

Beyond “Pink It and Shrink It” Perceived Product Gender, Aesthetics, and Product Evaluation

Miriam van Tilburg, Theo Lieven, and Andreas Herrmann
University of St. Gallen

Claudia Townsend
University of Miami

ABSTRACT

Marketing research on product personality suggests that products possess gender; however, the process by which a product becomes masculine or feminine is unknown. This research identifies product aesthetics as a source of product masculinity and femininity and investigates the influence of product gender created by aesthetics on consumer behavior. Building on prior work on anthropomorphism and evolutionary psychology (EP), the authors broadly hypothesize that specific physical characteristics identified as representing masculinity and femininity—and thus considered attractive in the mate selection process—will have a similar effect on products. The first study identifies the impact of the aesthetic dimensions of form (proportion, shape, and lines), color (tones, contrast, and reflection), and material (texture, surface, and weight) on defining a product's gender. The second study shows that products that are strongly gendered, particularly those that are strong in both the masculine and feminine dimensions, result in positive affective and behavioral responses. Thus, this research identifies product aesthetics as a significant source of product gender while highlighting the theoretical contribution of EP to consumer behavior. Managerial implications for product design are then discussed, offering guidelines for creating strongly gendered products. © 2015 The Authors. *Psychology & Marketing* Published by Wiley Periodicals, Inc.

Both consumers and designers have a general understanding of some design principles used to identify the gender of the target market of a product. From razors to power tools, there is the notion that one needs to “pink it and shrink it”; that is, adapt a previously masculine product to a female target market. While some associations between design elements and gender are undoubtedly learned, others may be innate. Consumers tend to anthropomorphize products, giving them humanlike characteristics (Epley, Waytz, & Cacioppo, 2007) and evaluating them in the same way that they evaluate other people (Govers & Schoormans, 2005). Indeed, brands and products seem to have personalities just like people (Aaker, 1997; Jordan, 1997). Moreover, much of how a product's personality is communicated by designers and understood by consumers is through its appearance (Govers, Hekkert, & Schoormans, 2002). This research proposes that physical characteristics that have a strong identification with human masculinity or femininity may convey the same symbolic meaning when expressed in objects. Moreover, just as brands with strong gender expression tend to be

well liked (Lieven, Grohmann, Herrmann, Landwehr, & van Tilburg, 2014), this research proposes that products with strong gender identification will produce greater affective and behavioral responses.

These issues are considered here in two different studies. The first study demonstrates that the perception of product gender can be influenced by the design elements of shape, color, and material. Specific variations of each of these elements that create a more masculine or feminine perception are then identified. The second study explores the effect of product gender on consumer response in terms of the perception of aesthetics, functionality, affective attitude toward the product, and purchase intent. Thus, the aim of this research is to determine whether product aesthetics are a crucial source of product gender and to highlight the importance of product gender in terms of consumer response. From a managerial perspective, this research offers a detailed guideline for designers regarding the creation of feminine product gender (FPG) and masculine product gender (MPG), thus enhancing product value. A somewhat recent trend in the field of

marketing is the use of evolutionary psychology (EP; e.g., Griskevicius & Kenrick, 2013; Saad, 2006), as it has been found to effectively explain consumer behavior (Colarelli & Dettmann, 2003; Foxall, 1993; Foxall & James, 2003; Griskevicius & Kenrick, 2013; Saad, 2004, 2006; Saad & Gill, 2000). This research, therefore, also offers a helpful illustration of how EP findings can offer guidance in seemingly unrelated areas such as product design and marketing.

THEORETICAL FRAMEWORK AND HYPOTHESES

Product Aesthetics as a Source of Product Gender

Most studies of gender with respect to products have viewed it as an explanatory variable for consumer behavior. Respondent gender has been analyzed as a moderator of the perception of products using variables such as sex role, self-concept, or biological sex (e.g., Gentry, Doering, & O'Brien, 1978; Golden, Allison, & Clee, 1979; McGrath, 1995). Some studies have also viewed products as having a gender, like people. Researchers have found that the determination of a product's gender is based on the gender of the product promoter (Debevec & Iyer, 1986; Golden, Allison, & Clee, 1979; Iyer & Debevec, 1989) as well as the perceptions of the product's general consumer group (Allison, Golden, Mullet, & Coogan, 1980).

Analogous to human physical features that influence the perception of a person's personality, a product's appearance is a major determinant of its personality, and people tend to share the same perception of the personality traits of a particular product (Govers, Hekkert, & Schoormans, 2002). As previously mentioned, this tendency to give human traits to inanimate objects is called anthropomorphism; an example of this would be recognizing a human body in the shape of a bottle (Epley, Waytz, & Cacioppo, 2007). Prior research suggests that a product's physical aspects should offer a consistent product personality (Townsend, Montoya, & Calantone, 2011). However, product design is more than this; according to Luchs and Swan, it is "the set of properties of an artifact, consisting of the discrete properties of the form (i.e., the aesthetics of the tangible good and/or service) and the function (i.e., its capabilities) together with the holistic properties of the integrated form and function" (2011, p. 338). Therefore, this research examines how the properties of a product's form (i.e., its aesthetics) influence consumers' perceptions of its gender.

In line with prior work on product personality (Govers & Schoormans, 2005), studies on person perception is considered to provide insight into how product gender is perceived. Theories of person perception state that gender is one of the first aspects that you notice and mentally process when you meet

someone new (Dion, Berscheid, & Walster, 1972), and the first basis on which someone judges the gender of another person is their physical appearance (Deaux & Lewis, 1984). Thus, appearance seems to be a likely candidate as a strong indicator of product gender. Most of what is known about the attribution of femininity and masculinity has come from the field of EP, which synthesizes ideas from modern psychology and evolutionary biology (Buss, 1994). Physical characteristics infer masculinity/femininity and attractiveness, and these principles of mate selection influence human information processing and are deeply ingrained in the human brain (Buss, 1994). According to EP, people use certain cues from the opposite sex as criteria for selecting a valuable mate. In addition, theories of sexual strategy posit that the values sought after in males and females are different. For example, the ideal male mate is one who displays readiness and capability to invest in his partner and offspring, whereas the cues for high productiveness in females are signals of youth, health, and physical attractiveness (Buss, 1994). These cues are expressed through certain physical characteristics that represent either masculinity or femininity. Therefore, it follows that physical appearance is important when judging a product's gender, and a look at EP will be helpful for understanding how aesthetics may influence a product's perceived gender. A differentiation between evolutionarily inherited (nature) and socially learned characteristics (nurture) could play a meaningful role in gender perception. However, as Confer et al. explain, "the framework of evolutionary psychology dissolves dichotomies such as 'nature versus nurture', 'innate versus learned', and 'biological versus cultural'" (2010, p. 116). Therefore, there seems to be an approximation of the two intellectual traditions and both contribute equally to gender theory adopting a different perspective (Eagly & Wood, 1999).

In fact, some studies have considered how various design aspects influence the gender perceptions of brands, the producer of a graphic, or the target consumer of a product (e.g., Danger, 1969; Lieven, Grohmann, Herrmann, Landwehr, & van Tilburg, 2015; Moss, Gunn, & Heller, 2006). Here, these findings are considered when formulating hypotheses on the perceptions of product gender through aesthetics. While these studies tended to not conjecture on the origin of the reported effects, their findings are in line with expectations based on EP, as will be shown in the next section of this article.

Dimensions of Product Aesthetics. The overall visual conception of a product is created through different qualities (Bloch, 1995), such as shape, scale, proportion, material, color, reflectiveness, and ornamentation (Davis, 1987). In line with prior work on aesthetics, in this work, these aspects are divided into three dimensions (form, color, and material) and each dimension is considered separately.

Product form has been shown to elicit various consumer responses, such as aesthetic liking and general

preference (Westerman et al., 2012; Yamamoto & Lambert, 1994). Product form includes the dimensions of proportion, shape, and lines. With respect to proportion, Lieven et al. (2015) have found that bold, solid, angular, and sharp characteristics of brand logos enhance brand masculinity and that airy, delicate, round, and smooth brand logos enhance brand femininity. Regarding shape, prior research suggests that angular forms embody dynamism and masculinity, whereas round forms create softness and femininity (Schmitt & Simonson, 1997). Gender has also been shown to influence graphic production: Graphics produced by males tend to include more vertical lines, whereas those created by females tend to include more rounded lines (Moss et al., 2006). Thus, based on past research, products with slim or bulky proportions, a round or angular shape, or curvy or straight lines are perceived as feminine or masculine, respectively. In relation, EP suggests that physical characteristics of body shape and facial form are indicators of masculinity and femininity. A round, smooth body shape suggests femininity (Singh, 1993), whereas a solid, defined body is prototypical for masculinity (Fisher, Dunn, & Thompson, 2002). In addition, the literature states that delicate, light facial shapes are feminine (Johnston, Hagel, Franklin, Fink, & Grammer, 2001), whereas edged, sharp shapes are masculine (Scheib, Gangestad, & Thornhill, 1999).

Therefore, the first hypothesis for this research is as follows:

- H1a:** Products with a slim proportion, round shape, or curvy lines enhance the perception of a product's femininity.
- H1b:** Products with a bulky proportion, angular shape, or straight lines enhance the perception of a product's masculinity.

Product color also has the potential to evoke certain emotional and psychological responses (Hevner, 1935) and is thus used in advertising, packaging, distribution, and brand logo design to create brand and product identities (Klink, 2003). Product color includes the dimensions of color tones, the amount of color, and reflection of light. Danger (1969) offers a universal association list of color tones, which describes blue as being associated with masculinity and pink with femininity. Again, a parallel can be found between the perception of color and EP. Women generally have lighter skin than men (Jablonski & Chaplin, 2000), which leads to the assumption that lighter colors are perceived as feminine while darker colors are perceived as masculine. A summary of research by Moss et al. (2006) comparing male and female drawings states that there is a tendency on the part of females to use a greater number of colors and to prefer warmer colors (e.g., pink and red) to cooler colors (e.g., blue and green). This tendency might explain why a greater number of colors make a product appear more feminine while a fewer amount of colors make

it appear more masculine. Another color characteristic that could possibly influence product gender might be the reflectiveness of the product's surface. In addition to certain body and face shapes, shiny and strong hair can be seen as a signal of fertility and physical health in women (Etcoff, 2000). Therefore, it follows that shiny product surfaces may be perceived as feminine, while dim products may be perceived as masculine.

The second hypothesis for this study is as follows:

- H2a:** Products with lighter tones, more colors, or a shiny reflectiveness enhance the perception of a product's femininity.
- H2b:** Products with darker tones, fewer colors, or a dim reflectiveness enhance the perception of a product's masculinity.

Product material can also portray a certain meaning, and it is used by designers to convey the characteristics of products. For example, they often use metal to stress technological superiority and a high level of engineering in a product's design (Ashby & Johnson, 2002). Whereas material properties such as compliance, weight, warmth, and surface texture are sensed with the haptic system (touch), this information can also be delivered visually (Klatzky, Lederman, & Reed, 1987). EP also provides insights into material perception. Although a male beard does not appear to have any major benefit for survival, it is viewed as a sexual characteristic pointing toward a masculine person (Darwin, 1871). Skin condition has also been explored as an indicator of the value of a female mate (Symons, 1979): Smooth skin signals female fertility and affects male judgments of attractiveness (Johnston et al., 2001). These two findings imply that harsh or hard (soft) surfaces enhance masculinity (femininity). These perceptions of female skin and the male beard also provide insight into texture structure. Smooth skin might be associated with a more delicate structure, whereas robust, hairy skin might be viewed as a rough-structured surface. Thus, smooth surfaces might cause a perception of femininity, while a rough structure might cause a perception of masculinity. EP also suggests that since men are generally heavier than women due to their musculature and bone structure, products that appear heavier might be associated with masculinity, while products that appear lighter might be associated with femininity.

Therefore, the third hypothesis of this research is as follows:

- H3a:** Products that appear to have a smooth texture structure, soft surface, or a light weight enhance the perception of a product's femininity.
- H3b:** Products that appear to have a rough texture structure, hard surface, or a heavy weight enhance the perception of a product's masculinity.

Qualitative Pretest of Hypotheses

As an initial exploration of the presented hypotheses regarding whether product aesthetics influence product gender, several interviews were performed with individuals working in product design.

Method/Design. In-depth interviews were conducted using a series of open-ended, nonleading questions. An iterative elicitation style allowed the questions to be adjusted according to the answers of the respondents. The four interviewees (three males and one female; $M_{age} = 37.5$, $SD_{age} = 4.33$, $M_{experience}$ (in years) = 8.75, $SD_{experience} = 4.82$) were all involved in or closely related to the product development or design process, thereby exerting a major influence on product design (i.e., they were a development manager, assistant designer, product manager, and category manager). Three of the four designers were from a well-known German firm, and other was from a well-known American international-selling sport article producer (the American designer only provided insights about the product form). Two of the interviews were conducted over the telephone, and the other two were face-to-face. The designers received a short briefing about the project and were then asked specific questions about manipulating product gender through design.

Results. With respect to product form, all four designers noted that product proportion is important. They identified “slim” vs. “bulky” as identifiers of gender. Further attributes described were “narrow, airy, and slim” for feminine products and “broad and clumsy” for male products. A personality characteristic mentioned for female products was “harmonic,” while “aggressive” was used to refer to male products. All of the designers mentioned shape, describing female products as “more shaped, curved” and male products as “more angular, edgy, and straight.” Lines were also mentioned by all four designers, using “curved, soft” to refer to female products and “straight, strong” to refer to male products.

Three of the four designers that were further interviewed mentioned color tones as being very important and as the easiest way to differentiate between female and male products. They characterized the consumer market as being very stereotyped regarding colors, explaining that women’s products are traditionally colored with pink, purple, pastel, and light colors, while men’s products use stronger, dark colors. Color distribution insights revealed that male products are often colored with three colors, while female products generally only use two. Regarding reflectiveness, two of the three designers said that in the European market, dim material would be used for male products and that shiny material would be used for female products. In contrast, the Asian market also accepts glittery material for male products.

All three of the designers that were interviewed further talked about product material. A smooth texture

was said to influence the femininity of a product, while a rough texture indicated masculinity. The surface attributes of soft vs. hard were also mentioned by all three designers. In addition, an even and more comfortable touch was mentioned to describe female products, while male products were “more stiff, hard, and harsh.” They described female products as lighter in weight, emphasized by the description of male products as being more “robust” (while the female products were more “subtle”).

Discussion. While the sample was neither large nor balanced on gender, the high level of interindividual agreement suggests that this qualitative input is a valid starting point for this investigation. Overall, H1–H3 were supported, although the insights about color somewhat contradicted H2. The designers said that fewer colors enhance a perception of femininity while more colors enhance masculinity and that regarding reflectiveness, at least in Western countries, dim material suggests masculinity and shiny material reflects femininity. This culture-specific gender perception might be explained by dual-inheritance theory, according to which human behavior is the result of the interaction of two evolutionary processes: genetic evolution (referring to Darwin’s selection process) and cultural evolution (see also Barkow, Cosmides, & Tooby, 1995; Richerson & Boyd, 2008). One point made by all designers was that these insights were gained through experience and not by any published or established guidelines. This speaks to the importance of this research and its managerial implications. Also, overall, these results demonstrate that H1–H3 are relevant to the research questions in this article and need to be empirically tested. Therefore, in this research, a variety of products were tested to develop guidelines for producing gender in product design.

Product Gender as a Source of Product Value

Having examined what makes a product more masculine or feminine, the relevance of gender was then tested; i.e., how product gender influences consumer response. Product design reveals a product’s aesthetic influence, including both the personality of the product and its perceived capabilities. Product design is said to be effective if a desirable consumption experience is created (Desmet & Hekkert, 2007) and can thus be used to gain market share and recognition (Bloch, 1995). Creusen and Schoormans (2005) have described the role of a product’s appearance in its selection as the communication of aesthetic value; as attracting attention; and as offering information on symbolism, functionality, ergonomics, and categorization. The effect of product gender on a consumer’s attitude toward the product was considered, as well as its aesthetic value, its perceived functionality, and the consumer’s purchase intent of the product.

Dimensions of Product Value. The simple pleasure received from just looking at a product (and not judging its utility) results in aesthetic value (Holbrook, 1980). Most of the literature states that aesthetic value is hedonic and is the result of interpretation and representation (e.g., Schmitt & Simonson, 1997). Visual organization principles, such as proportion (e.g., “the Golden Section”), symmetry, and unity (Hekkert, 1995; Veryzer & Hutchinson, 1998), appear to naturally lead to aesthetic preference. Unity makes an object easier to process and interpret. In addition, clarity in elements enhances fluency and leads to a more favorable judgment of stimuli (Reber, Schwarz, & Winkielman, 2004). A positive attitude toward the stimuli occurs because fluency increases error-free processing and effective stimulus recognition (Winkielman, Halberstadt, Fazendeiro, & Catty, 2006). Several preference phenomena noted in the fields of psychology and aesthetics can be explained by this effect (Reber, Schwarz, & Winkielman, 2004). An indicator supporting preference for clarity in product gender cues is the preference for prototypes (Hekkert, 1995; Veryzer & Hutchinson, 1998). This preference for clarity in product gender cues can be explained by fluency and, thus, its error-free processing of the stimuli. This fluent processing of highly gendered products leads to a positive affective attitude toward the products and increases their aesthetic appeal.

The connection between EP and aesthetic preference lies in the so-called “transfer hypothesis” (see Rhodes, 2006), which is based on the mate selection theory. Extremely masculine and extremely feminine human features are perceived as being very attractive (Kaplan & Gangestad, 2005), and features that signal masculinity or femininity are perceived as signals for good health and may be an indicator the ability to produce healthy offspring. Thus, highly prototypical examples of males or females are appealing because they offer strong cues for mate value (Symons, 1979). Although there is no biological relevance for these features, their desirability can be transferred to nonhuman objects and might explain why consumers appreciate masculinity and femininity both in people and in objects. Indeed, there is prior research that has used principles of person perception to explain consumer responses to product aesthetics (Townsend & Sood, 2012).

The fourth and fifth hypotheses for this study are as follows:

- H4:** Products that are more strongly gendered (more masculine or feminine) will elicit a more positive affective attitude in consumers than those that are less gendered.
- H5:** Products that are more strongly gendered (more masculine and/or feminine) will elicit a higher aesthetic value than those that are less gendered.

Product design can also influence a consumer’s perception of functionality and utility (Bloch, 1995). Dif-

ferent designs can imply different functions and different levels of functional performance (Hoegg & Alba, 2011). For example, the use of construction materials can suggest durability, larger size can be interpreted as power, and shape can suggest aerodynamics (Creusen & Schoormans, 2005). In general, high aesthetics suggest better functionality (Creusen & Schoormans, 2005; Yamamoto & Lambert, 1994). Of note, however, is one exception when unattractive products appear more functional, specifically when individuals elaborate on inconsistencies presented between visual and verbal information (Hoegg, Alba, & Dahl, 2010). This exception aside, the relationship between perceived aesthetics and functionality has a parallel in the social psychology literature. Studies of interpersonal perception have pointed to a positive relationship between physical attractiveness and socially desirable characteristics, such as being intelligent, nurturing, ethical, or competent at one’s job (Dion, Berscheid, & Walster, 1972; Langlois et al., 2000). Two explanations have been offered for this “beautiful is good” phenomenon. On the one hand, this may reflect a stereotyped approach that correlates the beauty of a person with positive personality characteristics (Dion, Berscheid, & Walster, 1972). On the other hand, the phenomenon might be produced by a halo effect (Nisbett & Wilson, 1977), in which beauty is the most obvious and accessible personality trait to others; in an interaction it is noticed first and then influences all subsequent perceptions of other personality characteristics (Dion, Berscheid, & Walster, 1972).

Therefore, the sixth hypothesis is the following:

- H6:** Products that are more strongly gendered (more masculine and/or feminine) will be perceived as more functional.

Furthermore, Creusen and Schoormans (2005) have found that all else being equal, consumers will choose the better-looking product. Based on these deliberations, it can be expected that product gender positively increases purchase intent. This is the main hypothesis of Study 2.

The seventh hypothesis is as follows:

- H7:** Products that are more strongly gendered (more masculine and/or feminine) will receive higher purchase intent ratings than those that are less gendered.

Affective attitude, aesthetic value, and functionality are included as mediators. These three factors provide as an appropriate explanation of the product gender’s effect on purchase intent. The relationship between product gender and purchase intent is mediated first by a positive affective attitude toward the product that comes from the error-free processing of the stimuli, second by an aesthetic value that results from the positive affective attitude, and third by the perception of functionality that is the result of its association with the high aesthetic value of the product. Thus, the mediation is as follows: A high level of product gender leads

(1) to a positive affective attitude toward the product because of easy processing of the stimuli, (2) to a higher perceived aesthetic value, and (3) to a higher perception of functionality. This then leads to a higher purchase intent. A respective structural model is depicted in Figure 2.

Affective attitude, aesthetic value, and functionality are assumed to be the explanation behind the positive effects of product gender on purchase intent. Furthermore, all three characteristics should mediate the effects of FPG and MPG on purchase intent.

The eighth hypothesis is the following:

- H8:** The characteristics of affective attitude, aesthetic value, and functionality fully mediate the positive relationship between more strongly gendered products and higher purchase intent.

Hypotheses H4–H8 postulate that strong femininity, strong masculinity, or both increase positive attitudes and purchase intent. In cases of simultaneously high FPG and high MPG, these products can be denoted as androgynous (Bem, 1974). The gender literature suggests that androgyny is associated with a larger repertoire of behavioral options. Androgynous people can better adapt to situations, respond more flexibly to their environments, and eventually experience better psychological health (Bem, 1974). Based on these deliberations, androgynous products should receive more positive consumer responses than feminine or masculine products.

The ninth hypothesis is as follows:

- H9:** Products that are more strongly gendered by simultaneously high masculinity and high femininity will receive a more positive affective attitude, will be perceived as more aesthetic and as more functional, and will receive higher purchase intent than products low on MPG, FPG, or both.

STUDY 1: PRODUCT AESTHETICS AS A SOURCE OF PRODUCT GENDER

The purpose of Studies 1a–1c was to test H1–H3 and analyze the impact of the aesthetic dimensions of form, color, and material on consumers' perceptions of a product's gender.

Method

Design. To test the effect of aesthetic elements on product femininity and masculinity, participants were presented with product images with varying aesthetic dimensions of form, color, or material. The experimental design of Study 1a was to test product form by examining proportion (slim, bulky), shape (round, an-

gular), and lines (curvy, straight) as within-subject factors. Study 1b tested the influence of color by examining colors (light, dark), contrast (more colors, fewer colors), and reflectiveness (shiny, dim) as within-subject factors. Study 1c analyzed the effect of material by examining texture (smooth, rough), surface (soft, hard), and weight (light, heavy) as within-subject factors.

Stimuli. To consider the generalizability of the hypotheses, three product categories—shoes, fragrances, and glasses—were used as stimuli. All three are neutral product categories with unisex functions. However, they are all typically publicly used and/or highly associated with personal identity. Thus, it is possible that any effects of product gender identified may be particularly strong in these instances due to an inherent high association between these product categories and their users. The images were developed in collaboration with a design agency to rule out associations with preexisting products. A pretest determined that the product gender of the base models was neutral on a 7-point scale (1 = feminine, 4 = neutral, 7 = masculine). The results demonstrated that the shoes ($n = 361$, $M = 3.87$, 95% confidence interval [CI]: 3.74–4), glasses ($n = 307$, $M = 4.05$, CI: 3.91–4.19), and fragrances were perceived as neutral ($n = 375$, $M = 4.18$, CI: 4.04–4.32).

For Study 1a, the products were in a full 2 (proportion: slim, bulky) $\times$ 2 (shape: round, angular) $\times$ 2 (lines: curvy, straight) within-subject experimental design, resulting in eight versions of each product (see Figure 1a, Panel A). For Study 1b, the products were in a full 2 (color: light, dark) $\times$ 2 (contrast: more, fewer) $\times$ 2 (reflection: shiny, dim) experimental design, resulting in eight versions of each product (see Figure 1b, Panel B). Colors were chosen according to the research of Picariello, Greenberg, & Pillemer (1990) who suggested bright pink and lavender as light, very feminine colors and navy blue and maroon as dark, very masculine colors. Greater contrast was represented by the use of more colors and vice versa: 50% (90%) gray, 40% (0%) in a less sex-typed color, and 10% (10%) in a strong sex-typed color. The product surface was treated to look dim (shiny). For Study 1c, products were in a full 2 (texture: smooth, rough) $\times$ 2 (surface: soft, hard) $\times$ 2 (weight: light, heavy) experimental design, resulting in eight different designs for each product (Figure 1c, Panel C). Leather and wool shoes were chosen to represent the heavy and light versions of the shoes, respectively. Both versions were designed once with a hard (plain) surface and once with a soft (uneven) surface as well as with a smooth and rough texture. The glasses and fragrances were also treated to look soft (plain) and hard (uneven), and rough and smooth structures were applied. The heavy glasses included a nontransparent material, and the light glasses included a transparent material. The light fragrance was presented in a thin bottle, while the heavy fragrance was presented in a thick bottle.

Sample. A German consumer panel was used for all studies. The sample size was $N = 146$ for Study 1a

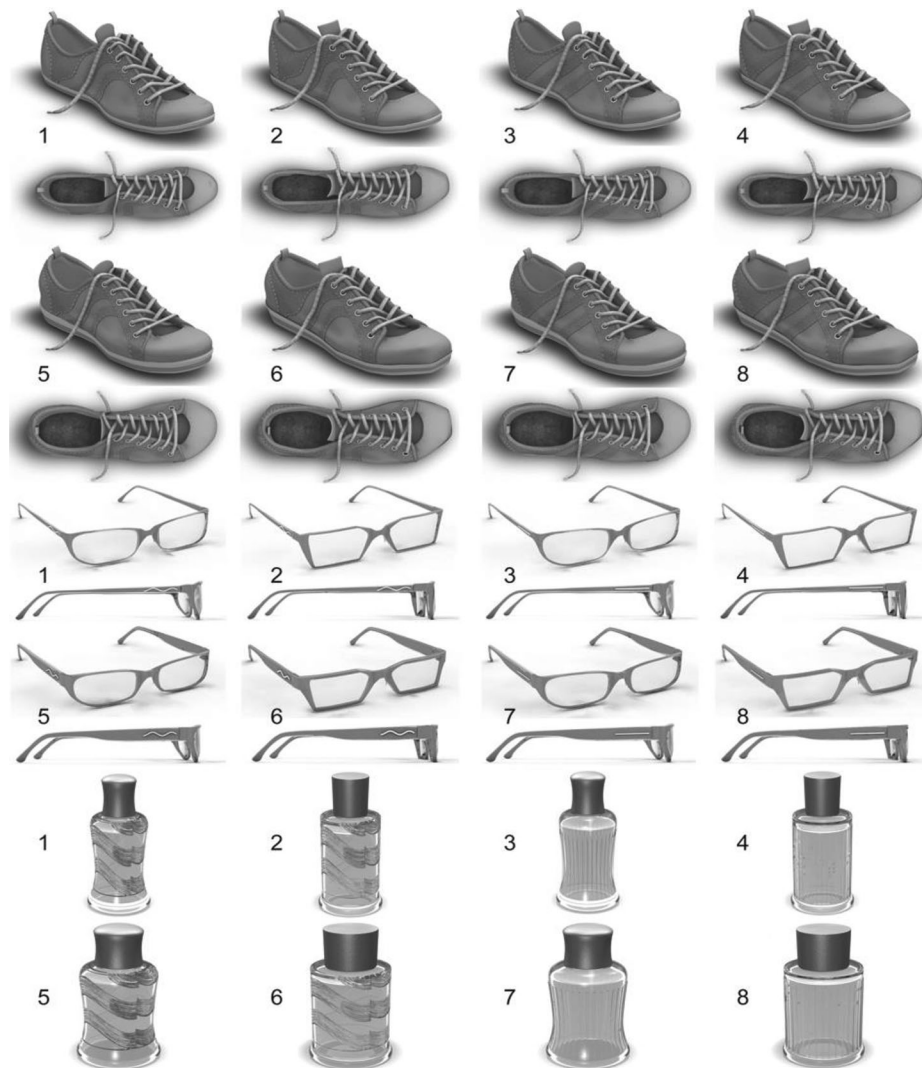


Figure 1. (a) Stimuli of Study 1 and Study 2—Panel A: product form 1 slim, round, curvy; 2 slim, angular, curvy; 3 slim, round, straight; 4 slim, angular, straight; 5 bulky, round, curvy; 6 bulky, angular, curvy; 7 bulky, round, straight; 8 bulky, angular, straight. (b) Stimuli of Study 1 and Study 2—Panel B: product color 1 light, more, shiny; 2 light, fewer, shiny; 3 light, more, dim; 4 light, fewer, dim; 5 dark, more, shiny; 6 dark, fewer, shiny; 7 dark, more, dim; 8 dark, fewer, dim. (c) Stimuli of Study 1 and Study 2—Panel C: product material 1 smooth, soft, light; 2 smooth, hard, light; 3 smooth, soft, heavy; 4 smooth, hard, heavy; 5 rough, soft, light; 6 rough, hard, light; 7 rough, soft, heavy; 8 rough, hard, heavy.

(45.7% female, $M_{age} = 42.99$, $SD_{age} = 13.59$), $N = 142$ for Study 1b (41.2% female, $M_{age} = 44.36$, $SD_{age} = 15.59$), and $N = 212$ for Study 1c (37.7% female, $M_{age} = 46$, $SD_{age} = 15.44$).

Procedure. Each participant joined the online studies about either (1a) form, (1b) color, or (1c) material through a web link, was provided with a short introduction, and then viewed the different products and their designs. In Studies 1a and 1b, participants first saw the shoes, then the fragrances, and then the glasses. In Study 1c, participants viewed only one product category. The number of products in Study 1c was limited due to the difficulty in judging product material (Klatzky, Lederman, & Reed, 1987). The different

designs were presented in a randomized order. Below each picture, the participant was asked to provide their perception of the gender of the product. Gender was measured by two 7-point scales to measure MPG and FPG (1 = not masculine at all, 7 = very masculine; 1 = not feminine at all, 7 = very feminine; Allison et al., 1980).

Results and Analysis

For the analysis of significant effects, a linear mixed model (LMM) procedure was applied, as LMM is able to handle missing data in repeated measures (Verbeke & Molenberghs, 2009). The complete results of Study 1a were examined with participants as subjects, the manipulation of characteristics as repeated measures,



Figure 1. Continued

FPG and MPG as the dependent variable (DV), and the three manipulations as factors (for proportion: slim vs. bulky, round vs. angular, curvy vs. straight). All fixed effects were significant with F -values above 64 for slim vs. bulky, above 185 for round vs. straight, and above 70 for curvy vs. straight (all $ps < 0.001$). The round vs. straight manipulations had the strongest effects on gender perception. The same LMM test was also performed for the within-product category (shoes, glasses, and fragrances). Most estimates of the fixed effects were significant. The slim, round, and curvy manipulations were found to increase FPG and decrease MPG, thus making the product feminine, and the opposite manipulations decreased FPG and increased MPG. See Table 1 for ratings for FBPs and MPGs across manipulations and Table 2 for estimated fixed effects.

The results of Study 1b were examined in a similar manner. For the whole data set of Study 1b, the

fixed effects were significant for light vs. dark colors ($ps < 0.001$), for more or fewer colors ($ps < 0.001$), and for shiny vs. dim colors ($ps < 0.05$). The light vs. dark manipulations had the strongest effects on gender perception, whereas the shiny vs. dim dimension had only a small effect, which can also be seen in the estimates of fixed effects (Table 2) after the same LMM test was performed for the within-product categories. For the shoes, all estimates were significant. For the fragrances, however, the estimates for more vs. fewer colors were not significant; for both fragrances and glasses, the estimates for shiny vs. dim were also not significant. In these cases, the hypotheses were not supported. Since no significant contradictions were noted and because of the overall significance, it was noted that, in general, lighter tones, more colors, and a shiny reflectiveness increase FPG and decrease MPG, thus supporting H2a and H2b.

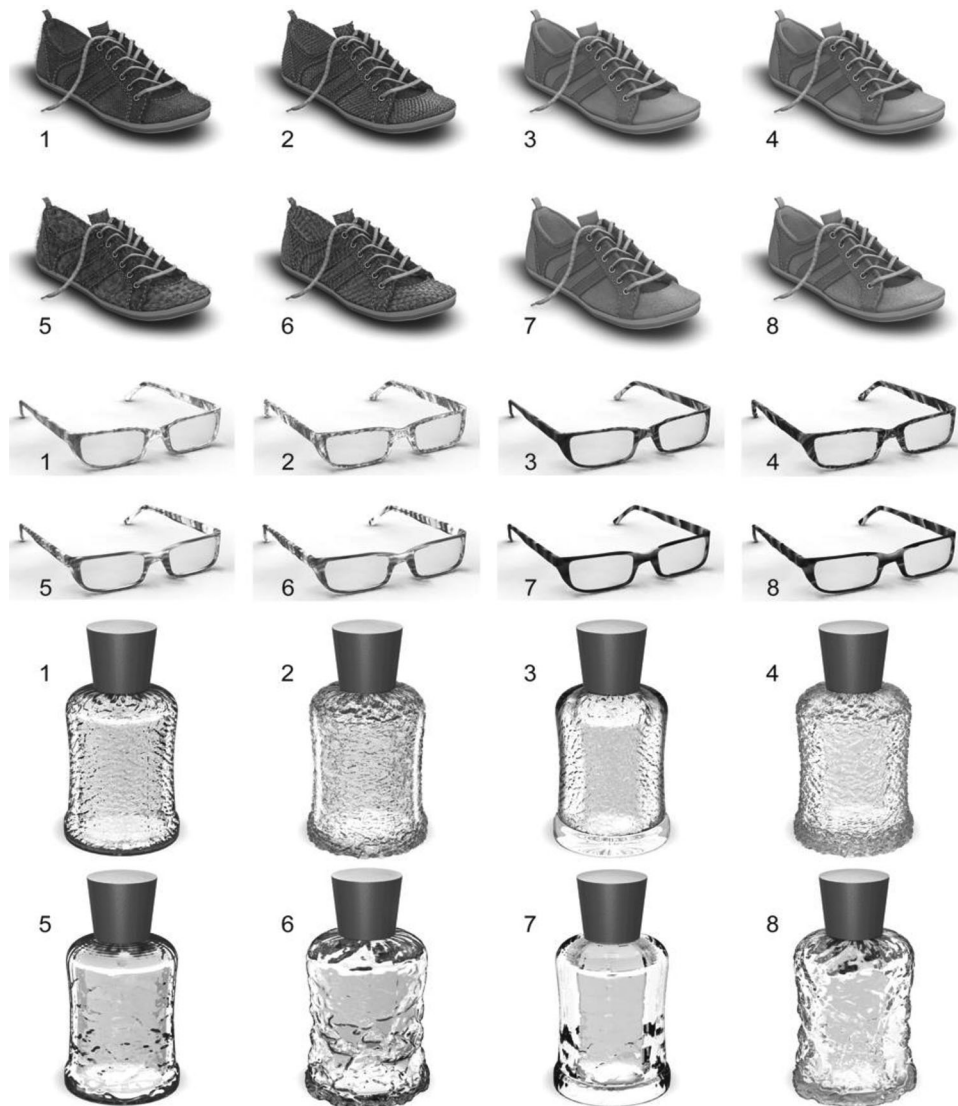


Figure 1. Continued

The results for Study 1c showed significant fixed effects only for light vs. heavy weight with F s above 38 (p s < 0.001) for both FPG and MPG. As can be seen from the LMM tests within the product groups, the signs of the respective estimates were as hypothesized (Table 2). Thus, a light weight increased the perception of femininity at least for shoes and even more so for glasses. While the smooth texture had an expected significant effect on increasing femininity in glasses, this was the opposite for shoes. Smooth textures seem to make shoes significantly more masculine. Therefore, at least for the surface characteristics, H3a and H3b are rejected. For the other characteristics, however, they are partly supported.

To examine the influence of the participants' gender, LMM analyses were conducted, but with gender as the DV. Within the 3 (dimensions) $\times$ 3 (products) = 9 groups, six showed significantly lower perceptions of

product femininity by the female respondents (in the form dimension for glasses, -0.55 , $p < 0.05$; for form and fragrance, -1.05 , $p < 0.001$; in the color dimension for shoes, -0.40 , $p < 0.05$; in the material dimension for shoes, -1.09 , $p < 0.001$; for glasses, -0.95 , $p < 0.001$; and for fragrance, -1.55 , $p < 0.001$). In general, the female respondents gave ratings nearer to the midpoint of the 7-point scale than the male respondents (average FPG 4.24 and MPG 3.92 vs. 4.52 and 3.60 for the male respondents).

Discussion

In line with the hypotheses, Study 1 identified product aesthetics as a source of product gender. Overall, H1a, H1b, H2a, and H2b were supported. However, differences at the product level regarding the effect strength

Table 1. Feminine (FPG) and Masculine (MPG) Product Genderers.

Product Form										Product Color					Product Material				
Proportion	Shape	Lines	FPG	MPG	Color	Contrast	Reflectiveness	FPG	MPG	Texture	Surface	Weight	FPG	MPG					
Shoe	Slim	Round	Curvy	4.53	3.50	Shoe	Light	More	Shiny	5.57	2.54	Shoe	Smooth	Soft	Light	3.94	3.71		
	Slim	Angular	Curvy	4.28	3.73		Light	Fewer	Shiny	5.45	2.71		Smooth	Hard	Light	4.42	3.28		
	Slim	Round	Straight	4.61	3.45		Light	More	Dim	5.40	2.77		Smooth	Soft	Heavy	3.75	3.97		
	Slim	Angular	Straight	4.24	3.74		Light	Fewer	Dim	5.16	2.99		Smooth	Hard	Heavy	4.00	3.88		
Bottle of perfume	Bulky	Round	Curvy	3.85	4.16	Bottle of perfume	Dark	More	Shiny	4.49	3.79	Bottle of perfume	Rough	Soft	Light	4.49	3.16		
	Bulky	Angular	Curvy	3.63	4.29		Dark	Fewer	Shiny	3.69	4.58		Rough	Hard	Light	4.61	3.03		
	Bulky	Round	Straight	3.80	4.29		Dark	More	Dim	4.22	3.94		Rough	Soft	Heavy	3.84	3.87		
	Bulky	Angular	Straight	3.54	4.32		Dark	Fewer	Dim	3.44	4.84		Rough	Hard	Heavy	3.96	3.58		
Glasses	Slim	Round	Curvy	4.90	3.37	Glasses	Light	More	Shiny	6.01	2.06	Glasses	Smooth	Soft	Light	4.85	3.14		
	Slim	Angular	Curvy	3.94	3.96		Light	Fewer	Shiny	5.85	2.20		Smooth	Hard	Light	4.87	3.06		
	Slim	Round	Straight	4.32	4.01		Light	More	Dim	6.01	2.01		Smooth	Soft	Heavy	3.94	4.21		
	Slim	Angular	Straight	3.75	4.34		Light	Fewer	Dim	5.90	2.14		Smooth	Hard	Heavy	4.03	3.96		
Bottle of perfume	Bulky	Round	Curvy	5.01	3.35	Bottle of perfume	Dark	More	Shiny	4.19	3.97	Bottle of perfume	Rough	Soft	Light	4.65	3.51		
	Bulky	Angular	Curvy	4.07	4.00		Dark	Fewer	Shiny	3.53	4.74		Rough	Hard	Light	4.75	3.36		
	Bulky	Round	Straight	4.35	4.03		Dark	More	Dim	3.95	4.08		Rough	Soft	Heavy	3.54	4.56		
	Bulky	Angular	Straight	3.55	4.47		Dark	Fewer	Dim	3.61	4.68		Rough	Hard	Heavy	3.51	4.67		
Bottle of perfume	Slim	Round	Curvy	5.45	2.86	Bottle of perfume	Light	More	Shiny	5.83	2.35	Bottle of perfume	Smooth	Soft	Light	3.93	4.03		
	Slim	Angular	Curvy	4.08	4.24		Light	Fewer	Shiny	5.74	2.35		Smooth	Hard	Light	4.14	3.93		
	Slim	Round	Straight	5.01	3.18		Light	More	Dim	5.76	2.41		Smooth	Soft	Heavy	4.18	3.93		
	Slim	Angular	Straight	3.48	4.84		Light	Fewer	Dim	5.73	2.43		Smooth	Hard	Heavy	4.14	3.93		
Bottle of perfume	Bulky	Round	Curvy	4.86	3.46	Bottle of perfume	Dark	More	Shiny	3.21	4.88	Bottle of perfume	Rough	Soft	Light	3.99	4.23		
	Bulky	Angular	Curvy	3.53	4.60		Dark	Fewer	Shiny	3.05	5.15		Rough	Hard	Light	3.87	4.37		
	Bulky	Round	Straight	4.14	4.06		Dark	More	Dim	3.16	4.98		Rough	Soft	Heavy	4.10	4.23		
	Bulky	Angular	Straight	2.84	5.47		Dark	Fewer	Dim	2.94	5.24		Rough	Hard	Heavy	4.15	4.07		

Table 2. Estimates of Fixed Effects for Feminine (FPG) and Masculine (MPG) Product Genders.

Product Form			Product Color			Product Material		
	FPG	MPG		FPG	MPG		FPG	MPG
Shoe	Intercept	3.55***	Shoe	Intercept	3.62***	Shoe	Intercept	4.10***
	Proportion = slim	0.71***		Color = light	1.43***		Texture = smooth	-0.18 ^{n.s.}
	Shape = round	0.28**		Contrast = more	0.44***		Surface = soft	0.24 ^{n.s.}
	Lines = curvy	0.03 ^{n.s.}		Reflectiveness = shiny	0.25**		Weight = light	0.47**
Glasses	Intercept	3.59***	Glasses	Intercept	3.66***	Glasses	Intercept	3.62***
	Proportion = slim	-0.03 ^{n.s.}		Color = light	2.13***		Texture = smooth	0.30***
	Shape = round	0.82***		Contrast = more	0.29***		Surface = soft	-0.04 ^{n.s.}
	Lines = curvy	0.51***		Reflectiveness = shiny	0.02 ^{n.s.}		Weight = light	1.03***
Fragrance	Intercept	2.85***	Fragrance	Intercept	3.00***	Fragrance	Intercept	4.12***
	Proportion = slim	0.65***		Color = light	2.67***		Texture = smooth	0.07 ^{n.s.}
	Shape = round	1.38***		Contrast = more	0.12 ^{n.s.}		Surface = soft	-0.02 ^{n.s.}
	Lines = curvy	0.61***		Reflectiveness = shiny	0.06 ^{n.s.}		Weight = light	-0.16 ^{n.s.}

Note: The respective opposite characteristics are redundant: bulky, angular, straight; dark, fewer, dim; rough, hard, heavy.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

of the respective characteristics should be taken into consideration. Thus, products with slim or bulky proportions, a round or angular shape, or curvy or straight lines generally enhance the perception of the product's femininity or masculinity, respectively, but the strength of the effect may be somewhat situation dependent. Also in line with the study expectations, products with lighter or darker tones, more or less colors, or a shiny or dim reflectiveness enhanced the perception of product femininity or masculinity, respectively.

Limited support was found for H3a and H3b; product material appears to be product specific. A smooth or rough texture did not enhance the perception of femininity or masculinity, respectively, of any of the products, and for shoes, in fact, the opposite was true; a rough texture made the product appear feminine, while a smooth texture made it feel more masculine. This may be due to a product-specific association; e.g., rough shoes might look lighter than smooth-structured shoes and thus perhaps are associated with femininity. Also, contrary to the hypotheses, a hard, as opposed to a soft, surface created a perception of femininity. Again, this result may be due to other associations with the product besides hard and soft; e.g., the hard surface might be perceived as being more detailed than the soft surface. However, the direction of the effect was obtained for all product categories, indicating that hard vs. soft surfaces can be used to enhance product femininity vs. masculinity. Overall, a light weight was found to enhance the perception of femininity, while a heavy weight enhanced the perception of masculinity. Thus, the results of Study 1c point to product-specific implications.

Finally, gender differences in Studies 1a–1c were noted. However, this may reflect females' greater susceptibility to anchoring effects (Kato & Hidano, 2007) rather than to diverging perceptions of product gender.

STUDY 2: PRODUCT GENDER AS A SOURCE OF PRODUCT VALUE

In Study 2, H4–H9 were considered. It also examined how product gender—as illustrated through product aesthetics—influences consumer reactions.

Method

Design and Stimuli. Participants in Studies 2a–2c were presented with the same gendered products as in Study 1 (see Figure 1a–c) and asked to rate the products in terms of their affective attitude toward the object, its visual aesthetic value, their perception of its functionality, and their purchase intent toward the product.

Sample. As in Study 1, the data were collected online in Germany from a consumer panel. A total of 1657 respondents participated; 35 extreme outliers were

identified using Cook's Distance, leaving a total of 1622 participants. Of these, 1335 people provided their gender and age (42.8% female, $M_{\text{age}} = 44.92$, $SD_{\text{age}} = 12.88$). Missing values in a scale rating led to the exclusion of this specific rating. As each participant was asked to rate three products, different numbers of cases for the different scales were obtained: 4129 for *affective attitude*; 4089 for *visual aesthetic value*; 4093 for the *utilitarian attitude toward the product*; and 4140 for the *purchase intent*.

Procedure. Participants entered the online survey through a web link and were assigned to participate in the survey either on the product's (a) form, (b) color, or (c) material. Participants randomly viewed one product of each type (shoes, glasses, fragrances) and were asked to rate it on several scales (with a randomized order). Specifically, to measure affective attitude toward the object, participants were asked to give three ratings of their belief that the product had the ability to elicit a positive feeling using 9-point bipolar scales: It is depressing/It is upbeat; I felt sad/I felt happy; It created a negative mood/It created a positive mood (Cohen & Andrade, 2004; $\alpha = 0.966$). To measure the visual aesthetic value using 5-point bipolar scales, participants were asked to give five product ratings: bad/good, unpleasant/pleasant, not likeable/likable, unflattering/flattering, and unattractive/attractive (Cox & Cox, 2002; $\alpha = 0.944$). To measure utilitarian attitude toward the product (i.e., functionality), participants were asked to rate the following using 5-point bipolar scales: not effective/effective, not helpful/helpful, not functional/functional, not necessary/necessary, and not practical/practical (Voss, Spangenberg, & Grohmann, 2003, $\alpha = 0.933$). To measure the attitude toward the act of purchase (i.e., purchase intent), participants were asked to answer the following three questions using a 5-point likelihood scale for each: If you were planning to buy a product of this type, would you choose this product? Would you purchase this product? If friends were looking for a product of this type, would you advise him or her to purchase this product? (Berens, van Riel, & van Bruggen, 2005, $\alpha = 0.939$).

Results and Analysis

The items for each of the four dimensions were aggregated with their averages for affective attitude, aesthetic value, functionality, and purchase intent. Regression analyses were conducted using Hayes' actual syntax file for SPSS, which is based on the work of Preacher and Hayes (2008) and Hayes and Preacher (2014). This procedure has the advantage that the model described in Figure 2 can be evaluated regarding direct and indirect effects and the significance of mediations (in particular, more than one X variable is allowed, thus both FPG and MPG could be implemented as independent variables).

The regression of affective attitude on FPG and MPG resulted in a significant $F(24,126) = 34.93$ with $b_{\text{FPG}} = 1.38$ and $b_{\text{MPG}} = 1.21$ (all $ps < 0.001$). Thus, H4 is supported (note that the coefficients are non-standardized in the Hayes procedure). The regression of aesthetic value on FPG and MPG resulted in a significant $F(24,088) = 44.76$, with $b_{\text{FPG}} = 0.82$ and $b_{\text{MPG}} = 0.75$ (all $ps < 0.001$). Thus, H5 is supported. The regression of functionality on FPG and MPG resulted in a significant $F(24,090) = 34.74$ with $b_{\text{FPG}} = 0.64$ and $b_{\text{MPG}} = 0.57$ (all $ps < 0.001$). Thus, H6 is supported. The most important hypothesis, H7, posits that purchase intent positively reacts to higher product gender represented by FPG and MPG. The regression was significant with $F(24,137) = 36.35$; the coefficient b_{FPG} was 0.83 and $b_{\text{MPG}} = 0.77$ (all $ps < 0.001$). Thus, H7 is also supported.

To analyze the individual mediation effects, the model in Figure 2 was calculated once with only affective attitude, once with only aesthetic value, and once with only functionality included. Affective attitude alone mediated the effect to some extent, but the gender coefficients were still highly significant ($b_{\text{FPG}} = 0.34$ and $b_{\text{MPG}} = 0.35$, $ps < 0.001$). Aesthetic value alone mediated the effect to a higher extent; however, the gender coefficients were still significant ($b_{\text{FPG}} = 0.13$ and $b_{\text{MPG}} = 0.14$, $ps < 0.05$). Functionality had the smallest mediation effect with remaining $b_{\text{FPG}} = 0.41$ and $b_{\text{MPG}} = 0.41$, $ps < 0.001$. Thus, no single variable fully mediated the effect of FPG and MPG on purchase intent.

In the next step, three pairs derived from the three variables were selected. First, the pair of affective attitude and functionality was included. Although it was not able to mediate the effects of FPG and MPG on purchase intent, the gender coefficients were still highly significant ($b_{\text{FPG}} = 0.26$ and $b_{\text{MPG}} = 0.28$, $ps < 0.001$). The pair of aesthetic value and functionality fully mediated FPG ($b_{\text{FPG}} = 0.11$, $p = 0.07$). MPG was still significant ($b_{\text{MPG}} = 0.12$, $p < 0.05$). This was similar for the pair of affective attitude and aesthetic value with $b_{\text{FPG}} = 0.11$, $p = 0.08$. MPG was still significant ($b_{\text{MPG}} = 0.12$, $p < 0.05$). No single dimension or any pair of the dimensions fully mediated the effect of product gender on purchase intent.

Including all three variables in the model and evaluating the complete model in a regression yielded an $F(53,911) = 1383.05$ with an R^2 of 0.64; therefore, 64% of the variance of the outcome variable of purchase intent was explained by the model. In addition, FPG and MPG were no longer significant ($b_{\text{FPG}} = 0.09$, $p = 0.13$ and $b_{\text{MPG}} = 0.11$, $p = 0.07$). The direct effect of affective attitude on purchase intent was 0.07 ($p < 0.001$), and the indirect effects of FPG and MPG were $b_{\text{FPG}} = 0.11$ and $b_{\text{MPG}} = 0.09$. The direct effect of aesthetic value on purchase intent was 0.74 ($p < 0.001$), and the indirect effects of FPG and MPG were $b_{\text{FPG}} = 0.60$ and $b_{\text{MPG}} = 0.56$. The direct effect of functionality on purchase intent was 0.08 ($p < 0.001$), and the indirect effects of FPG and MPG were $b_{\text{FPG}} = 0.05$ and $b_{\text{MPG}} = 0.05$. All lower and upper limits of the CI for the indirect effects were

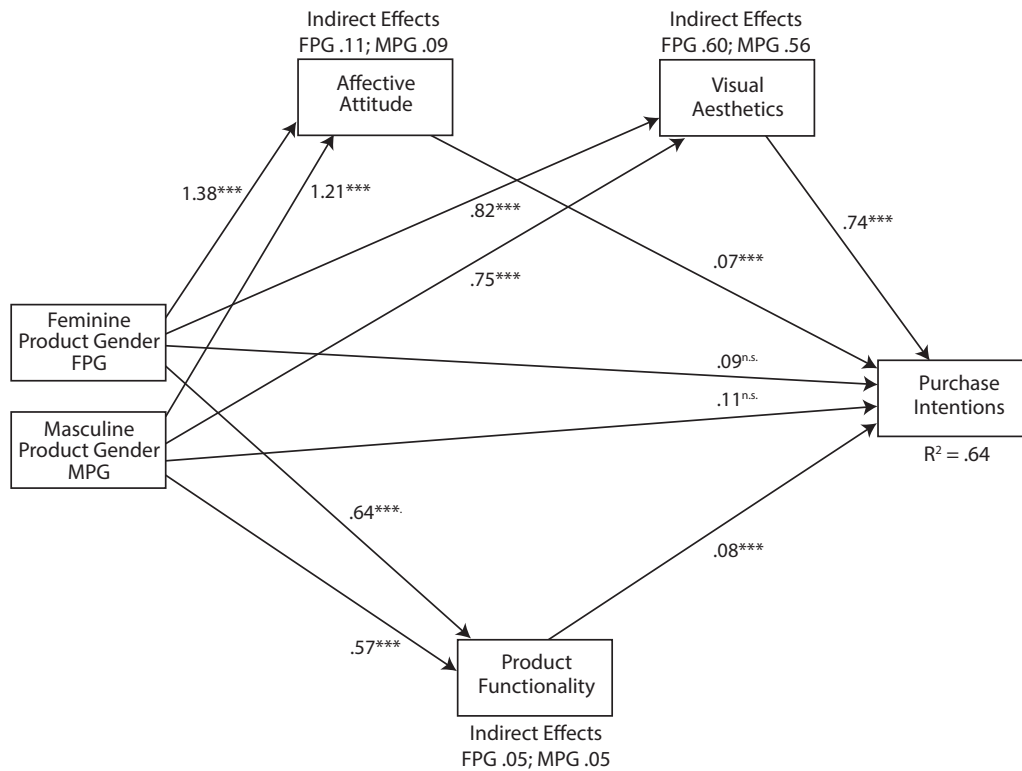


Figure 2. Coefficients of the structural model.
Note: *** $p < 0.001$, ** $p < 0.01$; * $p < 0.05$.

positive. As a result, the simultaneous inclusion of the three variables totally mediated the effect of product gender on purchase intent, thus supporting H8.

The correlation between the two exogenous variables FPG and MPG was a highly negative $r = -0.98$, suggesting that product gender can be considered on a bipolar scale. However, the model shows that purchase intent increases for both high FPG and/or MPG. Thus, high values for both dimensions cannot be projected on a bipolar scale except at the neutral midpoint. Therefore, categorical product gender was defined according to the medians of the FPG and MPG variables; values above the medians for both genders indicates an androgynous product, values above the median for FPG (MPG) and below the median for MPG (FPG) indicate feminine (masculine) products, and values below the medians on both indicate undifferentiated products (Bem, 1974, 1977; Spence, Helmreich, & Stapp, 1974, 1975). The respective categorization was analyzed in a one-way ANOVA with the four attitudes as the DVs. All four were significant. For affective attitude, $F(34,183) = 9.521$, $p < 0.001$; for aesthetic value, $F(34,183) = 9.440$, $p < 0.001$; for functionality, $F(34,183) = 22.574$, $p < 0.001$; and for purchase intent, $F(34,183) = 5.296$, $p < 0.01$. For all attitudes, the androgynous brands received the highest scores, and the undifferentiated products received the lowest scores. Feminine products were second highest, followed by the masculine products (Table 3). Thus, H9 is supported.

Discussion

Studies 2a–2c offered support for H4–H9. Higher levels of product gender resulted in stronger purchase intent; however, by also positively influencing affective attitude, aesthetic value, and functionality, these three variables completely mediated this effect. Products that were clear in their male or female appearance were perceived as pleasant, and even more so when the product offered strong characteristics of both genders. It seems that the evolutionary psychological process of appreciating the appearance of strong gender characteristics in others is so deeply anchored in the human mind that highly gendered products are perceived as more attractive to consumers. High product gender also yielded greater perceptions of functionality. Thus, there is evidence that the “what is beautiful is good” stereotype applies to products, with strongly gendered products appearing more beautiful and also more functional. The fact that none of the three variables alone or any chosen pair was able to fully mediate the gender effects on purchase intent shows that these three dimensions are necessary and sufficient to explain the mechanics behind the gender influence on purchase intent.

CONCLUSION

This research provides managers and designers with guidelines on how to design a gendered product using

Table 3. Attitude Scores for Four Product Gender Categories.

	Affective Attitude	Aesthetic Value	Functionality	Purchase Intent
Androgynous products	5.47	3.45	3.83	2.85
Feminine products	5.39	3.31	3.56	2.77
Masculine products	5.15	3.21	3.51	2.69
Undifferentiated products	4.82	3.07	3.19	2.54

the dimensions of form; color; and, to some extent, material. Moreover, this research highlights positive outcomes for producing products with strong aesthetic demonstrations of gender, as high product gender evokes positive consumer perceptions and behavior. Specifically, Studies 2a–2c revealed that highly gendered products are perceived as highly aesthetic. Moreover, the aesthetic pleasure derived by a highly gendered product leads to higher purchase intent.

Androgynous products with simultaneously high perceptions of femininity and masculinity showed the highest response, while undifferentiated products with simultaneously low femininity and masculinity received the lowest scores. Lieven et al. (2014) operationalized androgyny in the context of brands as the interaction between femininity and masculinity and defined it as the slope of the MBP–FBP surface on the 45-degree line (i.e., where MBP and FBP have the same values). This slope is determined by similarly low, as well as similarly high, values. Because androgyny is defined as high values of both masculinity and femininity, Lieven et al.’s (2014) definition seems too broad, as it also incorporates undifferentiated gendered items. Indeed, Lieven et al. (2014) found that defining androgyny in this manner was not positively related to brand equity, presumably due to low equity scores for some brands that were extremely low in both masculinity and femininity. The gender categorization method applied in this study is thus an important extension and revision to previous research.

This research does have some limitations. To begin with, the use of an online environment to gather data is not ideal. People tend to make more informed and better judgments when they touch product material (Klatzky, Lederman, & Reed, 1987). While the findings would likely also apply in an offline environment, future studies should examine this. Further, the products used in this research (shoes, glasses, and perfume) are all used publicly and/or highly linked to self-presentation. Thus, the influence of gender associations as they reflect the product owner or user is likely particularly strong in such a context. It would be interesting to see if the identified gender associations from this research also work for product categories such as automobiles, furniture, or electronic devices, which are probably less connected to the owners’ self-presentation and gender. It is worth noting, however, that the influence of general aesthetics on product perceptions has been shown in numerous categories where self-presentation is clearly less relevant, such as industrial products (Yamamoto

& Lambert, 1994), financial documents (Townsend & Shu, 2010), and computers (Tractinsky, Shoval-Katz, & Ikar, 2000). Thus, it seems plausible that the effects found in this research may also extend to such areas.

In Study 2, there may have been a common source bias. In other words, participants may have tended to give equally high or low scores, thus making correlations and causal effects more visible. However, the product gender scores were exogenous variables coming from a different survey; thus, there was no common source bias.

The formation of the hypotheses was based on both EP and prior findings on gender perceptions in related areas, such as product user groups. While there was strong consistency across evidence from these two distinct areas, it is possible that some of the results are not evolutionarily based. Future studies might investigate the cultural differences that may exist for product gender perceptions as suggested in interviews with the designers. Findings based on a true evolutionary motivation ought to hold across cultures, while more learned responses may not. Future research might identify which preferences are more learned and create culture-specific guidelines. Another potential area for future research could be how product gender as evoked by aesthetics interacts with the product gender of a specific category or brand.

More theoretically, this research extends the literature of product personality by explaining product aesthetics as a source of product gender. It enriches the research of Fugate and Philipps (2010), who pointed to a trend toward strongly gendered products. Moreover, this research shows how EP can be applied to and integrated into marketing theory.

REFERENCES

- Aaker, J. L. (1997). Dimensions of brand personality. *Journal of Marketing Research*, 34, 347–356.
- Allison, N. K., Golden L. L., Mullet, G. M., & Coogan, D. (1980). Sex-typed product images: The effects of sex, sex role self-concept and measurement implications. *Advances in Consumer Research*, 7, 604–609.
- Ashby, M., & Johnson, K. (2002). *Materials and design: The art and science of material selection in product design*. Oxford: Butterworth-Heinemann.
- Barkow, J. H., Cosmides, L., & Tooby, J. (1995). *The adapted mind: Evolutionary psychology and the generation of culture*. Oxford: Oxford University Press.

- Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology*, 42, 155–162.
- Bem, S. L. (1977). On the utility of alternative procedures for assessing psychological androgyny. *Journal of Consulting and Clinical Psychology*, 45, 196–205.
- Berens, G., van Riel, C. B. M., & van Bruggen, G. H. (2005). Corporate associations and consumer product response: The moderating role of corporate brand dominance. *Journal of Marketing*, 69, 35–48.
- Bloch, P. H. (1995). Seeking the ideal form: Product design and consumer response. *Journal of Marketing*, 59, 16–29.
- Buss, D. M. (1994). *The evolution of desire*. New York: Basic Books.
- Cohen, J. B., & Andrade, E. B. (2004). Affective intuition and task-contingent affect regulation. *Journal of Consumer Research*, 31, 358–367.
- Colarelli, S. M., & Dettmann, J. R. (2003). Intuitive evolutionary perspectives in marketing practices. *Psychology & Marketing*, 20, 837–865.
- Confer, J. C., Easton, J. A., Fleischman, D. S., Goetz, C. D., Lewis, D. M. G., Perilloux, C., et al. (2010). Evolutionary psychology—controversies, questions, prospects, and limitations. *American Psychologist*, 65, 110–126.
- Cox, D. S., & Cox, A. D. (2002). Beyond first impressions: The effects of repeated exposure on consumer liking of visually complex and simple product designs. *Journal of the Academy of Marketing Science*, 30, 119–130.
- Creusen, M. E. H., & Schoormans, J. P. L. (2005). The different roles of product appearance in consumer choice. *Journal of Product Innovation Management*, 22, 63–81.
- Danger, E. P. (1969). *How to use color to sell*. Boston: Cahnners.
- Darwin, C. (1871). *The Descent of Man, and Selection in Relation to Sex*. London: John Murray. Reprint: London: Penguin Books (2012).
- Davis, M. L. (1987). *Visual design in dress*. N J: Prentice Hall.
- Deaux, K., & Lewis, L. (1984). Structure of gender stereotypes: Interrelationships among components and gender label. *Journal of Personality and Social Psychology*, 46, 991–1004.
- Debevec, D., & Iyer, E. (1986). The influence of spokespersons in altering a product's gender image: Implications for advertising effectiveness. *Journal of Advertising*, 15, 12–20.
- Desmet, P., & Hekkert, P. (2007). Framework of product experience. *International Journal of Design*, 1, 57–66.
- Dion, K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality and Social Psychology*, 24, 285–290.
- Eagly, A. H., & Wood, W. (1999). The origins of sex differences in human behavior-evolved dispositions versus social roles. *American Psychologist*, 54, 408–423.
- Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review*, 114, 864–886.
- Etcoff, N. (2000). *Survival of the prettiest: The science of beauty*. New York: Doubleday.
- Fisher, E., Dunn, M., & Thompson, K. J. (2002). Social comparison and body image: An investigation of body comparison processes using multidimensional scaling. *Journal of Social and Clinical Psychology*, 21, 566–579.
- Foxall, G. R. (1993). Consumer behavior as an evolutionary process. *European Journal of Marketing*, 27, 46–57.
- Foxall, G. R., & James, V. K. (2003). The behavioral ecology of brand choice: How and what do consumers maximize? *Psychology & Marketing*, 20, 811–836.
- Fugate, D. L., & Philipps, J. (2010). Product gender perceptions and antecedents of product gender congruence. *Journal of Consumer Marketing*, 27, 251–261.
- Gentry, J. W., Doering, M., & O'Brien, T. V. (1978). Masculinity and femininity factors in product perception and self-image. *Advances in Consumer Research*, 5, 326–332.
- Golden, L. L., Allison, N., & Clee, M. (1979). The role of sex-role concept in masculine and feminine product perceptions. *Advances in Consumer Research*, 6, 599–605.
- Govers, P. C. M., & Schoormans, J. P. L. (2005). Product personality and its influence on consumer preference. *Journal of Consumer Marketing*, 22, 189–197.
- Govers, P. C. M., Hekkert, P., & Schoormans, J. P. L. (2002). Happy, cute, and tough: Can designers create a product personality that consumers understand? In D. McDonagh, P. Hekkert, J. van Erp, & D. Gyi (Eds.), *Design and emotion: The experience of everyday things* (pp. 400–405). London: Taylor and Francis.
- Griskevicius, V., & Kenrick, D. T. (2013). Fundamental motives: How evolutionary needs influence consumer behavior. *Journal of Consumer Psychology*, 23, 372–386.
- Hayes, A. F., & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. *British Journal of Mathematical and Statistical Psychology*, 67, 451–470.
- Hekkert, P. (1995). *Artful judgments*. Delft, The Netherlands: Delft University of Technology. Unpublished doctoral dissertation.
- Hevner, K. (1935). Experimental studies of the affective value of colors and lines. *Journal of Applied Psychology*, 19, 385–398.
- Hoegg, J., & Alba, J. W. (2011). Seeing is believing (too much): The influence of product form on perception of functional performance. *Journal of Product Innovation Management*, 28, 346–359.
- Hoegg, J. A., Alba, J. W., & Dahl, D. W. (2010). The good, the bad, and the ugly: Influence of aesthetics on product feature judgments. *Journal of Product Consumer Psychology*, 20, 419–430.
- Holbrook, M. B. (1980). Some preliminary notes on research in consumer aesthetics. *Advances in Consumer Research*, 7, 104–108.
- Iyer, E., & Debevec, K. (1989). Bases for the formation of product gender images. *Developments in Marketing Science*, 12, 38–42.
- Jablonski, N. G., & Chaplin, G. (2000). The evolution of human skin coloration. *Journal of Human Evolution*, 39, 57–106.
- Johnston, V. S., Hagel, R., Franklin, M., Fink, B., & Grammer, K. (2001). Male facial attractiveness: Evidence for hormone mediated adaptive design. *Evolution and Human Behavior*, 22, 251–267.
- Jordan, P. W. (1997). Products as personalities. In S. A. Robertson (Ed.), *Contemporary ergonomics* (pp. 73–78). London: Taylor & Francis.
- Kaplan, H. S., & Gangestad, S. W. (2005). Life history theory and evolutionary psychology. In D. M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 68–95). New York: Wiley.
- Kato, T., & Hidano, N. (2007). Anchoring effects, survey conditions, and respondents' characteristics: Contingent valuation of uncertain environmental changes. *Journal of Risk Research*, 10, 773–792.
- Klatzky, R. L., Lederman, S. J., & Reed, C. (1987). There's more to touch than meets the eye: The salience of object

- attributes for haptics with and without vision. *Journal of Experimental Psychology*, 116, 356–369.
- Klink, R. R. (2003). Creating meaningful brands: The relationship between brand name and brand mark. *Marketing Letters*, 14, 143–157.
- Langlois, J. H., Kalakanis, L., Rubenstein, A. J., Larson, A., Hallam, M., & Smoot, M. (2000). Maxims or myths of beauty? A meta-analytic and theoretical review. *Psychological Bulletin*, 126, 390–423.
- Lieven, T., Grohmann, B., Herrmann, A., Landwehr, J. R., & van Tilburg, M. (2014). The effect of brand gender on brand equity. *Psychology & Marketing*, 31, 371–385.
- Lieven, T., Grohmann, B., Herrmann, A., Landwehr, J. R., & van Tilburg, M. (2015). The effect of brand design on brand gender perceptions and brand preference. *European Journal of Marketing*, 49.
- Luchs, M. G., & Swan, S. (2011). Perspective: The emergence of product design as a field of marketing inquiry. *Journal of Product Innovation Management*, 28, 327–345.
- McGrath, M. A. (1995). Gender differences in gift exchanges: New directions from projections. *Psychology & Marketing*, 12, 371–393.
- Moss, G., Gunn, R., & Heller, J. (2006). Some men like it black, some women like it pink: Consumer implications of differences in male and female website design. *Journal of Consumer Behavior*, 5, 328–341.
- Nisbett, R. E., & Wilson, T. D. (1977). The halo effect: Evidence for unconscious alteration of judgments. *Journal of Personality and Social Psychology*, 35, 250–256.
- Picariello, M. L., Greenberg, D. N., & Pillemer, D. B. (1990). Children's Sex-Related Stereotyping of Colors. *Child Development*, 61, 1453–1460.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, Instruments, and Computers*, 40, 879–891.
- Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience. *Personality and Social Psychology Review*, 8, 364–382.
- Rhodes, G. (2006). The evolutionary psychology of facial beauty. *Annual Review of Psychology*, 57, 199–226.
- Richerson, P. J., & Boyd, R. (2008). *Not by genes alone: How culture transformed human evolution*. Chicago: University of Chicago Press.
- Saad, G. (2004). Applying evolutionary psychology in understanding the representation of women in advertisements. *Psychology & Marketing*, 21, 593–612.
- Saad, G. (2006). Applying evolutionary psychology in understanding the Darwinian roots of consumption phenomena. *Managerial and Decision Economics*, 27, 189–201.
- Saad, G., & Gill, T. (2000). Applications of evolutionary psychology in marketing. *Psychology & Marketing*, 17, 1005–1034.
- Scheib, J. E., Gangestad, S. W., & Thornhill, R. (1999). Facial attractiveness, symmetry, and cues of good genes. *Proceedings of the Royal Society of London B*, 266, 1913–1917.
- Schmitt, B. H., & Simonson, A. (1997). *Marketing aesthetics: The strategic management of brands, identity, and image*. New York: Simon and Schuster.
- Singh, D. (1993). Adaptive significance of female physical attractiveness: Role of waist-to-hip ratio. *Journal of Personality and Social Psychology*, 65, 293–307.
- Spence, J. T., Helmreich, R., & Stapp, J. (1974). The personal attributes questionnaire: A measure of sex role stereotypes and masculinity-femininity. *JSAS Catalog of Selected Documents in Psychology*, 4, 43–44.
- Spence, J. T., Helmreich, R., & Stapp, J. (1975). Ratings of self and peers on sex role attributes and their relation to self-esteem and conceptions of masculinity and femininity. *Journal of Personality and Social Psychology*, 32, 29–39.
- Symons, D. (1979). *The evolution of human sexuality*. New York: Oxford University Press.
- Townsend, C., & Shu, S. B. (2010). When and how aesthetics influences financial decisions. *Journal of Consumer Psychology*, 20, 452–458.
- Townsend, C., & Sood, S. (2012). Self-affirmation through the choice of highly aesthetic products. *Journal of Consumer Research*, 39, 415–428.
- Townsend, J. D., Montoya, M. M., & Calantone, R. J. (2011). Form and function: A matter of perspective. *Journal of Product Innovation Management*, 28, 374–377.
- Tractinsky, N., Shoval-Katz, A., & Ikar, D. (2000). What is beautiful is usable. *Interacting with Computers*, 31, 127–145.
- Verbeke, G., & Molenberghs, G. (2009). *Linear mixed models for longitudinal data*. New York: Springer.
- Veryzer, R. W., & Hutchinson, J. W. (1998). The influence of unity and prototypicality on aesthetic responses to new product designs. *Journal of Consumer Research*, 24, 374–394.
- Voss, K. E., Spangenberg, E. R., & Grohmann, B. (2003). Measuring the hedonic and utilitarian dimensions of consumer attitude. *Journal of Marketing Research*, 40, 310–320.
- Westerman, S. J., Gardner, P. H., Sutherland, E. J., White, T., Jordan, K., Watts, D., et al. (2012). Product design: Preference for rounded versus angular design elements. *Psychology & Marketing*, 29, 595–605.
- Winkielman, P., Halberstadt, J., Fazendeiro, T. & Catty, S. (2006). Prototypes are attractive because they are easy on the mind. *Psychological Science*, 17, 799–806.
- Yamamoto, M., & Lambert, D. R. (1994). The impact of product aesthetics on the evaluation of industrial products. *Journal of Product Innovation Management*, 11, 309–324.

Correspondence regarding this article should be sent to: Theo Lieven, Post-Doctoral Researcher, Center for Customer Insight, University of St. Gallen, Bahnhofstr. 8, CH-9000 St. Gallen, Switzerland (theo.lieven@unisg.ch).