affects gender perceptions, we test the proposition that the effect of brand case on product evaluations and purchase behavior depends on congruity between brand case and the gender of consumption benefits.

### Study 3: Consumption Goals and Product Evaluations

As proposed earlier, the gender of consumption benefits can be made salient through consumption goals as well as featured product benefits. To the extent that consumption goals or product benefits are perceived as feminine or masculine, products that better match the gender of these goals (benefits) should be more highly evaluated—due to increased processing fluency (Lee and Labroo 2004). Subsequent studies examine the proposition that a product with an uppercase brand name will be more highly evaluated by consumers with a masculine consumption goal (product benefit) whereas a product with a lowercase brand name will be more highly evaluated by consumers with a feminine consumption goal (product benefit). We manipulate the gender of consumption benefits through consumption goals in Study 3 and through product benefits in Studies 4 and 5.

### Design and Procedure

To control for potential effects of biological sex, Study 3 uses only female consumers. Subsequent studies extend the investigation to both male and female consumers. Two hundred and

twenty-three female participants ( $M_{\text{age}} = 36$ ,  $SD = 7.97$ ) were recruited on MTurk and randomly assigned to one condition in a 3 (goal gender: feminine vs. masculine vs. control)  $\times$  2 (brand case: lowercase vs. uppercase) between-subjects design. Women in the feminine (masculine) goal condition were asked to imagine that they were planning to get pregnant (run a marathon) and looking for a vitamin supplement to prepare for a healthy pregnancy (strong run). Women in the control condition were asked to imagine that they were looking for a vitamin supplement to improve their general health and well-being. (A separate pretest measuring femininity and masculinity on separate scales showed that, relative to the scale midpoint, for women, planning to get pregnant was perceived as a more feminine, planning to run a marathon was perceived as more masculine, while improving general health was not significantly different from the scale midpoint; see online Appendix in Supplementary material).

Next, participants were instructed to peruse an ad for a multivitamin, Xtend-Life (a real natural health products brand in New Zealand). As in the previous studies, brand case was manipulated by presenting the brand name in either lowercase (xtendlife) or uppercase (XTENDLIFE) letters. Other information was identical across conditions. After viewing the ad, participants indicated their attitudes toward the multivitamin, measured using the average of four seven-point scales (1 = negative/dislike/unfavorable/bad, 7 = positive/like/favorable/good;  $\alpha = .98$ ; Lee and Labroo 2004). As a manipulation check for brand case, on an untimed task, participants were asked to list the brand name they saw in the ad in its case format (Unnava and Burnkrant 1991). Brand familiarity was measured as in Study 2d. Results showed that familiarity with the Xtend-life brand was low ( $M = 1.63$  vs.  $M_{\text{midpoint}} = 4.0$ ;  $t(222) = 27.32$ ,  $p < .001$ ).

### Results

#### Manipulation checks

To check whether participants remembered the brand name used in the ad, a score of 1 was assigned to those who correctly recalled the exact form of the brand name in the lowercase and uppercase conditions and 0 otherwise. The majority of participants (173/223 [77.6%]) correctly recalled the brand name in its exact letter case format. A binary logistic regression showed that the proportion of those who correctly recalled the brand name in the lowercase condition (89/111 [80.2%]) was not significantly different from that in the uppercase condition (84/112 [75%]; Wald  $\chi^2(1) = .86$ ,  $p = .36$ ).

Consistent with pretest results, analyses of gender perceptions of consumption goals showed that, relative to the scale midpoint (4.0), our all-female participants perceived the goal of preparing for a pregnancy as more feminine ( $M = 6.14$ ;  $t(222) = 23.09$ ,  $p < .001$ ) and less masculine ( $M = 1.96$ ;  $t(222) = 22.19$ ,  $p < .001$ ); the goal of preparing for a marathon as more masculine ( $M = 5.13$ ;  $t(222) = 13.95$ ,  $p < .001$ ) and less feminine ( $M = 3.10$ ;  $t(222) = 11.01$ ,  $p < .001$ ); and the goal of improving general health and well-being as neu-

<sup>3</sup> Results are similar with brand familiarity included as a covariate. In addition, differences between each mean and the scale midpoints were also significant.

trally feminine ( $M = 4.08$ ;  $t(222) = 1.10$ ,  $p = .27$ ) and masculine ( $M = 4.04$ ;  $t(222) < 1$ ,  $p = .61$ ).

### Product attitudes

Consistent with the idea that greater congruity between consumption goal gender and brand case leads to higher evaluations, a 3 (goal gender: feminine vs. masculine vs. control)  $\times$  2 (brand case: lowercase vs. uppercase) between-subjects ANOVA revealed a significant interaction between goal gender and brand case ( $F(1, 217) = 8.82$ ,  $p < .001$ , partial  $\eta^2 = .08$ ; results are similar with brand familiarity and brand recall accuracy included as covariates). Pairwise comparisons showed that, when women had a more feminine consumption goal (i.e., getting pregnant), a lowercase brand name led to more favorable attitudes ( $M_{\text{lowercase}} = 5.26$  vs.  $M_{\text{uppercase}} = 3.96$ ;  $F(1, 217) = 10.91$ ,  $p < .01$ , partial  $\eta^2 = .05$ ). When women had a more masculine goal (i.e., running a marathon), an uppercase brand name resulted in more favorable attitudes ( $M_{\text{uppercase}} = 5.10$  vs.  $M_{\text{lowercase}} = 4.07$ ;  $F(1, 217) = 6.93$ ,  $p < .01$ , partial  $\eta^2 = .03$ ). On the other hand, in the control condition, when women had a general health goal, differences in lowercase versus uppercase product evaluations were not significant ( $M_{\text{lowercase}} = 4.63$  vs.  $M_{\text{uppercase}} = 4.55$ ;  $F(1, 217) < 1$ ,  $ns$ ). Other effects were not significant ( $p$ 's  $> .60$ ).

### Discussion

Study 3 provides preliminary support for the case-gender compatibility effect. Using a real-world branded vitamin product, we find that when a female consumer holds a feminine (masculine) consumption goal, the use of a lowercase (uppercase) brand name leads to more favorable product attitudes. However, when the consumption goal is non-gendered, female consumers do not prefer lowercase versus uppercase brand name products. These effects suggest that congruity between brand case and consumption benefits affects (female) consumers' preferences for lower versus uppercase brand names. Expanding our study to both male and female participants, Study 4 tests whether the case-gender compatibility effect extends to the gender of product benefits, whether compatibility affects purchase intentions, whether biological sex moderates these effects, and investigates the underlying mechanism for these effects.

### Study 4: Product Benefits, Evaluations, and Purchase Intentions

Study 3 shows that congruity between brand case and goal gender enhances product evaluations. As discussed previously, Study 4 tests the robustness of the case-gender compatibility effect by manipulating the gender of product benefits. In addition, according to the compatibility-fluency-response model (e.g., Lee and Labroo 2004), congruity between brand case and the gender of product benefits facilitates processing fluency, leading to positive consumer responses. Study 4 tests these ideas, by including both female and male participants, assessing

the mediating role of processing fluency, and studying purchase intentions as well as product evaluations.

### Design and Procedure

Three hundred and thirty MTurk participants ( $M_{\text{age}} = 34$ ,  $SD = 10.44$ ; 50% female) were randomly assigned to one condition in a 2 (brand case: lowercase vs. uppercase)  $\times$  2 (benefit gender: feminine vs. masculine) between-subjects design. Participants were told that in this study, a large natural health products company was interested in consumers' evaluations of new multivitamin product. Participants then perused an ad for the Xtend-Life multivitamin, where the brand name was either *xtendlife* or *XTENDLIFE*, as in Study 3.

The ad consisted of a product picture and four product benefits. Benefit gender was manipulated by making the first three benefits more feminine versus masculine. (A pretest consisting of a set of 12 multivitamin benefits was conducted to identify benefit gender; heart health was selected as a gender-neutral benefit; see online Appendix in Supplementary material). Participants in the feminine condition read that the multivitamin was formulated to support "healthy skin and hair," "reproductive system," "breast health," and "heart health," while those in the masculine condition read that the multivitamin was formulated to support "healthy muscle function," "physical energy," "bone health," and "heart health."

After perusing the ad, participants indicated their attitudes toward the multivitamin as in Study 3 ( $\alpha = .97$ ). Purchase intentions were assessed using the average ( $r = .89$ ) of two seven-point scales (1 = very unlikely/definitely would not, 7 = very likely/definitely would). Following prior research (Lee and Labroo 2004), processing fluency of the ad was measured using the average ( $r = .78$ ) of two seven-point scales (1 = easy to process/easy to understand; 7 = hard to process/hard to understand). Finally, as in Study 3, participants completed a brand case name recall task and indicated their familiarity with the multivitamin brand.

### Results

#### Manipulation checks

As in Study 3, the majority of participants (264/330 [80%]) correctly recalled the brand name they saw in the ad. Differences in the proportion of participants who correctly recalled the brand name in the lowercase (vs. uppercase) condition were not significant (130/167 [77.8%] vs. 134/163 [82.2%]; Wald  $\chi^2(1) < 1$ ,  $ns$ ). Brand familiarity relative to the scale midpoint was low ( $M = 1.46$  vs.  $M = 4.0$ ;  $t(329) = 45.19$ ,  $p < .001$ ).

#### Product attitudes

Means of dependent measures are presented in Table 2.<sup>4</sup> A 2 (brand case: lowercase vs. uppercase)  $\times$  2 (benefit gender: feminine vs. masculine)  $\times$  2 (participant sex: female vs. male)

<sup>4</sup> Results are similar across all dependent measures with brand familiarity and brand recall accuracy included as covariates.

Table 2  
Study 4: means.

	Female				Male			
	Feminine benefits		Masculine benefits		Feminine benefits		Masculine benefits	
	Lowercase brand	Uppercase brand	Lowercase brand	Uppercase brand	Lowercase brand	Uppercase brand	Lowercase brand	Uppercase brand
Product attitudes	5.48 (1.31)	4.85 (1.44)	4.39 (1.51)	4.69 (1.55)	4.88 (1.29)	4.16 (1.59)	4.71 (1.55)	5.42 (.93)
Purchase intentions	5.39 (.91)	2.99 (1.65)	2.88 (1.15)	3.11 (.92)	3.57 (.98)	2.57 (1.26)	2.85 (1.02)	5.54 (.79)
Processing fluency	6.51 (.72)	5.03 (2.01)	5.15 (1.80)	5.88 (1.19)	5.96 (.90)	4.63 (1.91)	5.70 (1.45)	6.28 (.75)

Note. Standard deviations are in parentheses.

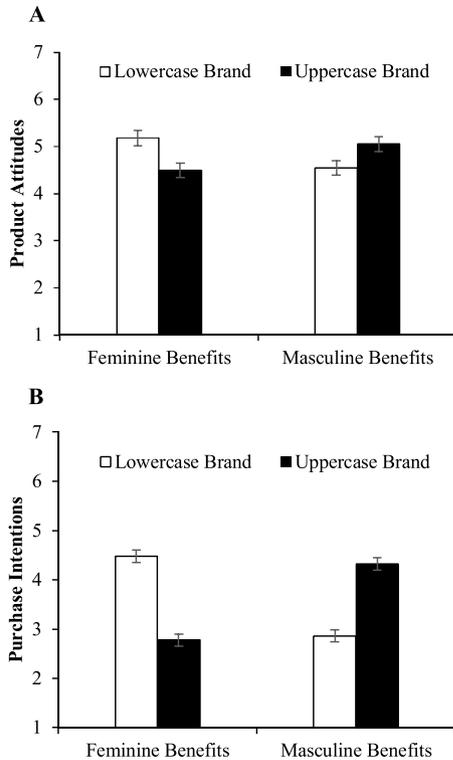


Fig. 2. Study 4: effects of brand case and benefit gender on: (A) product attitudes and (B) purchase intentions.

Note. Error bars represent standard errors of the mean.

between-subjects ANOVA revealed a significant interaction of product benefit gender and participant sex on brand attitude ( $F(1, 322) = 14.01, p < .001$ , partial  $\eta^2 = .04$ ). Not surprisingly, when product benefits were more feminine, women rated the vitamin more favorably ( $M_{\text{female}} = 5.16$  vs.  $M_{\text{male}} = 4.52$ ;  $F(1, 322) = 8.70, p < .01$ , partial  $\eta^2 = .03$ ), while when masculine attributes were made salient in the ad, men indicated more favorable attitudes ( $M_{\text{male}} = 5.06$  vs.  $M_{\text{female}} = 4.54$ ;  $F(1, 322) = 5.52, p < .05$ , partial  $\eta^2 = .02$ ). More importantly, consistent with the idea that greater congruity between brand case and benefit gender enhances product attitudes, the interaction between benefit gender and brand case was significant ( $F(1, 322) = 14.30, p < .001$ , partial  $\eta^2 = .04$ ; see Fig. 2A). Pairwise comparisons show that, when the product ad emphasized feminine benefits, a lowercase brand led to more favorable attitudes ( $M_{\text{lowercase}} = 5.18$  vs.  $M_{\text{uppercase}} = 4.50$ ;  $F(1, 322) = 9.56, p < .01$ , partial  $\eta^2 = .03$ ); however, when benefits had a mascu-

line tone, an uppercase brand resulted in more favorable attitudes ( $M_{\text{uppercase}} = 5.05$  vs.  $M_{\text{lowercase}} = 4.55$ ;  $F(1, 322) = 5.13, p < .05$ , partial  $\eta^2 = .02$ ). Other effects were not significant ( $p$ 's  $> .42$ ).

Purchase intentions

Consistent with the product attitude results, the interaction between benefit gender and participant sex on purchase intentions was significant ( $F(1, 322) = 85.61, p < .001$ , partial  $\eta^2 = .21$ ). Females were more likely to purchase the multi-vitamin when the product ad highlighted feminine benefits ( $M_{\text{female}} = 4.19$  vs.  $M_{\text{male}} = 3.07$ ;  $F(1, 322) = 40.72, p < .001$ , partial  $\eta^2 = .11$ ), whereas males were more likely to make a purchase if the ad reflected masculine benefits ( $M_{\text{male}} = 4.19$  vs.  $M_{\text{female}} = 2.99$ ;  $F(1, 322) = 44.91, p < .001$ , partial  $\eta^2 = .12$ ). More importantly, and supporting the case-gender compatibility effect, benefit gender and brand case interacted to affect purchase intentions ( $F(1, 322) = 159.30, p < .001$ , partial  $\eta^2 = .33$ ; see Fig. 2B). Specifically, when the product ad had more feminine benefits, participants were more likely to make a purchase for a lowercase ( $M = 4.48$ ) versus uppercase brand ( $M = 2.78$ ;  $F(1, 322) = 94.23, p < .001$ , partial  $\eta^2 = .23$ ). However, when the ad had masculine benefits, they were more likely to buy the uppercase brand ( $M = 4.32$ ) than the lowercase one ( $M = 2.86$ ;  $F(1, 322) = 66.57, p < .001$ , partial  $\eta^2 = .17$ ).

In addition, a significant three-way interaction of participant sex  $\times$  benefit gender  $\times$  brand case was detected ( $F(1, 322) = 4.54, p < .05$ , partial  $\eta^2 = .01$ ). Follow-up comparisons showed that females were more likely to make a purchase when a product had feminine benefits paired with a lowercase brand ( $M_{\text{female}} = 5.39$  vs.  $M_{\text{male}} = 3.57$ ;  $F(1, 322) = 82.43, p < .001$ , partial  $\eta^2 = .20$ ), while this effect was much smaller when feminine benefits were combined with an uppercase brand ( $M_{\text{female}} = 2.99$  vs.  $M_{\text{male}} = 2.57$ ;  $F(1, 322) = 4.76, p < .05$ , partial  $\eta^2 = .02$ ). Similarly, males exhibited greater purchase intentions when the ad highlighted masculine benefits and an uppercase brand ( $M_{\text{male}} = 5.54$  vs.  $M_{\text{female}} = 3.11$ ;  $F(1, 322) = 233.51, p < .001$ , partial  $\eta^2 = .42$ ); however, this effect was not significant when masculine benefits were paired with a lowercase brand in the ad ( $M_{\text{male}} = 2.85$  vs.  $M_{\text{female}} = 2.88$ ;  $F(1, 322) < 1, ns$ ). Relatedly, the two-way interaction of participant sex  $\times$  brand case was significant ( $F(1, 322) = 58.97, p < .001$ , partial  $\eta^2 = .16$ ). Females were more likely to purchase a lowercase brand ( $M_{\text{lowercase}} = 4.13$  vs.  $M_{\text{uppercase}} = 3.05$ ;  $F(1, 322) = 37.25, p < .001$ , partial  $\eta^2 = .10$ ) while males were more likely to buy an uppercase brand

( $M_{\text{uppercase}} = 4.05$  vs.  $M_{\text{lowercase}} = 3.21$ ;  $F(1, 322) = 22.61$ ,  $p < .001$ , partial  $\eta^2 = .07$ ). No other effects were significant ( $p$ 's  $> .33$ ).

### Processing fluency

Consistent with prior typographic research (Fisher 1975), a 2 (brand case: lowercase vs. uppercase)  $\times$  2 (benefit gender: feminine vs. masculine)  $\times$  2 (participant sex: female vs. male) between-subjects ANOVA revealed a main effect of brand case on processing fluency ( $F(1, 322) = 5.51$ ,  $p < .05$ , partial  $\eta^2 = .02$ ), indicating that participants processed the lowercase brand ( $M = 5.83$ ) more fluently than the uppercase brand ( $M = 5.46$ ). The interaction of benefit gender and participant sex was also significant ( $F(1, 322) = 8.81$ ,  $p < .01$ , partial  $\eta^2 = .03$ ). Females experienced greater processing fluency when the ad highlighted feminine benefits ( $M_{\text{female}} = 5.77$  vs.  $M_{\text{male}} = 5.30$ ;  $F(1, 322) = 4.46$ ,  $p < .05$ , partial  $\eta^2 = .01$ ) while males experienced greater processing fluency when the ad highlighted masculine benefits ( $M_{\text{male}} = 5.99$  vs.  $M_{\text{female}} = 5.51$ ;  $F(1, 322) = 4.35$ ,  $p < .05$ , partial  $\eta^2 = .01$ ).

Central to our theorizing, the interaction effect of benefit gender and brand case on processing fluency was significant ( $F(1, 322) = 41.30$ ,  $p < .001$ , partial  $\eta^2 = .11$ ). Pairwise comparisons showed that, when the product ad contained feminine benefits, a lowercase brand resulted in greater processing fluency ( $M_{\text{lowercase}} = 6.24$  vs.  $M_{\text{uppercase}} = 4.83$ ;  $F(1, 322) = 39.30$ ,  $p < .001$ , partial  $\eta^2 = .11$ ). However, when the ad contained masculine benefits, the uppercase brand resulted in greater processing fluency ( $M_{\text{uppercase}} = 6.08$  vs.  $M_{\text{lowercase}} = 5.43$ ;  $F(1, 322) = 8.15$ ,  $p < .01$ , partial  $\eta^2 = .03$ ).

### Mediation analyses

To examine whether congruity between benefit gender and brand case increases processing fluency, enhancing brand attitudes and purchase intentions, moderated mediation analyses were conducted (Hayes 2013, Model 7). In each analysis, the independent variable was brand case, the moderator was benefit gender, the mediator was processing fluency, and the dependent variable was product attitude or purchase intention.

For product attitudes, the overall moderated mediation effect was significant ( $B = 1.19$ ,  $SE = .20$ ; 95%  $CI = .81$ – $1.58$ ). Conditional indirect effects showed that when the product ad featured masculine benefits, the uppercase brand led to greater processing fluency, which in turn resulted in more favorable attitudes ( $B = .40$ ,  $SE = .13$ ; 95%  $CI = .15$ – $.65$ ). However, when the ad had feminine benefits, the uppercase brand resulted in less processing fluency, which led to less favorable attitudes ( $B = -.80$ ,  $SE = .14$ ; 95%  $CI = -1.08$  to  $-.53$ ).

For purchase intentions, the overall moderated mediation effect was also significant ( $B = 1.43$ ,  $SE = .24$ ; 95%  $CI = .98$ – $1.90$ ). Conditional indirect effects revealed that, when the ad was more masculine, the uppercase brand evoked greater processing fluency and participants were more likely to purchase the product ( $B = .48$ ,  $SE = .15$ ; 95%  $CI = .19$ – $.78$ ). In contrast, for the feminine ad, the uppercase brand reduced processing fluency and participants were less likely to make a purchase ( $B = -.95$ ,  $SE = .17$ ; 95%  $CI = -1.29$  to  $-.63$ ). These effects

suggest that greater congruity between benefit gender and brand case enhances processing fluency, leading to more favorable product attitudes and greater purchase intentions (see Fig. 3).

### Discussion

Study 4 underscores the findings of the previous studies while extending them in a number of important ways. Consistent with Study 3 (and Studies 2a–d), Study 4 suggests that biological sex does not play a role in the relationship between brand case and attitudes—such that, when there is congruity between brand case and benefit gender, women and men show similar (positive) attitudes toward the product. Further, Study 4 extends the prior studies by investigating the impact of case-gender congruity on purchase intentions. In fact, the case-gender compatibility effect is stronger for purchase intentions than attitudes (e.g., partial  $\eta^2 = .33$  vs. partial  $\eta^2 = .04$ ). However, this effect is qualified by an interaction with biological sex. This can be seen in the far left and right sides of Table 2 in which female consumers have lower purchase intentions than attitudes towards upper case brands with feminine benefits while male consumers have lower purchase intentions than attitudes towards lower case brands with masculine benefits. These results are consistent with the idea that, relative to product attitudes, purchase intentions are more influenced by a consumer's biological sex due to greater self-relevance (Bargh and Pratto 1986). Interestingly, for purchase intentions, males seem to be more attuned to incompatibility for products with female benefits than females are for incompatibility for products with male benefits. This may be due to differences in beliefs about how product purchases signal gender identity or by the greater tendency of female consumers to buy products for the whole family.

Finally, the moderated mediation analysis provides support for the proposed underlying mechanism. Consistent with the compatibility-fluency-response model, our results show that, when a product features feminine (masculine) benefits, use of a lowercase (uppercase) brand activates greater processing fluency, which in turn results in more favorable consumer attitudes and purchase intentions.

### Study 5: Case or Letter Shape?

Studies 3 and 4 support the case-gender compatibility effect. However, given that round shapes are likely to evoke soft associations whereas straight shapes evoke hard associations (Jiang et al. 2016), and that lowercase letters tend to involve more round surfaces, one might argue that the effects are due to differences in the shapes of lowercase and uppercase letters (rather than brand case). Study 5 is designed to test the alternative explanation of letter shape.

### Design and Procedure

Five hundred and twenty-four undergraduate students ( $M_{\text{age}} = 22$ ,  $SD = 2.01$ ; 49.6% female) completed the main study for class credit in a behavioral lab. Participants were randomly assigned to one condition in a 2 (letter shape: straight vs.

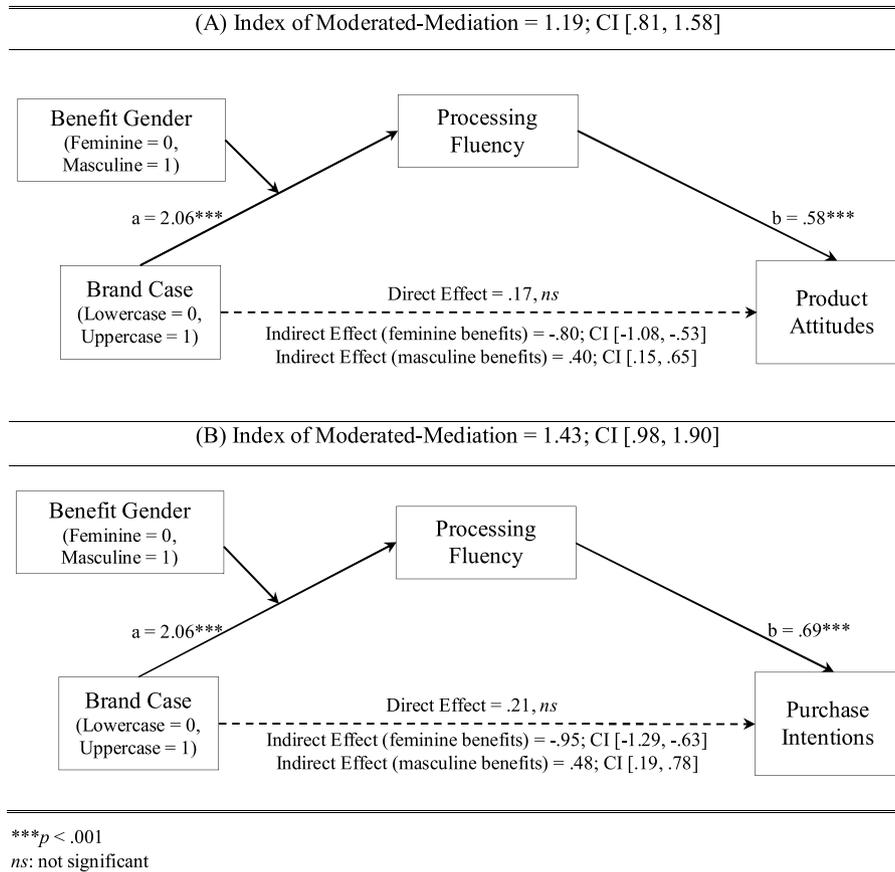


Fig. 3. Study 4: effects of brand case and benefit gender on: (A) product attitudes and (B) purchase intentions through processing fluency. \*\*\* $p < .001$ .  $ns$ : not significant.

round)  $\times$  2 (benefit gender: feminine vs. masculine)  $\times$  2 (brand case: lowercase vs. uppercase) between-subjects design. Participants were told that a large personal care products company was interested in consumers' evaluations of a new shampoo product. Next, participants were instructed to peruse an ad of a fictitious shampoo brand. Letter shape was manipulated by using "ivix" ("qobo") shampoo brand in the straight (round) conditions. (A pretest was conducted to select brand names that were perceived as being equally and moderately easy to pronounce; see online Appendix in Supplementary material.) Brand was manipulated by using "ivix" (vs. "IVIX") and "qobo" (vs. "QOBO") in the lowercase (uppercase) conditions. All other information was identical across conditions.

As in Study 4, benefit gender was manipulated by making feminine versus masculine benefits salient in the ad. A pretest was conducted to identify the gender of different benefits (see online Appendix in Supplementary material). Specifically, participants in the feminine condition read that the shampoo: "makes hair silky," "improves hair shine," "is color protecting," "leaves hair soft," and "has a floral scent," while those in the masculine condition read that the shampoo: "prevents hair loss," "helps eliminate dandruff," "relieves itching," "removes dirt and oil," and "has a woody scent."

Product attitudes ( $\alpha = .96$ ), purchase intentions ( $r = .81$ ), and processing fluency ( $r = .71$ ) were measured using same scales as

in Study 4. To assess the manipulation of brand letter shape, we asked participants to identify the shape of letters for the brand they saw as (counterbalanced): straight, angular, round, or oval (Jiang et al. 2016). A code of 1 (correct recall) was generated if participants selected "straight" or "angular" in the straight condition and "round" or "oval" in the round condition and 0 otherwise. Lastly, participants completed the same brand case recall task used in the previous studies.

## Results

### Manipulation checks

For letter shape recall, 76% (398/524) of participants correctly identified the letter shape assigned to their condition. The proportion of those who correctly identified letter shape in the straight (vs. round) conditions (206/264 [78%] vs. 192/260 [73.8%]; Wald  $\chi^2(1) = 1.25, p = .26$ ), and in the lowercase (vs. uppercase) conditions (198/261 [75.9%] vs. 200/263 [76%]; Wald  $\chi^2(1) < 1, ns$ ), did not statistically differ. As in Studies 3 and 4, the majority of participants (415/524 [79.2%]) correctly recalled the brand they saw in the ad. The proportion of participants who correctly recalled the brand in the straight (vs. round) conditions (211/264 [79.9%] vs. 204/260 [78.5%]; Wald  $\chi^2(1) < 1, ns$ ), or in the lowercase (vs. uppercase) conditions

(214/261 [82%] vs. 201/263 [76.4%]; Wald  $\chi^2(1) < 1$ , *ns*), were not significantly different.

### Product attitudes

A 2 (letter shape: straight vs. round)  $\times$  2 (benefit gender: feminine vs. masculine)  $\times$  2 (brand case: lowercase vs. uppercase)  $\times$  2 (participant sex: female vs. male) between-subjects ANOVA was conducted.<sup>5</sup> As in Study 4, the interaction of benefit gender and participant sex had a significant effect on product attitudes ( $F(1, 508) = 22.41$ ,  $p < .001$ , partial  $\eta^2 = .04$ ). Females (vs. males) exhibited more positive attitudes toward the shampoo when the shampoo highlighted feminine benefits ( $M_{\text{female}} = 5.23$  vs.  $M_{\text{male}} = 4.88$ ;  $F(1, 508) = 5.91$ ,  $p < .05$ , partial  $\eta^2 = .01$ ), while males (vs. females) liked the shampoo more when it highlighted masculine benefits ( $M_{\text{male}} = 5.28$  vs.  $M_{\text{female}} = 4.67$ ;  $F(1, 508) = 18.14$ ,  $p < .001$ , partial  $\eta^2 = .03$ ).

In support of the case-gender compatibility effect, the interaction between benefit gender and brand case was significant ( $F(1, 508) = 21.25$ ,  $p < .001$ , partial  $\eta^2 = .04$ ). Pairwise comparisons showed that when the shampoo had feminine benefits, a lowercase brand resulted in more favorable attitudes ( $M_{\text{lowercase}} = 5.31$  vs.  $M_{\text{uppercase}} = 4.80$ ;  $F(1, 508) = 13.07$ ,  $p < .001$ , partial  $\eta^2 = .03$ ). However, when the ad portrayed more masculine benefits, an uppercase brand led to more favorable attitudes ( $M_{\text{uppercase}} = 5.18$  vs.  $M_{\text{lowercase}} = 4.76$ ;  $F(1, 508) = 8.44$ ,  $p < .01$ , partial  $\eta^2 = .02$ ). Neither the main effect of letter shape nor other higher order effects were significant ( $p$ 's  $> .10$ ), suggesting that brand letter shape did not affect consumer attitudes.

### Purchase intentions

As in Study 4, there was a significant interaction of benefit gender and participant sex ( $F(1, 508) = 32.72$ ,  $p < .001$ , partial  $\eta^2 = .05$ ). Females indicated stronger purchase intentions when the shampoo ad highlighted feminine benefits ( $M_{\text{female}} = 4.58$  vs.  $M_{\text{male}} = 3.93$ ;  $F(1, 508) = 23.04$ ,  $p < .001$ , partial  $\eta^2 = .04$ ), while males were more likely to make a purchase if the ad reflected masculine benefits ( $M_{\text{male}} = 4.37$  vs.  $M_{\text{female}} = 3.93$ ;  $F(1, 508) = 10.85$ ,  $p < .01$ , partial  $\eta^2 = .02$ ). More importantly, and consistent with the case-gender compatibility proposal, the interaction of benefit gender and brand case was also significant ( $F(1, 508) = 118.63$ ,  $p < .001$ , partial  $\eta^2 = .19$ ). Results showed that, when the shampoo ad made feminine benefits salient, participants were more likely to make a purchase for a lowercase ( $M = 4.76$ ) versus uppercase brand ( $M = 3.75$ ;  $F(1, 508) = 56.21$ ,  $p < .001$ , partial  $\eta^2 = .10$ ). However, when the ad made masculine benefits salient, they were more likely to buy the uppercase brand ( $M = 4.69$ ) than the lowercase one ( $M = 3.62$ ;  $F(1, 508) = 62.48$ ,  $p < .001$ , partial  $\eta^2 = .11$ ).

As in Study 4, the three-way interaction of participant sex  $\times$  benefit gender  $\times$  brand case was also significant ( $F(1, 508) = 4.10$ ,  $p < .05$ , partial  $\eta^2 = .01$ ). Follow-up analyses revealed that females were more likely to purchase

the shampoo if the ad highlighted feminine benefits with a lowercase brand ( $M_{\text{female}} = 5.44$  vs.  $M_{\text{male}} = 4.09$ ;  $F(1, 508) = 116.65$ ,  $p < .001$ , partial  $\eta^2 = .19$ ), while this effect was not significant when feminine benefits were paired with an uppercase brand ( $M_{\text{female}} = 3.73$  vs.  $M_{\text{male}} = 3.77$ ;  $F(1, 508) < 1$ , *ns*). Similarly, males exhibited greater purchase intentions when the ad highlighted masculine benefits with an uppercase brand ( $M_{\text{male}} = 5.05$  vs.  $M_{\text{female}} = 4.31$ ;  $F(1, 508) = 25.40$ ,  $p < .001$ , partial  $\eta^2 = .05$ ) but this effect was not significant when masculine benefits were paired with a lowercase brand ( $M_{\text{male}} = 3.69$  vs.  $M_{\text{female}} = 3.54$ ;  $F(1, 508) < 1$ , *ns*). Further, the interaction of participant sex  $\times$  brand case was also significant ( $F(1, 508) = 27.32$ ,  $p < .001$ , partial  $\eta^2 = .05$ ). Females were more likely to purchase a lowercase brand ( $M_{\text{lowercase}} = 4.49$  vs.  $M_{\text{uppercase}} = 4.02$ ;  $F(1, 508) = 11.91$ ,  $p < .01$ , partial  $\eta^2 = .02$ ) while males were more likely to buy an uppercase one ( $M_{\text{uppercase}} = 4.42$  vs.  $M_{\text{lowercase}} = 3.89$ ;  $F(1, 508) = 15.46$ ,  $p < .001$ , partial  $\eta^2 = .03$ ). No other effects were significant ( $p$ 's  $> .12$ ), suggesting that brand letter shape does not explain the case-gender compatibility effect.

### Processing fluency

As in Study 4, ANOVA results revealed a (marginally) significant main effect of brand case on processing fluency ( $F(1, 508) = 3.46$ ,  $p = .06$ , partial  $\eta^2 = .01$ ) and the lowercase brand name was processed more fluently ( $M = 5.55$ ) than the uppercase brand name ( $M = 5.30$ ). A significant interaction of benefit gender and participant sex ( $F(1, 508) = 10.74$ ,  $p < .01$ , partial  $\eta^2 = .02$ ) showed that women processed a feminine ad more fluently than men ( $M_{\text{female}} = 5.61$  vs.  $M_{\text{male}} = 5.06$ ;  $F(1, 508) = 8.25$ ,  $p < .01$ , partial  $\eta^2 = .02$ ) while men (vs. women) processed a masculine ad more fluently ( $M_{\text{male}} = 5.69$  vs.  $M_{\text{female}} = 5.35$ ;  $F(1, 508) = 3.12$ ,  $p = .08$ , partial  $\eta^2 = .01$ ). Moreover, consistent with our theorizing, a significant interaction of benefit gender and brand case ( $F(1, 508) = 21.74$ ,  $p < .001$ , partial  $\eta^2 = .04$ ) shows that when the shampoo was portrayed as feminine, the lowercase brand evoked greater processing fluency ( $M_{\text{lowercase}} = 5.77$  vs.  $M_{\text{uppercase}} = 4.90$ ;  $F(1, 508) = 21.40$ ,  $p < .001$ , partial  $\eta^2 = .04$ ); however, when the ad was described as masculine, the uppercase brand activated greater processing fluency ( $M_{\text{uppercase}} = 5.71$  vs.  $M_{\text{lowercase}} = 5.33$ ;  $F(1, 508) = 3.91$ ,  $p < .05$ , partial  $\eta^2 = .01$ ).

### Mediation analyses

As in Study 4, for product attitudes, the overall moderated mediation effect was significant ( $B = .16$ ,  $SE = .06$ ; 95%  $CI = .06-.29$ ). Conditional indirect effects showed that when the ad highlighted masculine benefits, the uppercase brand led to greater processing fluency, which in turn resulted in stronger product attitudes ( $B = .05$ ,  $SE = .03$ ; 95%  $CI = .002-.117$ ). However, when the ad highlighted feminine benefits, the uppercase brand appeared incongruent and resulted in less processing fluency, which led to less favorable attitudes ( $B = -.11$ ,  $SE = .04$ ; 95%  $CI = -.205$  to  $-.044$ ). Likewise, for purchase intentions, the overall moderated mediation effect was significant ( $B = .13$ ,  $SE = .05$ ; 95%  $CI = .04$  to  $.24$ ). Conditional indirect effects revealed that when the ad was more masculine, the uppercase

<sup>5</sup> Results are similar across all dependent measures with brand recall accuracy included as a covariate.

brand evoked greater processing fluency increasing purchase intentions ( $B = .04$ ,  $SE = .02$ ;  $95\% \text{ CI} = .002 \text{ to } .095$ ). In contrast, when the ad was more feminine, the uppercase brand activated less processing fluency reducing purchase intentions ( $B = -.09$ ,  $SE = .04$ ;  $95\% \text{ CI} = -.17 \text{ to } -.03$ ).

### Discussion

Findings from Study 5 provide additional support for the case-gender compatibility effect by replicating the results of Study 4 and ruling out brand letter shape as an alternative account. As in Study 4, results show that congruity between brand case and the gender of product benefits evokes greater processing fluency, which leads to favorable product evaluations and stronger purchase intentions. As in Study 4, Study 5 shows that biological sex matters for purchase intentions but not product attitudes. Further, by explicitly manipulating brand letter shape as well as case, our findings provide robust evidence for the case-gender compatibility effect, and suggest that brand case, not letter shape, drives the impact of case compatibility on consumer evaluations and purchase behavior. These findings suggest that the case-gender compatibility effect is robust to changes in the letter shape of brand names, and imply that inner, symbolic, connotations of brand case (i.e., gender associations), rather than outer, visual imagery (i.e., letter shape), trigger the case-gender compatibility effect.

### General Discussion

This research shows that seemingly innocuous changes in brand case significantly impact consumer responses; however, effects on product evaluations and purchase intentions depend on the match between the gender evoked by brand case and the gender of product consumption benefits. Before summarizing the results, it is worth noting a few caveats. First, we do not claim that the association between lowercase (uppercase) and femininity (masculinity) *should* exist; rather that our findings demonstrate these associations exist (at least among our study participants). Relatedly, there is a reason to believe that, under certain circumstances, these associations can be alleviated, strengthened, or even counteracted. Future research could further explore moderators of case-gender associations. Second, the goal of this research is not to identify the exact cause of these associations—given that there may be additional reasons for these associations beyond those we identify. Instead, our focus is to explore how fit between the gender of brand case associations and the gender of consumer goals or product benefits affects consumer behavior. In support of our propositions, a series of experiments show that lowercase brands are perceived as more feminine while uppercase brands are perceived as more masculine. In particular, Studies 1–2 demonstrate that brand case affects gender perceptions. Three additional studies provide convergent evidence for the proposed case-gender compatibility effect across different product categories (multivitamins and shampoos) through manipulations of consumer goals as well as product benefits. Study 3 shows that greater congruity between brand case and goal gender leads to more favorable consumer

attitudes toward the product. Study 4 investigates the underlying mechanism for the case-gender compatibility effect and demonstrates that matching a product's brand case to the gender of its benefits results in greater processing fluency which, in turn, boosts product attitudes and purchase intentions. In addition, Study 4 shows that biological sex interacts with brand case and benefit gender to affect purchase intentions but not product attitudes. Study 5 replicates these findings and shows that brand case, rather than letter shape differences (i.e., straight vs. round letters), drives these effects. Together, these studies support the proposed compatibility-fluency-response model of brand case effects.

### Theoretical Implications and Future Research

This research contributes to the literature in several ways. First, this research extends previous research on typography (Perea et al. 2015), and research on letter case and consumer perceptions (Xu et al. 2017), by identifying the impact of brand case on product evaluations and purchase intentions. As such, it contributes to a growing body of research examining the role of typographic elements in marketing, addresses call for additional research on brand case (Childers and Jass 2002), and adds to marketing practice by showing how and when brand case affects consumer attitudes and intentions.

Second, this research adds to understanding of brand gender by showing that brand gender effects are contextual and mutable. Further, we propose and find that a consumer's biological sex combines with brand case and the gender of consumption benefits to influence purchase intentions but not product attitudes. These results add to research on differential effects of biological sex (Noble, Griffith, and Adjei 2006) and gender identity (Tuncay and Otnes 2008) and open up new directions for studying broader determinants of attitude-behavior consistency (Ajzen and Fishbein 2000).

Third, by demonstrating how brand case evokes gender associations, whose match with the gender of consumption benefits affects product evaluations and purchase intentions, this work adds to research on brand personality (Aaker 1997; Grohmann 2009). Building on this research, the current research demonstrates that simple changes in the typographic characteristics of a brand and the match between these changes and the gender of consumption benefits can significantly affect consumer choices. More generally, this research adds to prior research on how brand design elements affect consumer behavior (Yorkston and Menon 2004; Janiszewski and Meyvis 2001; Jiang et al. 2016).

Future research could broaden the current research in several ways. For example, it might be interesting to examine the effects of other forms of brand case, such as title case (e.g., "Microsoft") or the syllabic abbreviation of brand names (e.g., "FedEx" from Federal Express). To control for the potential influence of consumers' prior knowledge of a brand, this research only focuses on brands with which participants were unfamiliar. While gender associations for well-known brands are very likely to be strong, it would be very interesting to explore whether changes to the case of well-known brands lead to similar effects. Further, based on our findings in Study 5, it would be interesting

for future research to further pinpoint when and why inner traits versus outer visual elements of brands exert differential effects on consumer behavior. In a similar vein, future research could explore moderators of the impact of brand case on consumer responses. For instance, given our findings that biological sex can moderate the effect of case compatibility on purchase intentions, future research could examine how brand case interacts with other choice contexts, such as buying for the self versus for others.

Other research could further differentiate the influence of consumers' biological sex versus gender on case-gender compatibility. Results showing that the gender of women's consumption goals moderates brand case effects are consistent with the idea that gender is flexible, continuous, and distinct from physical anatomy. Prior research has shown that, in a brand setting, sex-role identity is a core dimension of the self (Grohmann 2009). Thus, we might have found a main effect of brand case on brand attitudes in Study 3, as well as an interaction between participant sex and brand case on brand attitudes in Studies 4 and 5, had we measured sex-role identity. Future research could examine this possibility. In addition, future research could extend the current work to investigate whether and how brand case may trigger non-gendered associations and affect match with non-gendered goals or benefits. It would be also interesting to examine the placebo effect (Shiv, Carmon, and Ariely 2005) in a brand case context. For example, does merely exposing people to lowercase versus uppercase brands impact their self-efficacy under certain consumption contexts (such as when achieving feminine vs. masculine goals) and does this further affect consumer choices and purchase intentions? Such research could test whether the case-gender compatibility effect becomes stronger or weaker in certain contexts.

### Practical Implications

Although marketers have long used design elements to convey whether a product is designed for females or males, such as pink for girls and blue for boys, traditional portrayals of femininity and masculinity based on gender or stereotypes are becoming blurred, as gender fluidity becomes the norm, rather than the exception. Savvy brands looking to connect with consumers who no longer think of their gender in binary terms are reconsidering strategies, throwing away plans based on stereotypes, and tackling gender norms in how they advertise and in the products they offer. The current research offers an approach to embrace gender fluidity by suggesting that brand case may be a subtler way to convey a product's gender. Changes to brand case may allow firms to avoid blatant gender appeals that lead to negative consumer responses, such as the "it's not for women" Dr. Pepper Ten slogan—which was seen as "insulting," "offensive," and "inappropriate" (Clarke 2011).

Our findings also show that compatibility effects are different for product attitudes and purchase intentions. Although both men and women show similar positive attitudes toward products for which brand case matches the gender of consumption benefits, when it comes to purchase decisions, men prefer masculine-uppercase-compatibility while women tend to gravi-

tate towards feminine-lowercase-compatibility. More generally, this research highlights the growing importance of brand name design. Rather than viewing brand name characteristics as solely aesthetic, it is important to continue to examine their impact on consumer behavior.

### Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.jretai.2018.10.002>.

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