Received 8 August 2012
Revised 5 April 2013
5 November 2013
24 March 2014
Accepted 23 July 2014

The effect of brand design on brand gender perceptions and brand preference

Theo Lieven
Center for Customer Insight, University of St. Gallen, St. Gallen, Switzerland

Bianca Grohmann
John Molson School of Business, Concordia University, Montreal, Canada

Andreas Herrmann
Center for Customer Insight, University of St. Gallen, St. Gallen, Switzerland

Jan R. Landwehr
Department of Product Management and Marketing Communications, Goethe University, Frankfurt, Germany, and

Miriam van Tilburg
Center for Customer Insight, University of St. Gallen, St. Gallen, Switzerland

Abstract

Purpose – This research aims to examine the impact of brand design elements (logo shape, brand name, type font and color) on brand masculinity and femininity perceptions, consumer preferences and brand equity.

Design/methodology/approach – This research empirically tests the relation between brand design elements, brand masculinity and femininity and brand preferences/equity in four studies involving fictitious and real brands.

Findings – Brand design elements consistently influenced brand masculinity and femininity perceptions. These, in turn, significantly related to consumer preferences and brand equity. Brand masculinity and femininity perceptions successfully predicted brand equity above and beyond other brand personality dimensions.

Research limitations/implications – Although this research used a wide range of brand design elements, the interactive effects of various design elements warrant further research.

Practical implications – This research demonstrates how markers of masculinity and femininity that are discussed in the evolutionary psychology literature can be applied to the brand design of new and existing brands.

Originality/value – This research considers the impact of multiple brand design elements (logo shape, brand name, type font and color) and involves a wide range of brands and product categories.

Keywords Brand equity, Brand gender, Brand personality, Brand design, Evolutionary psychology

Paper type Research paper

European Journal of Marketing
Vol. 49 No. 1/2, 2015
pp. 146-169

0309-0566
DOI 10.1108/EJM-08-2012-0456

1. Introduction

Brand design elements are names, signs and symbols that identify and differentiate the brand (Walsh *et al.*, 2010, 2011), and include brand name, logo shape, color and type font. The marketing literature suggests that brand design elements influence consumers' perceptions of brand personality (Batra *et al.*, 1993) – the human personality traits consumers associate with a brand (Aaker, 1997). Brand personality consists of multiple dimensions (sincerity, excitement, sophistication, ruggedness and competence; Aaker, 1997; masculinity, femininity; Grohmann, 2009). Although research on the influence of brand design elements on brand personality dimensions is growing (Grohmann *et al.*, 2012; Labrecque and Milne, 2012; Orth and Malkewitz, 2008), the impact of brand design on brand masculinity and femininity remains unexplored.

The first objective of this article is to examine how brand design elements (logos, type font, brand name and color) influence brand masculinity and femininity perceptions. The second objective is to investigate whether brand-design induced brand masculinity and femininity perceptions ultimately relate to consumer preferences and brand equity. The literature suggests that brand personality contributes to brand equity (Keller, 1993) because it allows consumers to more easily relate to the brand (Fournier, 1998) or express themselves through brand use (Aaker, 1997). Emerging evidence indeed indicates that the masculinity and femininity dimensions of brand personality relate positively to consumer responses to the brand (e.g. attitude; Grohmann, 2009) and brand equity (Lieven *et al.*, 2011). In providing further evidence for an impact of brand masculinity and femininity perceptions on consumer preferences and brand equity, we highlight the importance of brand design considerations in influencing managerially relevant outcomes (Aaker and Keller, 1990; Leuthesser *et al.*, 1995; Salzer-Mörling and Strannegard, 2004).

This research adopts an evolutionary psychology (EP) perspective to explain the influence of physical brand design characteristics on consumers' perceptions of brand masculinity and femininity. Evolutionary psychology posits that psychological processes that influence preferences and behavior are the result of evolution by selection (Buss, 1995). The recent marketing literature indeed demonstrates that EP-based theories are useful in elucidating behaviors in the consumption domain (Griskevicius *et al.*, 2012).

In examining the influence of brand design elements on brand masculinity and femininity perceptions, consumer preferences and brand equity, this research contributes to the literature in several ways. first, although research has begun to examine the influence of brand design elements on brand personality perceptions (Labrecque and Milne, 2012; Grohmann *et al.*, 2012), these investigations focus on a limited number of design elements, such as logo color (i.e. hue and saturation; Labrecque and Milne, 2012), or type font characteristics (i.e. elaborate, harmony, natural, flourish, weight) and type font hue (Grohmann *et al.*, 2012). The current article extends the consideration of brand design elements to logo and brand name, and reinvestigates the influence of type font and color. From a theoretical standpoint, this article highlights the parsimony of an EP-based explanation for the effects of multiple and seemingly disparate design elements. From a managerial standpoint, this investigation of multiple brand design elements demonstrates their effectiveness in the creation of desired brand masculinity or femininity perceptions.

Second, this research focuses on the influence of brand design on brand femininity and masculinity – two brand personality dimensions that have not been investigated despite their importance to brand positioning in many product categories (e.g. personal care products and fragrances). Prior brand design research (Labrecque and Milne, 2012; Grohmann *et al.*, 2012) considered the sincerity, sophistication, excitement, competence and ruggedness dimensions (Aaker, 1997).

Finally, this research is one of the few to examine whether design-evoked brand personality perceptions affect consumers' responses to the brand. Although the literature suggests that brand masculinity and femininity result in positive consumer responses (Grohmann, 2009; Lieven *et al.*, 2011), empirical evidence regarding this relation is limited. This research specifically addresses to what extent brand masculinity/femininity drives consumer preferences and consumer-based brand equity.

2. Conceptual background

EP has emerged as a promising conceptual framework for marketing, and brand positioning research (Colarelli and Dettmann, 2003; Foxall, 1993; Foxall and James, 2003; Griskevicius *et al.*, 2012; Griskevicius and Kenrick, 2013; Saad, 2013; Saad and Gill, 2000). EP holds that the human mind evolved through natural and sexual selection and represents an adaptation to challenges in various domains including survival, mating, kin selection and reciprocal altruism (Saad, 2013). Fundamental motives – such as self-protection from physical harm and disease, romantic partner attraction and retention, affiliation, status and caring for offspring (Kenrick *et al.*, 2010) – influence perception, emotions, cognition and memory (Saad, 2013), and shape preferences and behavior (Griskevicius and Kenrick, 2013).

This article extends EP-based research by examining whether brand design features influence consumers' perceptions of brand masculinity and femininity. Brand design elements include brand name and symbols associated with the brand (e.g. logo shape, color, type font; Henderson and Cote, 1998) and play an important role in brand perception (Batra *et al.*, 1993), identification and differentiation (Walsh *et al.*, 2010, 2011). In connecting physical features to masculinity and femininity perceptions in a brand context, this research draws on the EP literature that links physical features to masculinity/femininity perceptions among people. This literature suggests that people's inferences regarding masculinity and femininity based on physical features is rooted in psychological mechanisms pertaining to mate selection. The adaptation to the different reproductive roles influenced the development of several differences in physical characteristics between the sexes (i.e. sexual dimorphism; Darwin, 1874). To the extent that an individual's level of masculine or feminine characteristics may allow him or her to more successfully compete against other individuals of the same sex (i.e. intrasexual competition; Buss and Barnes, 1986) and to increase the likelihood of being selected in mate choice (i.e. intersexual competition; Buss and Barnes, 1986), these characteristics tend to increase the competitive advantage in sexual selection and are passed on to future generations (Andersson, 1994). In the mate-selection process, physical characteristics may be used as indicators of quality and reproductive value of a potential mate (Rhodes, 2006; Symons, 1979; Gangestad and Scheyd, 2005). The more prominent physical features signaling masculinity (or femininity) in an individual, the greater may be their perceived genetic fitness (and thus contribution to the offspring's genetic fitness) and attractiveness as a potential mate (Kaplan and Gangestad, 2005; Grammer

et al., 2003). The evolutionary-based tendency to seek a genetically fit and therefore attractive mate likely increases people's level of attention to physical features that relate to attractiveness (Jokela, 2009). This suggests that humans may be highly responsive to physical features signaling masculinity and femininity. Importantly, masculine and feminine features tend to enhance perceived attractiveness – regardless of the perceiver's sex (Grammer and Thornhill, 1994; Johnston *et al.*, 2001; Penton-Voak *et al.*, 2001; Perrett *et al.*, 1998; Rhodes *et al.*, 2003). This may be due to intrasexual competition, which requires competence in interpreting masculine and feminine features to judge same-sex competitors and to gauge what characteristics might increase attractiveness to the opposite sex (Buss and Schmitt, 1993). Similarly, individuals tend to select mates that match their own level of attractiveness, which requires that individuals judge their own level of attractiveness, as well as that of a potential mate (Buss and Schmitt, 1993). In sum, physical features influence femininity and masculinity perceptions to some extent (Furnham and Radley, 1989), and the degree to which an individual displays feminine or masculine features plays a role in others' judgments of their attractiveness (Kaplan and Gangestad, 2005). Because these psychological mechanisms relate to fundamental motives (Buss, 1989, 1994), it is plausible that consumers may recognize and respond positively to physical features conveying masculinity and femininity in brand design. We now turn to the discussion of specific brand design elements (logo shape, type font, brand name and color) and their effect on brand femininity/masculinity, brand preferences and brand equity.

2.1 Logo shape

Logo shape refers to a brand logo's graphic design (Henderson and Cote, 1998). Because logos are physical manifestations of brands, logo shape might influence perceived brand masculinity/femininity in line with EP principles. The EP literature suggests that physical characteristics – such as shoulders, upper-body musculature and biceps, waist-to-hip ratio (WHR), body mass index and waist-to-chest ratio (WCR) – influence masculinity and femininity perceptions (Horvath, 1981; Rhodes, 2006; Singh, 1993; Symons, 1979; Gangestad and Scheyd, 2005). Two dimensions of physical appearance – angularity versus roundness, and heavier versus slender build – appear to play an important role in these perceptions: the literature suggests that an angular, V-shaped torso consistent with physical strength and muscle development in the upper body increases perceived attractiveness in men (Furnham and Radley, 1989). In addition, a muscular physique is one of the factors influencing perceptions of male attractiveness (Fisher *et al.*, 2002). On average, male attractiveness ratings increase with a heavier build, but decrease for overweight and obese body shapes (Furnham and Radley, 1989). Whereas the prototypical masculine body shape involves an angular V-shape induced by a low WCR (Horvath, 1981) and moderate heaviness (Furnham and Radley, 1989), a curved ("hourglass") body shape characterized by a WHR of about 0.7 and a slender build is associated with femininity and female attractiveness (Singh and Young, 1995). The presence of heavier versus slender, and more angular versus rounder features (which describe a typically masculine and feminine body shape, respectively) in a brand logo might thus influence consumers' perceptions of brand masculinity and femininity. The prediction regarding angularity and roundness is also echoed in the marketing aesthetics literature, which links angular forms to masculinity, and round forms to femininity (Schmitt and Simonson, 1997).

H1. Logo shape influences perceived brand masculinity/femininity, such that (a) a heavier and more angular logo enhances brand masculinity (MBP) and (b) a slender and rounder logo enhances brand femininity (FBP).

2.2 Type font

The effects of angular/round and heavier/slender features on masculinity/femininity perceptions might also apply to other brand design elements, such as type font. Peacock (2005) reports that fine, sleek, elegant and serif-type fonts are perceived as feminine, whereas solid, bold-face type fonts are perceived as masculine. Similarly, Shaikh *et al.* (2006) find that script fonts (e.g. Monotype Corsiva, Kristen) communicate femininity, whereas modern display fonts (e.g. Impact, Agency FB) signal masculinity. Overall, slender, round type fonts likely signal brand femininity, whereas heavier (i.e. boldface, hereinafter referred to as bold), angular fonts signal brand masculinity.

H2. Type font influences perceived brand masculinity/femininity, such that (a) a bold and more angular type font enhances brand masculinity (MBP) and (b) a slender and rounder type font enhances brand femininity (FBP).

2.3 Brand name

Evolutionary phonology describes the evolution of language as an adaptive process and relates to evolutionary psychology (Blevins, 2004; Croft, 2008). Language involves the interpretation of sound. In this context, sound symbolism posits that word meaning derives from the sound of phonemes (i.e. smallest units of sound: vowels or consonants) it contains. Research supports a relation between vowel sounds and brand perception (Klink, 2000, 2003; Yorkston and Menon, 2004). For example, products with brand names containing front vowels (e.g. *i*, *e*) – as opposed to back vowels (e.g. *o*, *u*) – were perceived as more feminine, lighter in color and weight, milder, thinner, weaker, softer, faster, colder, prettier, bitter and friendlier (Klink, 2000). A second phoneme category consists of consonants (i.e. stops such as *p*, *t*, *b* and *k*; fricatives such as *f*, *s*, *v* and *z*). Brand names are perceived to be more masculine, larger, slower or heavier when they contain stops as opposed to fricatives (Klink, 2000).

This research focuses on the influence of vowels on brand masculinity and femininity perceptions. We expect that femininity perceptions are influenced by use of front vowels, whereas masculinity perceptions are influenced by use of back vowels.

H3. Brand names influence perceived brand masculinity/femininity, such that (a) back vowels enhance perceived brand masculinity MBP) and (b) front vowels enhance perceived brand femininity (FBP).

2.4 Color

Color conveys brand meaning and creates brand identity in the context of advertising, packaging, distribution and brand logo design (Klink, 2003). The relation between color and masculinity/femininity perceptions is often examined in the context of sex-related stereotyping of colors in socialization processes (Picariello *et al.*, 1990; Pomerleau *et al.*, 1990) and the cultural perpetuation of gender-stereotypes related to color associations (Cunningham and Macrae, 2011). EP provides a parsimonious explanation for the link between color and masculinity/femininity in that face color may serve as marker of masculinity and femininity: women tend to be more light-skinned than men (Jablonski and Chaplin, 2000) because of higher estrogen levels (Perrett *et al.*, 1998). Within ethnic

groups, the literature documents mate choice preferences that tend to favor women with skin tones lighter than the local average, and men with darker complexions than the local average (van den Berghe and Frost, 1986). This preference for women with lighter skin tone may be based on an association of lighter skin with health (and thus reproductive fitness; Stephen *et al.*, 2009), as well as increased facial contrast between lighter skin and lips or eyes, which also serves as an indicator of femininity (Russell, 2009). This suggests that lighter colors may be more strongly associated with femininity, whereas darker colors may be more strongly associated with masculinity. It is likely that use of light colors to represent the brand increases brand femininity perceptions, whereas use of dark colors might increase brand masculinity perceptions.

EP furthermore suggests a mate-attraction-based link between the color red, perceived femininity and attractiveness (Elliot and Niesta, 2008; Pazda *et al.*, 2012), likely because of estrogen/progesterone balance-induced blood flow during the ovulation phase of the menstrual cycle (Elliot and Niesta, 2008; Fortney *et al.*, 1988). The effect of color on masculinity and femininity perceptions thus appears to involve both hue (e.g. blue versus red or pink; Alexander, 2003; Elliot and Niesta, 2008) and brightness (dark versus light; Jablonski and Chaplin, 2000).

H4. Color influences perceived brand masculinity/femininity, such that (a) darker (blue) color enhance perceived brand masculinity (MBP) and (b) lighter (red/pink) color enhance perceived brand femininity (FBP).

2.5 Impact of brand design based masculinity and femininity perceptions on brand preferences and equity

EP suggests that physical features may influence perceived attractiveness (Barrett *et al.*, 2002; Buss, 2005). Women tend to rate status, strength and the ability to protect others as desirable male traits, whereas men tend to perceive fertility as a desirable attribute in females (Buss, 1989, 1994; Buss and Schmitt, 1993). Markers of femininity and masculinity that suggest the presence of these desirable attributes therefore play a role in attractiveness perceptions and mate selection preferences (Gangestad and Simpson, 2000; Symons, 1979): a highly masculine appearance indicating strength and status, or a highly feminine appearance indicating fertility is often considered attractive (Etcoff, 2000). The relation between masculinity or femininity and attractiveness may suggest that there is a link between highly masculine and feminine brands and consumers' responses to such brands. The fact that consumers perceive brands in terms of masculinity and femininity (Grohmann, 2009) and apply social judgment to non-human entities (Aaker *et al.*, 2010) suggests that they recognize and interpret physical markers of masculinity and femininity in a brand context. Hence, masculinity and femininity perceptions may influence brand preferences and – consequently – brand equity because of positively valenced (i.e. highly masculine or feminine) features. Prior literature also suggests that brand preference and brand equity are strongly and positively related. Keller (1993) conceptualizes brand equity as a differential effect on consumer responses which are influenced by consumer preferences. Similarly, Cobb-Walgren *et al.* (1995) found that high equity brands generate significantly higher brand preference.

H5. Highly masculine (feminine) brands evoke greater brand preference and equity compared to moderately masculine (feminine) brands.

We now turn to the empirical tests of the hypotheses.

3. Empirical studies

Study 1 examines the effect of brand logo shape on masculinity and femininity perceptions (*H1*). Study 2 investigates the effect of type fonts and brand names on perceived brand gender (*H2*, *H3*) and brand preferences (*H5*). Study 3 focuses on the influence of color and type fonts on brand gender perceptions (*H4*) and preference (*H5*). Study 4 then examines the effects of modifications of existing brand designs on perceived brand gender and equity.

3.1 Study 1: logo shapes and brand masculinity/femininity

3.1.1 Design, stimuli and procedure. Study 1 used a 2 (heavy vs slender) × 2 (angular vs round) between-participants design. To rule out brand familiarity effects, we relied on a fictitious brand logo selected from Henderson and Cote (1998). As illustrated in Table I, the logo was modified such that it differed along the heavy/slender and angular/round dimensions. Participants were members of a European consumer panel (with 65,000 members) who responded to an e-mail including a survey link that invited them to participate in an online-study. Participants were randomly assigned to logo condition. Participants (n = 548, 40.0 per cent female, M_{Age} = 45.3, SD_{Age} = 12.1) rated the logo on two semantic differential scales that reflect heaviness/slenderness and angularity/roundness in a design context (1 = bold/solid, 11 = airy/delicate; 1 = angular/sharp, 11 = round/smooth; Björntorp, 1987). Participants then rated perceived brand gender associated with the logos on two seven-point femininity and masculinity scales.

3.1.2 Results. An ANOVA with brand masculinity serving as dependent variable and the two logo shape dimensions as independent variables shows that heavy logos were rated as more masculine (M = 4.50) compared to slender logos (M = 3.92; $F(1, 544) = 25.30$, $p < 0.001$) and angular logos (M = 4.82) were rated as more masculine compared to round logos (M = 3.60; $F(1, 544) = 105.67$, $p < 0.001$). In an ANOVA with brand femininity serving as dependent variable and the logo shape dimensions serving as independent variables, heavy logos (M = 3.29) were perceived as less feminine compared to slender logos (M = 3.76; $F(1, 544) = 16.31$, $p < 0.001$) and angular logos (M = 2.87) were rated as less feminine compared to round logos (M = 4.18; $F(1, 544) = 115.71$, $p < 0.001$). No significant interaction effects emerged (brand masculinity $p > 0.49$; brand femininity $p > 0.82$).

Table I. Study 1: logos and ratings

Perceptual dimension	Logo 1	Logo 2	Logo 3	Logo 4
				
1 = bold/solid vs 11 = airy/delicate	3.78	6.06	4.72	6.04
1 = angular/sharp vs 11 = round/smooth	4.40	4.24	8.58	8.82
Masculinity	5.18	4.49	3.86	3.34
Femininity	2.63	3.09	3.91	4.44
Masculinity–Femininity (Gender)	2.55	1.40	−0.05	−1.09

3.1.3 Discussion. In support of *H1*, logo shape influenced brand masculinity and femininity perceptions, such that heavier and angular logos increased brand masculinity, whereas slender and round logos enhanced brand femininity.

3.2 Study 2: Type font, brand name, brand masculinity/femininity and brand preferences

Study 2 considers the effect of type font and brand name in a within-participants design that more closely approximates brand evaluation contexts consumers usually face. It also examines the relation between type font (*H2*) and brand name (*H3*), brand masculinity/femininity and resulting consumer preferences for brands within a product category (*H5*). Because the effects of brand masculinity/femininity on brand preferences may be contingent upon product category gender associations, this study further explores the effect of congruence between brand and product category masculinity and femininity on preferences.

Similar to brands, product categories are associated with masculinity and femininity (Fugate and Phillips, 2010; Milner and Fodness, 1996). Because product-level associations influence how consumers perceive brands (Keller, 1993), they may reinforce or weaken brand associations. Based on categorization theory and the finding that facilitated categorization increases liking (Lamberts and Brockdorff, 1997; Solomon *et al.*, 1999), it is likely that congruence between brand masculinity/femininity and product category masculinity/femininity influences brand preferences positively. In other words, congruence between brand and product category masculinity/femininity (e.g. a masculine brand in a masculine product category) likely reinforces brand masculinity/femininity perceptions and enhances preferences, whereas incongruence (i.e. feminine brand in a masculine product category) may lead to more difficult categorization – as well as dilution of brand-level associations through mismatching product category associations – and ultimately influences preferences negatively. It is important to note that in categories that are used to a similar extent by men and women (e.g. cars, smartphones, deodorants), brands can position themselves anywhere along the masculinity/femininity continuum to appeal to a desired target segment (i.e. men only, women only, consumers from both groups). The brand association and categorization literatures suggest, however, that a brand position that is more congruent with product category femininity/masculinity reinforces brand masculinity/femininity and benefits the brand.

> *H6.* Greater congruence between brand masculinity/femininity (MBP, FBP) and product category masculinity/femininity (MPG, FPG) enhances to brand preferences.

In testing the effects of brand masculinity/femininity on preferences, Study 2 also considers the impact of product category masculinity/femininity associations (*H6*).

3.2.1 Design, stimuli, and procedure. A 2 (brand name) × 4 (type font) within-participant experiment examined the effect of brand name and type font on brand masculinity and femininity, and brand preferences. Brand name manipulations consisted of two fictitious brand names with front (Edely) or back vowels (Bloyt). Type font manipulations consisted of two slender/round fonts (Monotype Corsiva, Kristen) and two bold/angular fonts (Impact, Agency FB; Shaikh *et al.*, 2006). Participants (n = 657, 44.2 per cent female, M_{Age} = 41.2, SD_{Age} = 12.2) were recruited from a

European consumer panel through an e-mail including a survey link. They first rated the two brand names (printed in Arial font) in terms of brand name masculinity and brand name femininity (1 = not at all masculine [feminine], 7 = very masculine [feminine]), and the four type fonts (based on a string of letters) on two semantic differential scales (1 = bold/solid, 11 = airy/delicate; 1 = angular/sharp, 11 = round/smooth). They also rated type font femininity and masculinity (1 = not at all masculine [feminine], 7 = very masculine [feminine]) based on a type sample (string of letters). Afterward, they rated brand femininity (FBP) and masculinity (MBP) arising from each of the eight brand name/type font combinations (i.e. two brand names displayed in four type fonts). Participants were then randomly assigned to 3 of 12 product categories (fragrance/cosmetics, sweets/snacks, food, soft drinks, apparel, alcohol/tobacco, household products, financial services, electronics, cars, information technology and transportation) and rated product category masculinity/femininity perceptions (MPG, FPG) on the MBP/FBP items (MPG: $\alpha = 0.88$; FPG: $\alpha = 0.92$; $r_{FPG–MPG} = 0.67$). They then distributed 100 points across the eight brand name/type font combinations to express brand preference in that product category.

3.2.2 Results. Table II summarizes brand name and type font perceptions, as well as MBP, FBP and MBP-FBP difference ratings.

First, paired-samples *t*-tests examined the effects of brand name and type font on perceived brand gender. Compared to the brand name including front vowels, the brand name including a back vowel was perceived as more masculine ($M_{back} = 4.53$; $M_{front} = 2.38$, $t(647) = 24.95$, $p < 0.001$) and less feminine ($M_{back} = 1.97$; $M_{front} = 4.27$, $t(642) = -29.28$, $p < 0.001$). We averaged the data over the two slender/round fonts (Monotype, Kristen) and the two bold/angular fonts (Impact, Agency) and found that compared to the slender/round fonts the bold/angular fonts were perceived as more solid ($M_{bold/angular} = 4.02$; $M_{slender/round} = 7.29$, $t(653) = -35.54$, $p < 0.001$), less round ($M_{bold/angular} = 4.01$; $M_{slender/round} = 8.34$, $t(652) = -39.41$, $p < 0.001$), more masculine ($M_{bold/angular} = 4.71$; $M_{slender/round} = 2.59$, $t(653) = 30.73$, $p < 0.001$) and less feminine ($M_{bold/angular} = 2.52$; $M_{slender/round} = 4.70$, $t(652) = -33.89$, $p < 0.001$).

To analyze the relationships between brand design elements, perceived brand gender, fit between brand and product category gender and brand preference, we aggregated the data across participants such that the eight versions of the brand name for each of the 12 product categories that constitute 96 cases for the subsequent analyses. Table III depicts perceived product category masculinity/femininity and average preference rankings for the eight brand designs in each product category. To account for product category effects on brand perceptions, the Euclidian distance served as a measure of dissimilarity between brand and product category gender:

$$\text{Distance} = \sqrt{(\text{MBP} - \text{MPG})^2 + (\text{FBP} - \text{FPG})^2}$$

Figure 1 outlines the relationships between brand design elements, brand masculinity/femininity and preferences tested in linear regression analyses.

Regression of type font masculinity on the type font design characteristics provided evidence that airy/delicate ($b = -0.49$, $p < 0.001$) and round/smooth ($b = -0.56$, $p < 0.001$; $R^2 = 0.98$; $F(2, 93) = 2{,}814.07$, $p < 0.001$) fonts reduced perceived masculinity. Regression of font femininity on the type font characteristics showed that more airy/delicate ($b = 0.44$, $p < 0.001$) and round/smooth type fonts ($b = 0.60$, $p < 0.001$;

Table II.
Study 2: effect of type font and brand name on brand masculinity, femininity and preference

Name	Name masculinity	Name femininity	Type font	Bold/solid vs airy/delicate	Angular/sharp vs round/smooth	Font masculinity	Font femininity	Name	Brand MBP	Brand FBP
Bloyt	4.53	1.98	Impact	2.40	4.14	5.08	2.14	**Bloyt**	5.33	2.10
			Agency	5.62	3.87	4.31	2.89	Bloyt	4.45	2.57
			Kristen	6.89	7.74	2.70	4.29	Bloyt	3.41	3.40
			Monotype	7.71	8.95	2.48	5.11	*Bloyt*	2.96	4.09
Edely	2.40	4.28	Impact	2.40	4.14	5.08	2.14	**Edely**	4.33	2.87
			Agency	5.62	3.87	4.31	2.89	Edely	3.65	3.41
			Kristen	6.89	7.74	2.70	4.29	Edely	2.70	4.26
			Monotype	7.71	8.95	2.48	5.11	*Edely*	2.25	5.22

Product category	Masculine product gender	Feminine product gender	Name	Type font	Brand MBP	Brand FBP	Brand equity
Fragrance, cosmetics	3.47	4.76	Bloyt	Impact	5.36	2.14	6.03
				Agency	4.37	2.57	6.49
				Kristen	3.49	3.44	8.72
				Monotype	3.10	4.13	19.54
			Edely	Impact	4.42	2.89	6.66
				Agency	3.85	3.43	9.75
				Kristen	2.86	4.33	12.31
				Monotype	2.41	5.12	28.74
Sweets, snacks	3.05	4.45	Bloyt	Impact	5.31	2.09	7.74
				Agency	4.45	2.55	7.40
				Kristen	3.27	3.40	15.88
				Monotype	2.79	4.12	16.86
			Edely	Impact	4.31	2.79	7.47
				Agency	3.50	3.26	7.58
				Kristen	2.52	4.15	14.02
				Monotype	2.19	5.17	22.40
Food	3.15	3.78	Bloyt	Impact	5.21	2.16	10.93
				Agency	4.32	2.62	8.25
				Kristen	3.39	3.48	10.52
				Monotype	2.85	4.25	15.89
			Edely	Impact	4.48	2.84	11.81
				Agency	3.70	3.34	12.77
				Kristen	2.75	4.11	10.54
				Monotype	2.17	5.23	18.68
Soft drinks	3.31	3.75	Bloyt	Impact	5.42	2.00	11.45
				Agency	4.65	2.53	9.62
				Kristen	3.49	3.26	14.76
				Monotype	3.09	3.87	15.82
			Edely	Impact	4.14	2.96	8.40
				Agency	3.51	3.61	9.15
				Kristen	2.65	4.46	12.99
				Monotype	2.23	5.36	15.37
Fashion, apparel	3.79	4.23	Bloyt	Impact	5.21	2.16	8.48
				Agency	4.32	2.62	8.90
				Kristen	3.39	3.48	10.44
				Monotype	2.85	4.25	17.72
			Edely	Impact	4.48	2.84	5.60
				Agency	3.70	3.34	10.48
				Kristen	2.75	4.11	12.77
				Monotype	2.17	5.23	25.60
Cigarettes, alcoholic beverages	3.91	2.88	Bloyt	Impact	5.36	2.14	14.58
				Agency	4.37	2.57	10.42
				Kristen	3.49	3.44	10.55
				Monotype	3.10	4.13	16.60
			Edely	Impact	4.42	2.89	10.54
				Agency	3.85	3.43	10.36
				Kristen	2.86	4.33	8.67
				Monotype	2.41	5.12	16.51

Table III.
Study 2: product gender, brand gender, and brand equity ratings by product category

(*continued*)

Product category	Masculine product gender	Feminine product gender	Name	Type font	Brand MBP	Brand FBP	Brand equity
Home-related products	4.02	2.79	Bloyt	Impact	5.31	2.09	15.44
				Agency	4.45	2.55	16.11
				Kristen	3.27	3.40	8.37
				Monotype	2.79	4.12	10.66
			Edely	Impact	4.31	2.79	13.99
				Agency	3.50	3.26	14.67
				Kristen	2.52	4.15	8.94
				Monotype	2.19	5.17	11.19
Financial services	4.23	2.45	Bloyt	Impact	5.42	2.00	17.48
				Agency	4.65	2.53	23.79
				Kristen	3.49	3.26	4.81
				Monotype	3.09	3.87	6.87
			Edely	Impact	4.14	2.96	13.31
				Agency	3.51	3.61	16.35
				Kristen	2.65	4.46	5.13
				Monotype	2.23	5.36	9.20
Electronics	3.88	2.84	Bloyt	Impact	5.36	2.14	16.68
				Agency	4.37	2.57	14.78
				Kristen	3.49	3.44	9.75
				Monotype	3.10	4.13	11.26
			Edely	Impact	4.42	2.89	12.13
				Agency	3.85	3.43	11.90
				Kristen	2.86	4.33	8.58
				Monotype	2.41	5.12	13.75
Cars	4.63	3.19	Bloyt	Impact	5.31	2.09	16.55
				Agency	4.45	2.55	18.38
				Kristen	3.27	3.40	9.07
				Monotype	2.79	4.12	13.84
			Edely	Impact	4.31	2.79	12.69
				Agency	3.50	3.26	9.77
				Kristen	2.52	4.15	6.50
				Monotype	2.19	5.17	9.99
Information technology	4.03	2.93	Bloyt	Impact	5.42	2.00	12.41
				Agency	4.65	2.53	19.74
				Kristen	3.49	3.26	12.73
				Monotype	3.09	3.87	8.38
			Edely	Impact	4.14	2.96	9.78
				Agency	3.51	3.61	14.91
				Kristen	2.65	4.46	10.04
				Monotype	2.23	5.36	8.95
Transportation	4.07	2.84	Bloyt	Impact	5.21	2.16	18.93
				Agency	4.32	2.62	12.72
				Kristen	3.39	3.48	9.47
				Monotype	2.85	4.25	12.80
			Edely	Impact	4.48	2.84	13.84
				Agency	3.70	3.34	12.16
				Kristen	2.75	4.11	7.25
				Monotype	2.17	5.23	11.62

Table III.

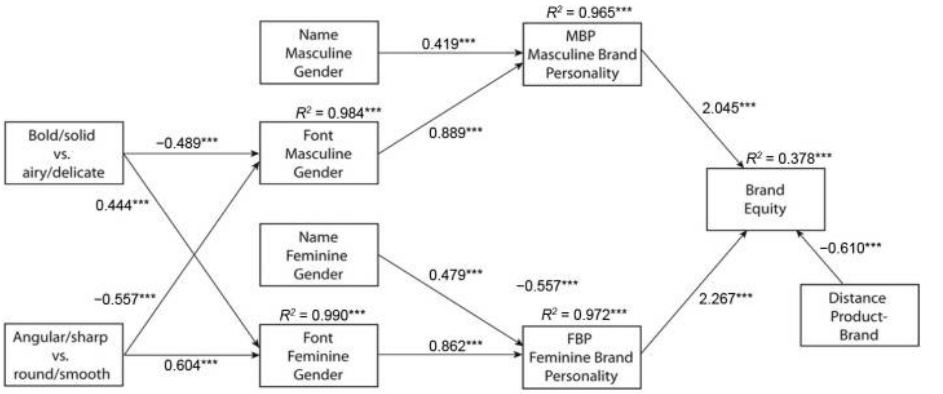

Figure 1.
Study 2: path and determination coefficients

Notes: Summary of the separate regressions from study 2. Results are the same when calculated simultaneously in a partial least square (PLS) model

$R^2 = 0.99$; $F(2, 93) = 4{,}453.02$, $p < 0.001$) were perceived as more feminine. Regression analyses also supported an influence of brand design perceptions on brand masculinity ($R^2 = 0.97$; $F(2, 93) = 1{,}291.66$, $p < 0.001$; masculine brand name gender perceptions $b = 0.42$, $p < 0.001$; masculine type font gender perceptions $b = 0.89$, $p < 0.001$) and brand femininity ($R^2 = 0.97$; $F(2, 93) = 1{,}629.84$, $p < 0.001$; feminine name gender perceptions $b = 0.48$, $p < 0.001$; feminine font gender perceptions $b = 0.86$, $p < 0.001$). A regression of the brand equity on MBP, FBP and the distance vector ($F(3, 92) = 18.66$, $p < 0.001$; $R^2 = 0.38$) showed a positive and significant effect of MBP ($b = 2.05$, $p < 0.001$) and FBP ($b = 2.27$, $p < 0.001$) and a negative effect of the distance between product category and brand masculinity/femininity ($b = -0.61$, $p < 0.001$) on brand preferences. In support of *H5*, brand masculinity and femininity positively related to brand preferences. In support of *H6*, this relation was stronger when brand and product category masculinity and femininity were more congruent. A simultaneous least square regression model (Ringle *et al.*, 2005) replicated these findings.

3.2.3 Discussion. Results supported *H2*, *H3*, *H5* and *H6*. Brand logos including bold, angular type fonts (*H2a*) and brand names containing back vowels (*H3a*) signal brand masculinity, whereas brand logos with slender, round type fonts (*H2b*) and brand names including front vowels (*H3b*) increase brand femininity perceptions. Use of consistent cues result in more pronounced masculinity and femininity perceptions, which – in turn – increased brand preference (*H5*). A consideration of product category-brand masculinity/femininity congruence demonstrates that greater congruence between brand and product category masculinity/femininity increases preferences (*H6*).

3.3 Study 3: Type font, color, brand masculinity/femininity and brand preference

Study 3 examines the influence of type font (*H2*) and color (*H4*) on brand masculinity and femininity perceptions, replicates the findings regarding the relation between brand masculinity/femininity and brand preferences (*H5*) and provides additional evidence for regarding congruence between brand and product masculinity/femininity (*H6*).

3.3.1 Design, stimuli and procedure. This study used a 2 (type font) × 2 (color) × 2 (product category) between-participants design, with product categories differing in

terms of masculinity/femininity associations (i.e. deodorants, smartphones). Deodorants and smartphones have similar usage rates among men and women, yet Study 2 suggests that the product categories cosmetics (i.e. the category deodorant belongs to) and information technology products (i.e. the category smartphones belong to) are associated with femininity and masculinity, respectively. Stimuli consisted of four brand designs that combined a bold/angular type font (Impact) or slender/round type font (Monotype) with a dark hue/brightness color (navy blue [RGB 0, 0, 128]) or a light hue/brightness color (bright pink [RGB 255, 0, 127]). Color selection was based on prior research on color-related masculinity and femininity perceptions (Picariello *et al.*, 1990), and did not involve an independent manipulation of hue and brightness. These designs were applied to a deodorant dispenser (fictitious brand "Young"), and to a smartphone (fictitious brand "Connect"). Figure 2 illustrates the stimuli. Participants recruited from a European consumer panel (n = 1,103; 41.3 per cent female, M_{Age} = 44.7, SD_{Age} = 12.1) participated in an online study, and were randomly assigned to the deodorant (n = 516) or smartphones (n = 587) category and one brand design associated with. Participants rated the brand in terms of MBP and FBP (Grohmann, 2009). Participants then saw all four brand designs in the product category and expressed their relative preference on a 100-point constant sum scale.

3.3.2 Results. The effect of type fonts and color on brand masculinity, femininity and the MBP–FBP difference score was analyzed in a series of ANOVAs. *H2a* received partial support in that bold/angular type font significantly enhanced brand masculinity in one product category (deodorant: $F(1, 496) = 7.92$, $p < 0.01$, smartphone: $p > 0.58$). The MBP–FBP difference score was positively influenced by use of a bold/angular-type font (deodorant: $F(1, 496) = 27.44$, $p < 0.001$, smartphone: $F(1, 557) = 9.75$, $p < 0.01$). *H2b* was supported in that use of a slender/round type font significantly enhanced brand femininity (deodorant: $F(1, 496) = 6.09$, $p < 0.05$, smartphone: $F(1, 557) = 7.24$, $p < 0.01$). *H4a* was only partially supported: a dark color did not enhance brand masculinity (deodorants: $p > 0.92$, smartphone: $p > 0.55$). However, the effect of color on the MBP–FBP difference score was significant (deodorants: $F(1, 496) = 12.28$, $p < 0.01$, smartphone: $F(1, 557) = 7.83$, $p < 0.01$), such that a darker color enhanced brand masculinity. Partial support emerged for *H4b*, such that brand femininity was enhanced by a light color in only one of the product categories (deodorants: $F(1, 496) = 12.02$, $p < 0.05$, smartphone: $p > 0.15$). The type font × color interactions did not reach significance (ps > 0.16).

In ordinal regressions of standardized MBP–FBP scores on preference ratings for four groups that expressed the match between participants' sex and product category (female participants/deodorants, female participants/smartphones, male participants/deodorants and male participants/smartphones), all coefficients differed significantly from 0 ($\chi^2(1) > 16$, ps < 0.001). For female participants/deodorant, the coefficient was −0.62 (i. e. the more masculine the deodorant brand, the less preferred it was). For female participants/smartphones, the coefficient was −0.24; for male participants/deodorants, the coefficient was 0.21; and for male participants/smartphones, the coefficient was 0.27. These results suggest that female (male) consumers prefer feminine (masculine) brands, but even more so in feminine (masculine) product categories. Figure 2 illustrates the odds ratios for the preference ratings distribution (female participants/deodorant = 0.54, female participants/smartphone = 0.79, male participants/deodorant = 1.23, male participants/smartphone = 1.32; odds ratio = 1 indicates an equal distribution of

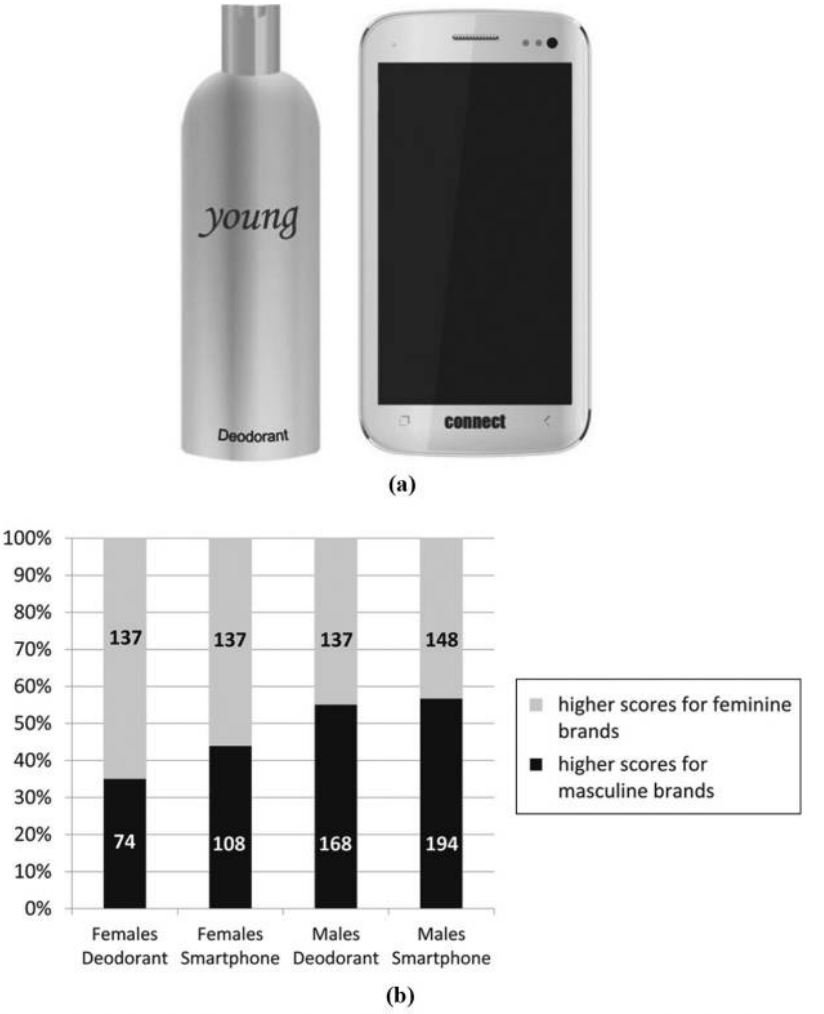

Figure 2.
Study 3: stimuli and preference ratings

Notes: (a) Stimuli; (b) distributions of preferences based on odds ratios; Numbers in bars are extrapolated from the odds ratios for the respective sample sizes

preference ratings, an odds ratio = 1.32 indicates a 31.5 per cent higher probability for the brand to receive a higher preference score when it is more masculine/its MBP–FBP difference score increases by 1 unit). The distribution of preference ratings significantly differed from equal distribution ($\chi^2(3) = 31.38$, $p < 0.001$). These results support *H6*.

3.3.3 Discussion. This study generally supports an impact of type fonts on brand masculinity/femininity (*H2*). Support for an effect of color on brand masculinity/femininity (*H4*) was weak, however. An important contribution of this study was a further investigation of consumer preferences for masculine/feminine brands in masculine/feminine product categories. Results suggest that brand preferences are driven by congruence

between brand masculinity/femininity and consumers' sex. This preference shifts based on the masculinity/femininity of the product category: When the product category is feminine (masculine), feminine (masculine) brands are more preferred, regardless of consumers' sex.

3.4 Study 4: Modification of brand communication for existing brands and brand equity

Studies 1 through 3 established that brand design elements associated with unfamiliar brands shape brand masculinity/femininity perceptions. Study 4 examines:

- whether modifications of brand design elements embedded in brand communications are effective in changing brand masculinity/femininity perceptions for existing brands;
- whether such modifications negatively affect existing brands' equity. These issues are important considerations for brand repositioning. Because brand masculinity and brand femininity are often conceptualized as dimensions of brand personality (Grohmann, 2009); and
- investigates whether brand masculinity and femininity contribute to brand equity above and beyond the impact of other brand personality dimensions (i.e. sincerity, sophistication, excitement, competence and ruggedness; Aaker, 1997).

Study 4 therefore provides a more rigorous test of *H5*.

3.4.1 Design, stimuli and procedure. This study included existing print advertisements for Mercedes (masculine brand: $M_{MBP} = 5.26$, $M_{FBP} = 4.08$) and Dove (feminine brand: $M_{MBP} = 4.02$, $M_{FBP} = 4.82$), based on a pretest. The original Mercedes advertisement included dark blue color (RGB 50, 50, 55) and bold type font (Centaur; hereafter referred to as dark/bold design). The modified advertisement included light red color (RGB 145, 100, 125) and slender type font (Monotype; hereafter referred to as light/delicate design). The original Dove print advertisement featured light gold – brown color (RGB 150, 130, 80) and a slender type font (MyriadPro; light/delicate design), whereas the modified advertisement included color blue (RGB 50, 80, 100) and a bold type font (Arial Rounded MT Bold; dark/bold design).

In a 2 (brand: Mercedes, Dove) × 2 (brand design: dark/bold, light/delicate) between-participants online study with random assignment to one advertisement, 413 participants (44 per cent female, $M_{Age} = 42.8$, $SD_{Age} = 11.8$) rated the advertised brand on the 42 brand personality items (Aaker, 1997), 12 MBP/FBP items (Grohmann, 2009) and 6 brand equity items (based on Yoo *et al.*, 2000).

3.4.2 Results. Brand design elements embedded in advertisements successfully changed brand masculinity and femininity perceptions for established brands: for Mercedes, the dark/bold design increased brand masculinity ($MBP_{dark/bold} = 4.83$, $MBP_{light/delicate} = 4.18$; $t(272) = 4.77$, $p < 0.001$), and decreased brand femininity ($FBP_{dark/bold} = 3.42$, $FBP_{light/delicate} = 3.88$; $t(272) = 2.99$, $p < 0.01$) perceptions. These results generally held for Dove ($MBP_{dark/bold} = 4.06$, $MBP_{light/delicate} = 3.71$, $t(137) = 1.86$, $p < 0.07$; $FBP_{dark/bold} = 3.47$, $FBP_{light/delicate} = 4.87$, $t(137) = 6.57$, $p < 0.001$). The MBP–FBP difference (Uzzel and Horne, 2006) also indicated that dark/bold designs evoked higher degrees of brand masculinity (Mercedes: $M_{dark/bold} = 1.41$, $M_{light/delicate} = 0.30$, $t(272) = 6.19$, $p < 0.001$; Dove: $M_{dark/bold} = 0.59$, $M_{light/delicate} = -1.17$, $t(137) = 7.47$, $p < 0.001$). Brand equity differed for Mercedes ($BE_{dark/bold} = 4.34$, $BE_{light/delicate} = 3.73$, $t(272) = 3.28$, $p < 0.001$), but not Dove ($p > 0.55$). The relative

impact of brand personality dimensions on brand equity was examined in a linear regression with brand equity as the criterion and the 15 brand personality facets (Aaker, 1997) as predictors ($R^2 = 0.65$; $F(15, 397) = 48.71$, $p < 0.001$). Adding MBP and FBP significantly improved model fit ($\Delta F(2, 405) = 3.15$, $p < 0.05$). The model regressing equity on MBP and FBP only was significant ($R^2 = 0.43$; $F(2, 410) = 151.23$, $p < 0.001$; $b_{MBP} = 0.48$, $b_{FBP} = 0.38$, ps < 0.001).

3.4.3 Discussion. Study 4 shows that brand masculinity and femininity of existing brands can be modified through use of design elements embedded in brand communication. Using existing brands, this study replicated previous results with regard to the influence of brand design on brand masculinity/femininity, and – for one of the brands – with regard to the relation between brand masculinity/femininity and brand equity (*H5*). The finding that brand masculinity and brand equity did not differ significantly across Dove brand designs may be because of a limitation arising from stimulus calibration: The Dove light/delicate design used a neutral (i.e. gold/brown) rather than femininity-associated color scheme; the modification to a bold/dark design may therefore have affected brand masculinity perceptions and (in)congruence with the brand to a lesser degree than did the modification of the Mercedes advertisement from a color associated with femininity (i.e. red in the light/delicate design) to one associated with masculinity (i.e. blue in the bold/dark design). This study also showed that brand masculinity and femininity contributed to brand equity above and beyond the five personality dimensions (Aaker, 1997), and explained a significant amount of variance in brand equity when considered as sole predictors.

4. General discussion and implications

This article examines whether brand design elements influence brand masculinity and femininity perceptions, and ultimately, brand preferences and equity. Study 1 shows that angular, bold logo shapes increase brand masculinity perceptions, whereas round, slender logo shapes enhance brand femininity perceptions. Study 2 demonstrates that type fonts and brand names affect brand masculinity/femininity perceptions. Brand masculinity/femininity, in turn, increase brand preferences, particularly when brand masculinity/femininity more closely matches the masculinity/femininity associated with the product category. Study 3 finds limited support for an effect of color on brand masculinity/femininity, but supports that greater congruence between brand and product category masculinity/femininity increases preference ratings. Study 4 shows that design elements embedded in brand communications change brand masculinity/femininity perceptions for existing brands, and demonstrates that brand masculinity/femininity predicts brand equity, even if other brand personality dimensions are considered.

This research developed EP-based predictions, and shows that EP has implications for branding: brand designs based on EP principles successfully shaped brand masculinity and femininity perceptions. This research thus contributes to the emerging literature that demonstrates EP's usefulness in understanding and explaining consumer behavior and marketing outcomes (Griskevicius *et al.*, 2009, 2010; Saad and Gill, 2000). This research also contributes to the investigation of antecedents of brand personality perceptions (Grohmann *et al.*, 2012; Labrecque and Milne, 2012; Orth and Malkewitz, 2008; Wentzel, 2009). Although previous research examines how the "big five" brand personality dimensions (i.e. sincerity, sophistication, competence, excitement,

ruggedness; Aaker, 1997) arise, this research is among the first to consider design-related sources of brand masculinity and femininity perceptions. This research also relates to the literature on package design effects on brand impressions. Orth and Malkewitz (2008), for example, find that contrasting (i.e. low harmony, natural, flourish and compressed) package designs are low in femininity, while natural (i.e. highly natural, harmony, elaborate, symmetry and flourish) packaging designs are highly feminine. Although the current research generally supports Orth and Malkewitz's (2008) findings regarding the impact of design elements on femininity (e.g. the effect of round, slender and therefore more natural logos on femininity perceptions), the current research relies on an experimental manipulation of design elements (logo, font, colors, brand names) and pinpoints the levels of these design factors that are most effective in creating femininity perceptions. In addition, the current research adds to insights regarding design effects in that it considers their impact on masculinity and femininity – operationalized as two discrete dimensions of brand perceptions.

4.1 Managerial implications

This research provides useful guidelines regarding the choice of design elements to signal brand masculinity and femininity. The use of bold, angular logo shapes and type fonts and back vowels in brand names enhances brand masculinity. The use of slender, round logo shapes and type fonts and front vowels enhances brand femininity. The findings of this research indicate that high levels of either brand masculinity or brand femininity are associated with more positive consumer responses to the brand (i.e. brand preference, brand equity). Furthermore, this research suggests that congruence between brand and product category masculinity and femininity relates positively to consumer preference ratings. This implies that brand positioning with regard to masculinity or femininity should be considered in light of consumers' product category perceptions.

This research documents an influence of brand design elements on brand masculinity and femininity perceptions on unfamiliar, as well as established, brands. Brand design elements facilitate not only initial brand positioning in terms of masculinity and femininity but also repositioning of existing brands (e.g. to attract new consumer segments). Although modifications of brand design elements successfully changed brand masculinity and femininity perceptions, brand equity ratings may be negatively affected by a modified design – as in the case of the Mercedes advertisement including slender type fonts and light colors. This suggests that although a consistent use of brand designs over time is desirable in terms of strengthening brand associations and recognition, it may also lead to consumer expectations regarding the nature of the design elements representing the brand. Modified designs that deviate from consumers' expectations can trigger negative consumer responses to the brand (Walsh *et al.*, 2010).

4.2 Limitations and directions for future research

This research contributes to the emerging literature on the relation between brand gender and brand equity (Lieven *et al.*, 2011), in that it examined both brand preferences and consumer-based brand equity. Brand preferences reflect brand equity (Cobb-Walgren *et al.*, 1995) and served as proxy for brand equity in two of the studies. In Studies 2 and 3, preferences among brands were measured on a constant sum scale, whereas Study 4 measured brand equity on the overall brand equity scale (Yoo *et al.*, 2000). Both operationalizations reflect a unidimensional view of brand equity, although

it is often considered as multi-dimensional (Christodoulides and Chernatony, 2010; Keller, 1993). The use of brand preferences as a proxy measure and the application of a unidimensional brand equity measure are limitations of this research, and future research examining the brand masculinity/femininity-brand equity relation might benefit from a multi-dimensional brand equity operationalization.

We acknowledge that the operationalization of color in this research confounded hue and brightness and therefore allows for only limited conclusions regarding the role of color in shaping consumers' brand gender perceptions. EP suggests that both hue and brightness influence masculinity/femininity perceptions. In selecting the colors used in Study 3, we relied on prior research (Picariello *et al.*, 1990) and tested the effect of color on brand masculinity/femininity perceptions using a light pink and a dark navy blue. A more rigorous test of color effects on brand masculinity/femininity perceptions would entail an experimental design that crosses the hue and brightness dimensions. Despite the limitations regarding the operationalization of color, this research nonetheless points toward the future potential of this line of inquiry; it hopefully also highlights the need for more rigorous operationalization of color in future research.

This research finds consistent main effects of design elements on brand gender perceptions, and some patterns of results consistent with interaction effects (e.g. effects of type font and brand name in Study 2). Although significant interaction effects did not emerge in Study 3, this may have been because of limitations regarding the manipulation of color. Relatedly, we found a weaker relative effect of color compared to other brand design elements, possibly because of the same limitation. Future research exploring the relative impact of brand design elements and their potential interactions would therefore be beneficial.

An important theoretical limitation regarding EP pertains to the consideration of sound symbolism effects within an EP framework. Although evolutionary phonology is related to other evolutionary models (Blevins, 2004; Croft, 2008), the literature is equivocal on whether evolutionary adaptations and language developed in lockstep (Croft, 2008). Further research is needed to clarify whether the evolution of sound perception followed adaptive processes captured by other evolutionary models (Croft, 2008), as this has implications for the use of EP in the explanation of linguistic effects. The second limitation is this context is that we did not test directly whether evolutionary associations underlie the relation between design elements and brand masculinity/femininity perceptions observed in this research. Nonetheless, the patterns in masculinity and femininity perceptions arising in response to multiple design elements (and across multiple studies) are consistent with EP-based predictions. This suggests that EP theories are appropriate for an investigation of consumer perceptions and behaviors (Griskevicius *et al.*, 2012). Stronger support for an EP-based explanation of the effect of brand design hinges on cumulative evidence provided by future research in this domain, however.

References

Aaker, D.A. and Keller, K.L. (1990), "Consumer evaluations of brand extensions", *Journal of Marketing*, Vol. 54 No. 1, pp. 27-41.

Aaker, J., Vohs, K.D. and Mogilner, C. (2010), "Nonprofits are seen as warm and for-profits as competent: firm stereotypes matter", *Journal of Consumer Research*, Vol. 37 No. 2, pp. 224-237.

Aaker, J.L. (1997), "Dimensions of brand personality", *Journal of Marketing Research*, Vol. 34 No. 3, pp. 347-356.

Alexander, G.M. (2003), "An evolutionary perspective of sex-typed toy preferences: pink, blue, and the brain", *Archives of Sexual Behavior*, Vol. 32 No. 1, pp. 7-14.

Andersson, M.B. (1994), *Sexual Selection*, Princeton University Press, NJ.

Barrett, L., Dunbar, R. and Lycett, J. (2002), *Human Evolutionary Psychology*, Palgrave, Basingstoke.

Batra, R., Lehmann, D.R. and Singh, D. (1993), "The brand personality component of brand goodwill: some antecedents and consequence", in Aaker, D. and Biel, A. (Eds), *Brand Equity and Advertising*, Lawrence Erlbaum Associates, Hillsdale, NY, pp. 83-96.

Björntorp, P. (1987), "Fat cell distribution and metabolism", *Annals of the New York Academy of Sciences*, Vol. 499 No. 1, pp. 66-72.

Blevins, J. (2004), *Evolutionary Phonology – The Emergence of Sound Patterns*, Cambridge University Press.

Buss, D. (1989), "Sex differences in human mate preferences: evolutionary hypotheses tested in 37 cultures", *Behavioral and Brain Science*, Vol. 12 No. 1, pp. 1-49.

Buss, D. (1994), *The Evolution of Desire: Strategies of Human Mating*, Basic Books, New York, NY.

Buss, D. (1995), "Evolutionary psychology: a new paradigm for psychological science", *Psychological Inquiry*, Vol. 6 No. 1, pp. 1-30.

Buss, D. (2005), *The Handbook of Evolutionary Psychology*, Wiley, New York, NY.

Buss, D. and Barnes, M. (1986), "Preferences in human mate selection", *Journal of Personality and Social Psychology*, Vol. 50 No. 3, pp. 559-570.

Buss, D. and Schmitt, D.P. (1993), "Sexual strategies theory: an evolutionary perspective on human mating", *Psychological Review*, Vol. 100 No. 2, pp. 204-232.

Christodoulides, G. and Chernatony, L.D. (2010), "Consumer-based brand equity conceptualization and measurement: a literature review", *International Journal of Research in Marketing*, Vol. 52 No. 1, pp. 43-66.

Cobb-Walgren, C.J., Ruble, C.A. and Donthu, N. (1995), "Brand equity, brand preference, and purchase intent", *Journal of Advertising*, Vol. 24 No. 3, pp. 25-40.

Colarelli, S.M. and Dettmann, J.R. (2003), "Intuitive evolutionary perspectives in marketing practices", *Psychology & Marketing*, Vol. 20 No. 9, pp. 837-865.

Croft, W. (2008), "Evolutionary linguistics", *Annual Review of Anthropology*, Vol. 37, pp. 219-234.

Cunningham, S.J. and Macrae, C.N. (2011), "The colour of gender stereotyping", *British Journal of Psychology*, Vol. 102 No. 3, pp. 598-614.

Darwin, C. (1874), *The Descent of Man, and Selection in Relation to Sex*, J. Murray, London.

Elliot, A.J. and Niesta, D. (2008), "Romantic red: red enhanced men's attraction to women", *Journal of Personality and Social Psychology*, Vol. 95 No. 5, pp. 1150-1164.

Etcoff, N. (2000), *Survival of the Prettiest – The Science of Beauty*, Anchor Books, New York, NY.

Fisher, E., Dunn, M. and Thompson, K.J. (2002), "Social comparison and body image: an investigation of body comparison processes using multidimensional scaling", *Journal of Social and Clinical Psychology*, Vol. 21 No. 5, pp. 566-579.

Fortney, S.M., Beckett, W.S., Carpenter, A.J., David, J., Drew, H., LaFrance, N.D., Rock, J.A., Tankersley, C.G. and Vroman, N.B. (1988), "Changes in plasma volume during bed rest:

effects of menstrual cycle and estrogen administration", *Journal of Applied Physiology*, Vol. 65 No. 2, pp. 525-533.

Fournier, S. (1998), "Consumers and their brands: developing relationship theory in consumer research", *Journal of Consumer Research*, Vol. 24 No. 4, pp. 343-353.

Foxall, G.R. (1993), "Consumer behavior as an evolutionary process", *European Journal of Marketing*, Vol. 27 No. 8, pp. 46-57.

Foxall, G.R. and James, V.K. (2003), "The behavioral ecology of brand choice: how and what do consumers maximize?", *Psychology & Marketing*, Vol. 20 No. 9, pp. 811-836.

Fugate, D.L. and Phillips, J. (2010), "Product gender perceptions and antecedents of product gender congruence", *Journal of Consumer Marketing*, Vol. 27 No. 3, pp. 251-261.

Furnham, A. and Radley, S. (1989), "Sex differences in the perception of male and female body shapes", *Personality and Individual Differences*, Vol. 10 No. 6, pp. 653-662.

Gangestad, S.W. and Scheyd, G.J. (2005), "The evolution of human physical attractiveness", *Annual Review of Anthropology*, Vol. 34 No. 1, pp. 523-548.

Gangestad, S.W. and Simpson, J.A. (2000), "The evolution of human mating: trade-offs and strategic pluralism", *Behavioral and Brain Sciences*, Vol. 23 No. 4, pp. 573-587.

Grammer, K., Fink, B., Moller, A.P. and Thornhill, R. (2003), "Darwinian aesthetics: sexual selection and the biology of beauty", *Biological Reviews*, Vol. 78 No. 3, pp. 385-407.

Grammer, K. and Thornhill, R. (1994), "Human (*homo sapiens*) facial attractiveness and sexual selection: the role of symmetry and averageness", *Journal of Comparative Psychology*, Vol. 108 No. 3, pp. 233-242.

Griskevicius, V., Ackerman, J.M. and Redden, J.P. (2012), "Why we buy: evolution, marketing, and consumer behavior", in Roberts, S.C. (Ed.), *Applied Evolutionary Psychology*, 1st ed., Oxford University Press, pp. 311-329.

Griskevicius, V., Goldstein, N.J., Mortensen, C.R., Sundie, J.M., Cialdini, R.B. and Kendrick, D.T. (2009), "Fear and loving in Las Vegas: evolution, emotion, and persuasion", *Journal of Marketing Research*, Vol. 46 No. 3, pp. 384-395.

Griskevicius, V. and Kenrick, D.T. (2013), "Fundamental motives: how evolutionary needs influence consumer behavior", *Journal of Consumer Psychology*, Vol. 23 No. 3, pp. 372-386.

Griskevicius, V., Shiota, M.N. and Nowlis, S.M. (2010), "The many shades of rose-colored glasses: an evolutionary approach to the influence of different positive emotions", *Journal of Consumer Research*, Vol. 37 No. 2, pp. 238-250.

Grohmann, B. (2009), "Gender dimensions of brand personality", *Journal of Marketing Research*, Vol. 46 No. 1, pp. 105-119.

Grohmann, B., Giese, J.L. and Parkman, I.D. (2012), "Using type font characteristics to communicate brand personality of new brands", *Journal of Brand Management*, Vol. 20 No. 5, pp. 389-403.

Henderson, P.J. and Cote, J.A. (1998), "Guidelines for selecting or modifying logos", *Journal of Marketing*, Vol. 62 No. 2, pp. 14-30.

Horvath, T. (1981), "Physical attractiveness: the influence of selected torso parameters", *Archives of Sexual Behavior*, Vol. 10 No. 1, pp. 21-24.

Jablonski, N.G. and Chaplin, G. (2000), "The evolution of human skin coloration", *Journal Human Evolution*, Vol. 39 No. 1, pp. 57-106.

Johnston, V.S., Hagel, R., Franklin, M., Fink, B. and Grammer, K. (2001), "Male facial attractiveness: evidence for hormone mediated adaptive design", *Evolution and Human Behavior*, Vol. 22 No. 4, pp. 251-267.

Jokela, M. (2009), "Physical attractiveness and reproductive success in humans: evidence from the late 20th century United States", *Evolution and Human Behavior*, Vol. 30 No. 5, pp. 342-350.

Kaplan, H.S. and Gangestad, S.W. (2005), "Life history theory and evolutionary psychology", in Buss, D.M. (Ed.), *The Handbook of Evolutionary Psychology*, Wiley, New York, NY, pp. 68-95.

Keller, K.L. (1993), "Conceptualizing, measuring, and managing customer-based brand equity", *Journal of Marketing*, Vol. 57 No. 1, pp. 1-22.

Kenrick, D.T., Neuberg, S.L., Griskevicius, V., Becker, D.V. and Schaller, M. (2010), "Goal-driven cognition and functional behavior: the fundamental-motives framework", *Current Directions in Psychological Science*, Vol. 19 No. 1, pp. 63-67.

Klink, R.R. (2000), "Creating brand names with meaning: the use of sound symbolism", *Marketing Letters*, Vol. 11 No. 1, pp. 5-20.

Klink, R.R. (2003), "Creating meaningful brands: the relationship between brand name and brand mark", *Marketing Letters*, Vol. 14 No. 3, pp. 134-157.

Labrecque, L.I. and Milne, G.R. (2012), "Exciting red and competent blue: the importance of color in marketing", *Journal of the Academy of Marketing Science*, Vol. 40 No. 5, pp. 711-727.

Lamberts, K. and Brockdorff, N. (1997), "Fast categorization of stimuli with multi-valued dimensions", *Memory & Cognition*, Vol. 4 No. 25, pp. 296-304.

Leuthesser, L., Chiranjeev, S.K. and Harich, K.R. (1995), "Brand equity: the halo effect measure", *European Journal of Marketing*, Vol. 29 No. 4, pp. 57-66.

Lieven, T., Herrmann, A., Landwehr, J.R. and van Tilburg, M. (2011), "Sex matters: the effect of brand gender on brand equity", in Ahluwalia, R., Chartrand, R.L. and Ratner, R.K. (Eds), *Advances in Consumer Research*, Vol. 39, Association for Consumer Research, Duluth, MN, p. 527.

Milner, L.M. and Fodness, D. (1996), "Product gender perceptions: the case of China", *International Marketing Review*, Vol. 13 No. 4, pp. 40-51.

Orth, U.R. and Malkewitz, K. (2008), "Holistic package design and consumer brand impressions", *Journal of Marketing*, Vol. 72 No. 3, pp. 64-81.

Pazda, A.D., Elliot, A.J. and Greitemeyer, T. (2012), "Sexy red: perceive sexual receptivity mediates the red-attraction relation in men viewing women", *Journal of Experimental Social Psychology*, Vol. 48 No. 3, pp. 787-790.

Peacock, I. (2005), *From Arial to Wide Latin*, BBC Radio, London, available at: www.bbc.co.uk/radio4/science/fromarialtowidelatin.shtml (accessed 3 April 2011).

Penton-Voak, I.S., Benedict, C.J., Anthony, C.L., Baker, S., Tiddeman, B.P., Burt, D.M. and Perrett, D.I. (2001), "Symmetry, sexual dimorphism in facial proportions and male facial attractiveness", *Proceedings of the Royal Society of London*, Vol. 268 No. 1476, pp. 1617-1623.

Perrett, D.I., Lee, K.J., Penton-Voak, I.A., Rowland, D., Yoshikawa, S., Burt, D.M., Henzi, S.P., Castles, D.L. and Akamatsu, S. (1998), "Effects of sexual dimorphism on facial attractiveness", *Nature*, Vol. 394 No. 8, pp. 884-887.

Picariello, M.L., Greenberg, D.N. and Pillemer, D.B. (1990), "Children's sex-related stereotyping of colors", *Child Development*, Vol. 61 No. 6, pp. 1453-1460.

Pomerleau, A., Bolduc, D., Malcuit, G. and Cossette, L. (1990), "Pink or blue: environmental gender stereotypes in the first two years of life", *Sex Roles*, Vol. 22 Nos 5/6, pp. 359-367.

Rhodes, G. (2006), "The evolutionary psychology of facial beauty", *Annual Review of Psychology*, Vol. 57, pp. 199-226.

Rhodes, G., Chan, J., Zebrowitz, L.A. and Simmons, L.W. (2003), "Does sexual dimorphism in human faces signal health?", *Proceedings of the Royal Society of London*, Vol. 270 No. S1, pp. 93-95.

Ringle, C.M., Wende, S. and Will, S. (2005), "SmartPLS 2.0 (M3) Beta", available at: www.smartpls.de

Russell, R. (2009), "A sex difference in facial contrast and its exaggeration by cosmetics", *Perception*, Vol. 38 No. 8, pp. 1211-1219.

Saad, G. (2013), "Evolutionary consumption", *Journal of Consumer Psychology*, Vol. 23 No. 3, pp. 351-371.

Saad, G. and Gill, T. (2000), "Applications of evolutionary psychology in marketing", *Psychology & Marketing*, Vol. 17 No. 12, pp. 1005-1034.

Salzer-Mörlin, A. and Strannegard, L. (2004), "Silence of the brands", *European Journal of Marketing*, Vol. 38 Nos 1/2, pp. 224-238.

Schmitt, B.H. and Simonson, A. (1997), *Marketing Aesthetics: The Strategic Management of Brands, Identity, and Image*, Simon and Schuster, New York, NY.

Shaikh, A.D., Chaparro, B.S. and Fox, D. (2006), "Perception on fonts: perceived personality traits and uses", *Usability News*, Vol. 8 No. 1, pp. 1-6.

Singh, D. (1993), "Adaptive significance of female physical attractiveness: role of waist-to-hip ratio", *Journal of Personality and Social Psychology*, Vol. 65 No. 2, pp. 293-307.

Singh, D. and Young, R. (1995), "Body weight, waist-to-hip ratio, breasts, and hips: role in judgments of female attractiveness and desirability for relationships", *Ethology and Sociobiology*, Vol. 16 No. 6, pp. 483-507.

Solomon, K.O., Medin, D.L. and Lynch, E. (1999), "Concepts do more than categorize", *Trends in Cognitive Science*, Vol. 3 No. 1, pp. 99-105.

Stephen, I.D., Smith, M.J.L., Stirrat, M.R. and Perrett, D.I. (2009), "Facial skin coloration affects perceived health of human faces", *International Journal of Primatology*, Vol. 30 No. 6, pp. 854-857.

Symons, D. (1979), *The Evolution of Human Sexuality*, Oxford University Press, New York, NY.

Uzzel, D. and Horne, N. (2006), "The influence of biological sex, sexuality and gender role on interpersonal distance", *British Journal of Social Psychology*, Vol. 45 No. 3, pp. 579-597.

Van den Berghe, P.L. and Frost, P. (1986), "Skin color preferences, sexual dimorphism and sexual selection: a case of gene-culture co-evolution?", *Ethnic and Racial Studies*, Vol. 9 No. 1, pp. 87-113.

Walsh, M.F., Winterich, K.P. and Mittal, V. (2010), "Do logo redesigns help or hurt your brand? The role of brand commitment", *Journal of Product and Brand Marketing*, Vol. 19 No. 2, pp. 76-84.

Walsh, M.F., Winterich, K.P. and Mittal, V. (2011), "How re-designing angular logos to be rounded shapes brand attitude: consumer brand commitment and self-construal", *Journal of Consumer Marketing*, Vol. 28 No. 6, pp. 438-447.

Wentzel, D. (2009), "The effect of employee behavior on brand personality impressions and brand attitudes", *Journal of the Academy of Marketing Science*, Vol. 37 No. 3, pp. 359-374.

Yoo, B., Donthu, N. and Lee, S. (2000), "An examination of selected marketing mix elements and brand equity", *Journal of the Academy of Marketing Science*, Vol. 28 No. 2, pp. 195-211.

Yorkston, E. and Menon, G. (2004), "A sound idea: phonetic effects of brand names on consumer judgments", *Journal of Consumer Research*, Vol. 31 No. 1, pp. 43-51.

Further reading

Scheib, J.E., Gangestad, S.W. and Thornhill, R. (1999), "Facial attractiveness, symmetry and cues of good genes", *Proceedings of the Royal Society of London*, Vol. 266 No. 1431, pp. 1913-1917.

About the authors

Theo Lieven has a degree in management and economics and received his PhD from the University of St. Gallen where he is now a post-doctoral research fellow at the Center for Customer Insight.

Bianca Grohmann holds a PhD in marketing from Washington State University and is an Associate Professor of Marketing at the John Molson School of Business (Concordia University) in Montreal. Her research focuses on branding, scale development and sensory marketing. Bianca Grohmann is the corresponding author and can be contacted at: bianca.grohmann@concordia.ca

Andreas Herrmann studied Business Administration, Law and Economics at the Koblenz School of Corporate. In 1991, he got a PhD in Marketing at Koblenz School of Corporate Management. From 1993 to 1996, he was an Assistant Professor of Marketing at University Mannheim. In 1997, he became the Chair Professor of Marketing at University Mainz. In 2002, he moved to the University of St. Gallen and became the Director of the Institute for Media and Communications Management. Since 2009, he has been the Director of the Center for Customer Insight at University of St. Gallen. His research interest is consumer decision-making, pricing and product development.

Jan R. Landwehr is a Professor of Marketing at Goethe-University Frankfurt (Germany). He holds a diploma degree in psychology from the University of Wuerzburg, Germany, and a PhD in marketing from the University of St. Gallen, Switzerland. His research focuses on product design/aesthetics, consumer preferences and sustainable consumer behavior. Jan R. Landwehr's research has been published or is forthcoming in journals such as *Marketing Science*, *Journal of Marketing*, *Psychology & Marketing*, *Marketing Letters* and in a number of proceedings (e.g., ACR, AMA, EMAC, ICIS).

Miriam van Tilburg is a PhD student and a research assistant at the Center for Customer Insight at the University of St. Gallen in Switzerland since 2010. She graduated as Master of Business Administration at the University of Bayreuth Germany, with the specializations of Marketing and International Management.

This article has been cited by:

1. AzarSalim L., Salim L. Azar, AiméIsabelle, Isabelle Aimé, UlrichIsabelle, Isabelle Ulrich. 2018. Brand gender-bending. *European Journal of Marketing* **52**:7/8, 1598-1624. [Abstract] [Full Text] [PDF]
2. Nazuk Sharma, Sajeev Varki. 2018. Active White Space (AWS) in Logo Designs: Effects on Logo Evaluations and Brand Communication. *Journal of Advertising* **47**:3, 270-281. [Crossref]
3. Joana César Machado, Leonor Vacas-de-Carvalho, Salim L. Azar, Ana Raquel André, Barbara Pires dos Santos. 2018. Brand gender and consumer-based brand equity on Facebook: The mediating role of consumer-brand engagement and brand love. *Journal of Business Research* . [Crossref]
4. UlrichIsabelle, Isabelle Ulrich, Tissier-DesbordesElisabeth, Elisabeth Tissier-Desbordes. 2018. "A feminine brand? Never!" Brands as gender threats for "resistant" masculinities. *Qualitative Market Research: An International Journal* **21**:3, 274-295. [Abstract] [Full Text] [PDF]
5. Angela Fraser. The influence of package design on consumer purchase intent 225-249. [Crossref]
6. SchnurrBenedikt, Benedikt Schnurr. 2018. What's best for whom? The effect of product gender depends on positioning. *European Journal of Marketing* **52**:1/2, 367-391. [Abstract] [Full Text] [PDF]
7. Theo Lieven. 195. [Crossref]
8. Theo Lieven. 143. [Crossref]
9. Theo Lieven. 129. [Crossref]
10. Theo Lieven. 85. [Crossref]
11. Benedikt Schnurr. 2017. The impact of atypical product design on consumer product and brand perception. *Journal of Brand Management* **24**:6, 609-621. [Crossref]
12. HessAlexandra Claudia, Alexandra Claudia Hess, MelnykValentyna, Valentyna Melnyk. 2016. Pink or blue? The impact of gender cues on brand perceptions. *European Journal of Marketing* **50**:9/10, 1550-1574. [Abstract] [Full Text] [PDF]
13. Theo Lieven. 2016. Customers' choice of a salesperson during the initial sales encounter. *Journal of Retailing and Consumer Services* **32**, 109-116. [Crossref]
14. Claudio Alvarez, Susan Fournier. 2016. Consumers' relationships with brands. *Current Opinion in Psychology* **10**, 129-135. [Crossref]
15. Theo Lieven, Christian Hildebrand. 2016. The impact of brand gender on brand equity. *International Marketing Review* **33**:2, 178-195. [Abstract] [Full Text] [PDF]
16. Miriam van Tilburg, Theo Lieven, Andreas Herrmann, Claudia Townsend. 2015. Beyond "Pink It and Shrink It" Perceived Product Gender, Aesthetics, and Product Evaluation. *Psychology & Marketing* **32**:4, 422-437. [Crossref]