Measuring the Perceived Boundary between Consumers and Brands

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Abstract

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This study develops and validates a measure that captures the perceived psychological boundary between consumers and brands, which is defined as consumers' perceived demarcation between themselves and a brand. This construct captures both consumers' separateness from and relatedness to a brand. A seven-point Venn diagram, which has been proved effective and valid in interpersonal relationship and other self-expansion studies, is applied to measure consumers' perceived boundary with various brands. The reliability and validity of the boundary measure are assessed with 44 brands. This study finds that consumers' boundary with brands is significantly correlated with brand-related consumer responses. The discriminant validity and convergent validity between the boundary and self-brand connection, self-brand attachment, and BESC scales are validated. Masculinity incongruence and femininity incongruence between consumers and brands are shown to have a significantly negative relationship with boundary, thus supporting the concurrent validity. In a nomological network, a significant mediation effect of boundary on the relationship between brand-consumer gender identity incongruence and brand-related consumer responses is observed.

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Introduction

The sense of autonomy (Laing, 1965) is viewed as an important feature of the sense of mental self (Strawson, 1997), which enable the individuals to experience oneself as unique and autonomous from others. To enhance their ability to achieve personal goals, individuals try to expand themselves psychologically or physically to acquire resources (Bandura, 1977; Deci & Ryan, 2000), which is defined as self-expansion (Aron & Aron, 1986). One of the most important ways people expand themselves is to include close others in their self-concept (Aron et al., 1992). Self-expansion theories posit that close relationships strongly affect individuals' self-expansion behaviors, such as resource allocation (Aron et al., 1991). To measure the relationship between self and others, many social psychologists have applied a Venn diagram to examine the closeness between the self and various others. For example, Aron, Aron, and Smollan (1992) developed an inclusion of other in the self scale (IOS), which has been used to explore friendship and romantic relationships (Lin & Rusbult, 1995) and cooperative behaviors (De Cremer & Stouten, 2003). The experienced self and other scale (E-SOS) was developed by Shvil, Krauss, and Midlarsky (2013) to examine the relationship between individuals' perception of self and their perception of all kinds of potential other entities, such as negative emotions, view of self, persons, objects, and family.

Interpersonal relationship theories have inspired many consumer psychologists to study consumer-brand relationships. When consumers treat a brand as a person or interact with a humanized brand (e.g., Aggarwal & McGill, 2012; Kim & Kramer, 2015), they perceive the brand as having human features (e.g., Haley & Fessler, 2015), human qualities (e.g., Epley & Waytz, 2010a, 2010b), or human identity (e.g., Grohmann, 2009). As in interpersonal relationships, individuals interweave and connect to brands (e.g., Liu, Li, Mizerski, & Soh,

2012), and build a relationship with brands (e.g., Fournier, 1998; Long, Yoon, & Friedman, 2015) to acquire more resources to achieve their personal goals. In the field of branding and consumer-brand relationships, the *brand engagement in self-concept scale* (BESC) was developed by Sprott, Czellar, and Spangenberg (2009) to study how individuals expand their self-concepts through brands or how brands are incorporated in one's self-concept.

Both social psychologists and consumer psychologists focus on the perceived relatedness of self and others (including brands) but neglect the perceived separateness of self and others. However, the sense of autonomy or the sense of mental self (Laing, 1965; Strawson, 1997, 1999) emphasizes not only the relatedness and connection to others, but also the separateness and uniqueness from others. If an individual does not feel autonomous, he or she can neither perceive separateness from nor relatedness to others. This study, therefore, focuses on the perception of separateness in the relationship between self and brands, while also considering relatedness. More specifically, it investigates the extent to which consumers perceive a psychological boundary with regard to various brands. This study uses the self-brand connection scale, self-brand attachment scale, and various previously validated measures of brand-related consumer responses to explore the validity of a measure of the perceived boundary between consumers and brands.

This study first reviews the literature on consumer-brand relationships, self-expansion, and interpersonal boundary to construct the definition of consumer-brand boundary. The boundary between consumers and brands is then assessed with a 7-point Venn diagram consisting of seven pairs of circles. In the first study, the reliability of the boundary measure is examined with forty-four existing brands of consumer products and services. A correlation analysis explores the relationship between boundary and brand-related consumer responses (e.g.,

brand trust, brand affect, brand attitude, brand preference, purchase intention, attitudinal brand loyalty, behavioral brand loyalty, likelihood of recommendation, WOM), and a discriminant validity and convergent validity of boundary and self-brand connection, self-brand attachment, and BESC scales was conducted. This study also examined to what extent femininity and masculinity incongruence between consumers and brands can predict perceived boundary. Study 2 investigates whether anthropomorphism decreases consumers' boundary with brands and whether masculinity and femininity incongruence consistently affect the boundary and brand-related responses. The mediating effect of boundary on the relationship between masculinity/femininity incongruence and brand-related consumer responses was also examined. Finally, the theoretical contribution and managerial implications, as well as limitations of this research and potential future research are discussed.

Literature Review

Brand Relationship

The metaphor of human relationships has inspired many consumer psychologists to study how the consumer-brand relationship resembles the interpersonal relationship (Blackston, 1992; Fournier, 1998). When individuals interact with a humanized object or treats an object as a person (Aggarwal & McGill, 2007, 2012; Kim & Kramer, 2015), he or she perceives brands as having human-like features (Haley & Fessler, 2015; Kim & McGill, 2011; Hur, Koo, & Hofmann, 2015; Kim, Chen, & Zhang, 2016), qualities (e.g., Epley & Waytz, 2010; Weiss & Johar, 2013; Puzakova et al., 2013; Waytz et al., 2014) and capacities (e.g., Kwak, Puzakova, & Rocereto, 2015; Chen, Nelson, & Hsu, 2015); consumers connect to brands (e.g., Chaplin & John, 2005; Fennis & Pruyn, 2007; Grohmann, 2009; Liu, Li, Mizerski, & Soh, 2012) and build relationships with brands (Fournier, 1998, 2009; Thomson, et al., 2005; Aggarwal & McGill,

2012; Long, Yoon, & Friedman, 2015), as brands are imbued with human intentions and feelings (Waytz, Cacioppo, et al., 2010; Waytz, Epley, et al., 2010).

Consumer-brand relationship can be characterized by positive consumer responses, such as brand attachment (Park et al., 2010, 2013a, 2013b; Thomson, MacInnis, & Park, 2005; Debenedetti, Oppewal, & Arsel, 2013), brand connection (e.g., Shimp & Madden, 1988), brand love (Park et al., 2013a, 2013b), and brand affection (Albert, Merunka, & Valette-Florence, 2008); negative responses, such as brand aversion (Fournier, 1998, 2009; Wiggin & Yalch, 2015) and brand betrayal (Gregoire & Fisher, 2008; Johnson, Matear & Thomson, 2010); or ambivalent responses, such as approach-avoidance conflict (MacInnis, Deborah, & Folkes, 2017). Power balance differences (Fournier & Alvarez, 2012; Kim & Kramer, 2015; Miller, Fournier, & Allen, 2012), individual factors (e.g., loneliness; Long, 2015), or brand personality (Aaker, Fournier, & Brasel, 2004; Smit, Bronner, & Tolboom, 2007; Grohmann, 2009) give rise to different types of consumer-brand relationships.

There are two main concepts in the field of brand relationship, self-brand attachment and self-brand connection. Different from brand love (Carroll & Ahuvia, 2006; Batra, Ahuvia, & Bagozzi, 2012; Park et al., 2013a, 2013b), *brand attachment*, which is described as the strength of bond, is related with high brand-self closeness and high brand prominence (Park et al., 2010). It predicts consumers' pro-brand behaviors, such as the willingness to invest (Thomson et al., 2005; Orth, Limon, & Rose, 2010), brand loyalty (Park et al., 2010, 2013a), brand advocacy, and desires to be part of brand communities (Schau, Muniz & Arnould, 2009). *Brand-self connections* are defined from different perspectives, such as identity resonance (Escalas & Bettman, 2003, 2005), goal resonance (Fournier, 1998; Keller, 2001), brand-self closeness, and brand-self overlap (Park et al., 2010, 2013a). In the perspective of self-concept and self-identity,

some researchers argue that consumers include brands as part of the self (Belk, 1988) and that brands are engaged in consumers' self-concept (Sprott, Czellar, & Spangenberg, 2009).

The antecedences of brand attachment and self-brand connection are sociality motivation, such as self-esteem, social exclusion (Dommer et al., 2013), fear (Dunn & Hoegg, 2014), and loneliness (Pieters, 2013); effectance motivation, which means that a brand can enable, entice, and enrich the self (Park et al., 2013a; Proksch, Orth, and Cornwell, 2015); their combination (e.g., celebrities; Thomson, 2006); and brand personality and self-concept congruity (e.g., Aaker et al., 2004; Grohmann, 2009; Orth et al., 2010; Ghuman et al., 2015).

Overall, self-concept and self-identity influence what kind of consumer-brand relationships are formed and how consumers interact with brands.

Self-expansion

A sense of mental self was first proposed by Strawson (1997), based on a sense of autonomy (Laing, 1965). According to theories of the self, individuals start to realize that they are separate from others when they realize mental representations are unobservable by others (Strawson, 1997) and they have the capacity to experience oneself as autonomous (Laing, 1965). People expand themselves psychologically or physically to enhance their ability to achieve personal goals, which is defined as *self-expansion* (Aron & Aron, 1986). Exploration, effectance, curiosity, competence, and self-improvement are described as the central human motives of the desire to expand the self, which individuals acquire resources and enhance ability (Bandura, 1977; Deci & Ryan, 2000). Self-expansion theories propose that one of the most important ways people expand themselves is to include close others in their self-concept (Aron et al., 1992) and that close relationships strongly affect people's resource allocation decisions (Aron et al., 1991).

Pipp, Shaver, Jennings, Lamborn, and Fischer (1985) were the first to use Venn diagrams to measure interpersonal closeness. The *Inclusion of Other in the Self* (IOS) scale developed by Aron, Aron, and Smollan (1992) is widely used to study romantic and friend relationships (Aron & Aron, 1986; Lin & Rusbult, 1995), cultural differences in individualism and collectivism (Li & Aksoy, 2001), and cooperative behaviors (De Cremer & Stouten, 2003). Shvil, Krauss, and Midlarsky (2013) designed the *Experienced Self and Other* (E-SOS) scale to measure the relationship between one's perception of self and one's perception of all kinds of potential other people or other entities. In their study, a four-point Venn diagram was used to assess the relationship between an individual's self and negative emotion (e.g., sadness, stress, anxiety), view of self (e.g., optimism, self-control, physical body, fantasies), persons (e.g., acquaintances, class friends, and those over whom I have power), objects (e.g., drugs, alcohol), and family (e.g., mother, father, sibling). An exploratory factor analysis yielded a five-factor solution: the experience of positive sensation, the experience of challenges, the experience of temptations, the experience of a higher power, and the experience of family.

In the field of brand and brand relationship, the *brand engagement in self-concept* scale (BESC; Sprott, Czellar, & Spangenberg, 2009) touches on the theories of self and self-expansion and uses a Likert-type measure. While no other research in marketing uses Venn diagrams to capture the relationship between consumers and brands, the successful practices in the social and psychological field lay a solid foundation of its potential practice in the consumer and brand relationship. This research, therefore, develops a measure of perceived separateness or boundary between consumers and an individual brand by using Venn diagrams. To develop and validate this measure , this research relies on the context of perceived congruence between the consumers' and the brands' gender, although the measure is of general nature and could be applied to consumer-brand boundaries in other contexts.

Gender aspect of self. Through lifelong development, individuals learn about social norms and expectations regarding gender traits, and about how men and women should behave (Eagly, 2013; Cross & Madson, 1997; Wood, Christensen, Hebl, & Rothgerber, 1997; Deaux & Major, 1987). Much research is devoted to how consumers' gender identity affects behaviors (Palan, 2001), such as product choice (Funk & Ndubisi, 2006; Neale, Robbie, & Martin, 2016), eco-friendly behavior (Brough et al., 2016), consumption of advertising (Hogg & Garrow, 2003; Feiereisen, Broderick, & Douglas, 2009), brand-related behaviors (Grohmann, 2009), and information search behaviors (Ramkissoon & Nunkoo, 2012). This research focuses on consumers' perceptions of the incongruence between the consumer's own and the brand's masculinity and femininity (i.e., masculinity and femininity incongruence between brands and consumers), because of the importance of gender identity on an individual's whole self-identity.

Boundary

As mentioned earlier, the sense of mental self is viewed as a sense of autonomy (Laing, 1965; Strawson, 1997, 1999), the capacity to experience oneself as unique and autonomous from others. Previous research suggests that neither one's separateness from nor one's relatedness to others can be experienced by an individual who does not feel autonomous. However, most researchers focus on relatedness while ignoring perceived separateness from the self. For example, while there exists an *inclusion of other in the self scale* (Aron, Aron, & Smollan, 1992), the exclusion of others from the self has not been studied.

Psychological concepts such as the boundary of mind, personal boundary, or psychological boundary may provide some insights to interpret the interpersonal or consumer-brand relationships from a perspective of separateness. Hartmann and his colleagues (1991, 1998) developed a boundary questionnaire that consists of 145 five-point scales covering 12

areas based on their research on life-long nightmares. They define thin versus thick boundaries as the boundary between any two entities, processes, or functions in the mind. The connection (thinness) and separation (thickness) amongst entities, such as id, ego, superego; feelings, thoughts, and memories; or different processing units, can be regarded as existing in separate but apparently connected units (Hartmann, 1984). The dimensions of the boundary questionnaire cover many aspects of personality, mental states, cognitive styles, and personal opinions about organizations, groups, nations, truth, and beauty. Psychology researchers (e.g., Zborowski et al., 2003; Beaulieu-Prevost & Zadra, 2007) conducted their research based on the definition of the boundary of minds by Hartmann, Elkin, and Garg (1991). Although their focus of boundary is mostly in the domain of psychotherapy, their definition of thick versus thin boundaries between any two entities provides a fundamental notion of what boundary is. Richmond (1997) proposed that boundary marks a limit, which is created by individuals to identify a safe and permissible way for others to behave. Brown (2006) defined it as "the internal and unconscious demarcation points or lines that define where *'I'* begin and *'other'* end" (p. 44) and proposed four types of boundary: soft, spongy, rigid, and flexible. Both Richmond (1997) and Brown (2006) considered the importance of personal space, which is conceptually closer to the definition of personal boundary. Although Brown (2006) mentioned two categories of boundaries (physical and psychological), her proposition of four types of boundaries is not based on these two categories, and no measurement scale was developed to support them.

Construct Definition

Based on the definitions of boundary and the theories of self, this research adopts the boundary concept defined as "where I begin and other ends" by Brown (2006, p. 44). This definition includes the idea of self and other proposed in self-expansion theory, while also

considering where various other entities end in relation to the self. In this research, the *consumer-brand boundary* is defined as the perceived demarcation between where the consumers' self begins and a specific brand ends. This construct is measured by the means of Venn diagrams, which have been used and validated in studies of interpersonal relationship (e.g., *Inclusion of Other in the Self* scale; Aron, Aron and Smollan, 1992) and self-object relationship (e.g., *the Experienced Self and Other* scale; Shvil, Krauss, and Midlarsky, 2013). Both self-expansion theories and the boundary concept emphasize the relationship between self (or *"I"*) and others. This conceptual relation between self-expansion and boundary theories and the successful practices of using Venn diagrams to study the relationship between two entities provide a solid foundation for application in the context of consumer-brand relationships.

This study uses a 7-point Venn diagram to examine the consumer-brand boundary, which is defined as the perceived demarcation lines between the consumer's self and other brands.

Methodology Overview

This research consists of two studies that report the development and initial validation of a consumer-brand boundary measure and demonstrate its role in consumers' responses to brands. Study 1 includes 44 existing brands and provides initial evidence for the reliability of the boundary measure. It also maps the correlation between boundary and brand-related variables (e.g., brand awareness, brand trust, brand affect, preference). Study 1 also assesses the discriminant validity and convergent validity between boundary and self-brand connection (Escalas & Bettman, 2003), self-brand attachment (Thomson, MacInnis, & Park, 2005), and brand engagement in self-concept (BESC; Sprott, Czellar, & Spangenberg, 2009). Furthermore, Study 1 examines the concurrent validity of the boundary measure by exploring the relationship between boundary and gender identity incongruence between consumers and brands.

Study 2 assesses the nomological validity of the boundary measure by exploring (1) if anthropomorphizing a brand's package design can decrease the perceived boundary between consumers and the brand, and (2) the mediation effect of boundary on the relationship between gender identity incongruence and brand-related responses.

Study1

The development of the boundary measure consists of construct definition (which is addressed in the literature review), reliability tests, scale validation (discriminant, convergent, and concurrent validities), and nomological validation (in study 2). First, the reliability of the measure was assessed with 44 brands that are symbolic, utilitarian, or both. The correlation between boundary and brand-related consumer responses was also established. Secondly, discriminant and convergent validities between boundary and self-brand connection (Escalas & Bettman, 2003), self-brand attachment (Thomson, MacInnis, & Park, 2005), and brand engagement in self-concept (BESC, Sprott, Czellar, & Spangenberg, 2009) were assessed. Thirdly, the concurrent validity of the boundary measure was examined by studying the relationship between boundary and gender-identity incongruence between consumers and brands.

Participants

Four hundred and sixty-one participants were recruited using Amazon's Mechanical Turk (MTurk) and four hundred and fifty-one responses (51.2% male; M_{age} = 40.54; SD = 12.67) were valid. Prior decision-making research (e.g., Goodman et al., 2013) has provided evidence that MTurk workers produce reliable results by replicating previous findings. MTurk workers were rewarded (1.5 USD) for their time (15 to 20 minutes) to complete the questionnaire. All participants were from the United States or Canada. Their approval rates were greater than .95 and the number of HITs approved was greater than 50. Preliminary data cleaning removed

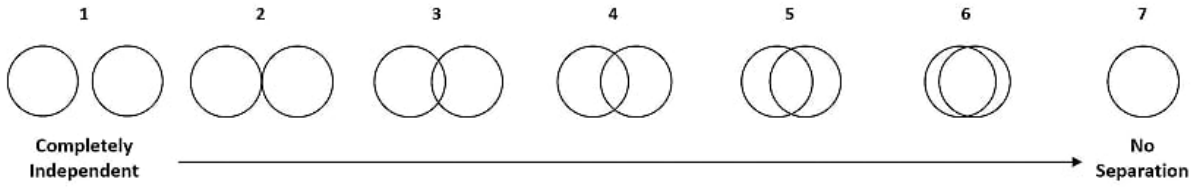
eleven responses based on incorrect answers to an attention check question. The MTurk platform was also used for the data collection of study 2.

Procedure

Participants were asked to read the following instruction: *"Below there are 7 pairs of circles. Each pair represents a kind of relationship between yourself and a brand, which means that one circle represents you and another circle represents a brand. You will be asked to choose the one pair of circles that best represents the relationship between yourself and the brand. The diagram at the very left means that you are completely independent of this brand, while the diagram on the very right means that there is no separation between yourself and the brand, it feels as if both of you are one."* Next, all participants completed practice questions to better understand how to use the 7-point Venn diagram boundary measure (see Figure 1). The practice block included six brands represented by their logos (Google, Amazon, Coca-cola, WWF, Walmart, and Government Canada). Participants were then randomly assigned to two brands out of the forty-four brands (see Appendix 1), which included utilitarian (e.g., toilet paper, stomach medicine), symbolic (e.g., jeans, cosmetics), and symbolic-utilitarian brands (e.g., automobiles, shoes). These brands had at least 50% familiarity rating and had been used as target brands in previous research on brand gender (Grohmann, 2009). The participants were then asked to complete control variables (awareness, affordability), masculine brand personality and feminine brand personality (MBP & FBP; Grohmann, 2009), self-brand connection (Escalas & Bettman, 2003), self-brand attachment (Thomson, MacInnis, & Park, 2005), and other brand-related variables (brand trust, brand affect, global attitude, preference, purchase intention, attitudinal brand loyalty, behavioral brand loyalty, likelihood of recommendation, word-of-mouth; see Table 1). Participants then completed the brand engagement in self-concept scale (BESC; Sprott,

Czellar, & Spangenberg, 2009) and personal gender identity scale (FTI & MTI; Stern, Barak, & Gould, 1987). Finally, an attention check question and demographic questions were asked. All scales related to one brand were randomized, as were the items within each scale.

Figure 1: Boundary Measure with a 7-point Venn Diagram



Measures & Methods

Prior research used a four-anchor diagram or nine-anchor Venn diagram scale. In this research, we use a seven-point Venn diagram to measure the boundary between consumers and brands (anchored 1= "Completely Independent" to 7= "No Separation"). Of each of the 7 pairs of circles, one circle represents consumers' self, and the other the brand. The left anchor (labelled 1) means that the self and brand are completely independent and separated, the second (labelled 2) means that the self has contact with the brand but does not connect or overlap, and the extreme right pair (labelled 7) represents a relationship that there is no separation between self of consumers and brands.

Awareness, affordability, and purchase history of the brands were measured on one- or two-item, 7-point Likert scales. Table 1 listed all the measures used in study 1 along with coefficient alpha: brand trust (Cronbach's Alpha =. 86), brand affect (Cronbach's Alpha = .95), global attitude (Cronbach's Alpha = .97), brand preference (Cronbach's Alpha = .97), purchase intention (Cronbach's Alpha = .98), attitudinal brand loyalty (Cronbach's Alpha = .90), behavioral brand loyalty (Cronbach's Alpha = .94), likelihood of recommendation (Cronbach's

Alpha = .98), word-of-mouth (Cronbach's Alpha = .94), MBP (Cronbach's Alpha = .89), FBP (Cronbach's Alpha = .93), self-brand connection (Cronbach's Alpha = .97), self-brand attachment (Cronbach's Alpha = .98), BESC (Cronbach's Alpha = .92), MTI (Cronbach's Alpha = .91), and FTI (Cronbach's Alpha = .94).

A principal component analysis was conducted for each of the multi-time scales to ensure that all the items loaded on one principal factor (see Appendix 2). After confirming that all the items loaded on only one principal factor and had high reliability, an average score was calculated for each scale. A Pearson correlation analysis was then applied to explore the relationship between boundary and theoretically related variables.

Results

Correlation Analysis

The results of the principal factor analysis confirmed that only one factor was extracted for each scale included in this study, and all the items loaded on the principal factor (see Appendix 2). Coefficient alpha of all variables amounted to around .90 (see Table 1), which confirmed scale reliability.

The correlation between the boundary (see Appendix 1 for mean boundary scores by brand) and all other scales was significant (see Table 2). Awareness (Pearson correlation r = .243, $p < .001$) and affordability (Pearson correlation r = .241, $p < .001$) had a minor positive correlation with boundary. Purchase history had a moderately positive correlation (Pearson correlation r = .426, $p < .001$) with boundary. In terms of other brand-related consumer responses, all had significant and moderate (e.g., brand trust, Pearson correlation r = .49, p<.001; brand preference, Pearson correlation r = .45, p <.001) or strong correlations (e.g., attitudinal brand loyalty, Pearson correlation r = .65, $p < .001$; WOM, Pearson correlation r = .63, $p < .001$)

Table 1: Brand-related Consumer Responses Measured (7-point Likert Scale)

Measure	Anchors	Source	Cronbach's Alpha
Awareness	Strongly disagree/Strongly agree		0.92
I know this brand.			
I'm familiar with this brand.			
Affordability	Strongly disagree/Strongly agree		
I can afford the product/service of this brand.			
Purchase history			
I purchased this product/service of this brand before.			
Brand Trust	Strongly disagree/Strongly agree	Chaudhuri and Holbrook (2001)	0.86
I trust this brand.			
I rely on this brand.			
This is an honest brand.			
This brand is safe.			
Brand Affect	Strongly disagree/Strongly agree	Chaudhuri and Holbrook (2001)	0.95
I feel good when I use this brand.			
This brand makes me happy.			
This brand gives me pleasure.			
Attitude Toward the Brand	Negative/positive Dislike/like Favorable/unfavorable		0.97
What is your global evaluation of the brand?			
Brand Preference	Very poor/very good	Sirgy et al. (1997)	0.97
Indicate your degree of liking or preference for [brand] relative to other brands in the same product category.	Very unsatisfactory/very satisfactory Very unfavorable/very favorable		
Purchase Intention	Unlikely/likely Improbable/probable		0.98
How likely are you to purchase this brand in the near future?			
Attitudinal Brand Loyalty	Strongly disagree/strongly agree	Chaudhuri and Holbrook (2001)	0.90
I am committed to this brand.			
I would be willing to pay a higher price for this brand over other brands			
Behavioral Brand Loyalty	Strongly disagree/strongly agree	Chaudhuri and Holbrook (2001)	0.94
I will buy this brand next time I buy (the product category).			
I intend to keep purchasing this brand.			
Likelihood of Recommendation	Unlikely/likely Improbable/probable		0.98

How likely are you to recommend this brand to a friend?			
Word-of-Mouth Communication I recommend to other people that the brand should be theirs as soon as possible. I recommend the brand to other people. I talked directly about my experience with this brand with them.	Strongly disagree/strongly agree	Kim, Han, and Park (2001)	0.94
MBP Adventurous/ Aggressive/ Brave/ Daring/ Dominant/ Study	Not at all descriptive/ Extremely descriptive	Grohmann, 2009	0.89
FBP Expresses tender feelings / fragile / graceful/ sensitive/ sweet/ tender			0.93
Self-brand connection This brand reflects who I am. I can identify with this brand. I feel a personal connection to this brand. I (can) use this brand to communicate who I am to other people. I think this brand (could) help(s) me become the type of person I want to be. I consider this brand to be "me" (it reflects who I consider myself to be or the way that I want to present myself to others) This brand suits me well.	Strongly disagree/ Strongly agree	Escalas & Bettman, 2003	0.97
Self-brand attachment Affectionate/ Friendly/ Loved/ Peaceful/ Passionate/ Delighted/ Captivated/ Connected/ Bonded/ Attached	Not at all/ Very well	Thomson, MacInnis, & Park, 2005	0.98
Brand engagement in self-concept (BESC) I have a special bond with the brands that I like. I consider my favorite brands to be a part of myself. I often feel a personal connection between my brands and me. Part of me is defined by important brands in my life. I feel as if I have a close personal connection with the brands I most prefer. I can identify with important brands in my life. There are links between the brands that I prefer and how I view myself. My favorite brands are an important indication of who I am.	Strongly disagree/ Strongly agree	Sprott, Czellar, & Spangenberg, 2009	0.92
MTI Have leadership abilities/ Willing to take a stand/ Ambitious/ Competitive/ Dominant/ Assertive/ A strong personality/ Forceful/ Act like a leader/ Aggressive	Never or almost never true/ Always or almost always true	Stern, Barak, & Gould, 1987	0.91
FTI Affectionate/ Loyal/ Tender/ Sensitive to others' needs/ Sympathetic/ Compassionate/ Eager to soothe hurt feelings/ Understanding/ Gentle/ Warm			0.94

with boundary. (See Appendix 3 for the full correlation matrix.) This result indicates that the consumer's relatedness with brands is closely related with their affection and loyalty to the brands rather than simple awareness and affordability.

Table 2: Correlations between Boundary and Brand-related Responses

		Awareness	*Affordability*	*Purchase history*	*Brand trust*	*Brand affect*	*Global attitude*
Boundary	Pearson correlation	.243**	.241**	.426**	.491**	.579**	.401**
		Brand preference	*Purchase intention*	*Attitudinal brand loyalty*	*Behavioral brand loyalty*	*Likelihood of recommendation*	*Word-of-mouth*
Boundary	Pearson correlation	.447**	.553**	.646**	.587**	.506**	.638**
	n	901	901	901	901	901	901

**. $p < .001$.

Discriminant Validity & Convergent Validity

Pearson correlation analysis was also applied to verify discriminant validity and convergent validity of boundary and the self-brand connection (Cronbach's Alpha = .97), self-brand attachment (Cronbach's Alpha = .98), and BESC scales (Cronbach's Alpha = .92).

The discriminant and convergent validity between boundary and all three constructs were evaluated based on correlations (see Table 3). There was a significant and moderate correlation between boundary and self-brand connection (Pearson correlation $r = .68$, $p < .001$) and self-brand attachment (Pearson correlation $r = .63$, $p < .001$), and a significant and lower correlation between boundary and BESC (Pearson correlation $r = .24$, $p < .001$). Compared to the very strong correlation (Pearson correlation $r = .83$, $p < .001$) between self-brand connection and self-brand attachment, the correlations between boundary and these two scales were much lower, which shows that the boundary construct is to some extent related with self-brand connection and self-brand attachment, but also discriminant from these two constructs. The significantly, but

relatively weaker correlation (Pearson correlation $r = .24$, $p < .001$) confirmed the discriminant validity between boundary and BESC. The results show a significantly minor correlation with BESC scale but moderate correlations with self-brand connection and self-brand attachment construct, indicating that the consumers' boundary with a specific brand is more related with identity-related features of the brand and their affection towards the brand.

Table 3: Correlations between Boundary and other Scales

		Self-brand connection	*Self-brand attachment*	*BESC scale*
Boundary	Pearson correlation	.682**	.635**	.238**
	n	901	901	901

**. $p < .001$.

Concurrent Validity & the Interaction between Masculinity and Femininity Incongruence

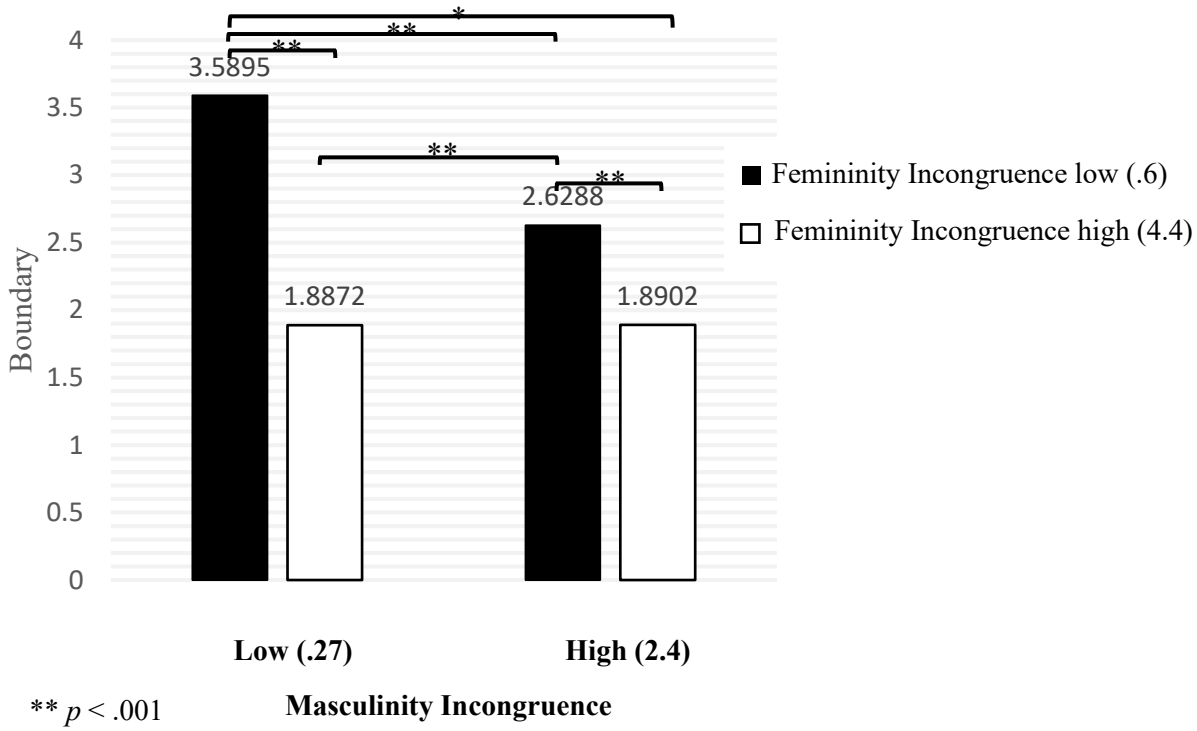
Two distance scores between MBP/FBP and MTI/FTI were generated for each of the participants, and the absolute values of these two distance scores were used as predictors. |MBP-MTI| and |FBP-FTI| represented masculinity incongruence and femininity incongruence between the consumer and the target brand, respectively. The higher values are, the more incongruent are consumer-brand gender identities. A correlation analysis between MBP, FBP, MTI, and FTI, and a correlation analysis between the femininity incongruence and masculinity incongruence values was conducted to ensure that there was no multi-collinearity problem. The results show that there is a minor or moderate correlation between MBP, FBP, MTI, and FTI (see Appendix 4) and there is a minor positive correlation (Pearson correlation $r = .26$, $p < .001$) between masculinity incongruence and femininity incongruence (see Appendix 4), which provide initial evidence of the absence of a multi-collinearity problem.

Table 4: Regression Analysis of Two Distance Scores on the Boundary Value

	Coefficient	*SE*	*t*	*p*	LLCI	ULCI
Constant	3.9974	.1351	29.5902	.0000	3.7323	4.2625
Masculinity incongruence	-.5217	.0965	-5.4049	.0000	-.7111	-.3322
Femininity incongruence	-.4797	.0481	-9.9646	.0000	-.5742	-.3852
Interaction	.1189	.0295	4.0362	.0001	.0611	.1767

To examine the effect of masculinity incongruence and femininity incongruence on consumers' boundary with a brand, a regression analysis was conducted. Both masculinity incongruence and femininity incongruence have a significant negative effect of the boundary (see Table 4). Every one-unit increase of masculinity/femininity incongruence decreased the boundary value by .52 / .48 unit. The results also revealed a significant interaction (F (1, 897) = 16.29, $p < .001$, $r^2 = .015$) between masculinity incongruence and femininity incongruence (see Appendix 5 for full results). A process (model 1; Hayes, 2017) was conducted to examine how different level of femininity incongruence interacts with masculinity incongruence. When the value of femininity incongruence is low (low score = .6), higher values of masculinity incongruence (low score = .26, high score = 2.40) result in lower boundary value (i.e., more separation); when the value of femininity incongruence is high (high score = 4.4), higher value of masculinity incongruence does not significantly affect the boundary value (see Figure 2). The results validate that the more incongruent the gender identity between consumers and brands, the lower boundary value would be (i.e., lower relatedness) and when the femininity incongruence is high, a lower masculinity incongruence does not decrease the consumers' separateness to brands (i.e., higher boundary value).

Figure 2: The Moderation Effect of Femininity Incongruence (Study 1)



** $p < .001$

Discussion

Study 1 provides initial evidence for the reliability of the seven-point Venn diagram boundary measure applied to 44 symbolic, utilitarian, or symbolic-utilitarian existing brands. Correlations between boundary and brand awareness, brand trust, brand affect, brand attitude, brand preference, purchase intention, brand loyalty, likelihood of recommendation, and WOM suggest important antecedents and consequences of boundary that could be explored further. The discriminant and convergent validities between self-brand boundary and self-brand connection, self-brand attachment, and BESC scale are also supported. Furthermore, Study 1 shows that self-brand gender identity incongruence predicts consumers' perceptions of the boundary, thus supporting the concurrent validity of boundary measure : When both the masculinity and femininity incongruence is low, the value of self-brand boundary is the highest.

When masculinity incongruence is high while femininity incongruence remains low, the self-brand boundary value will become lower (i.e., less relatedness). However, when femininity incongruence becomes high and prominent, the self-brand boundary value stays at the lowest level (i.e., less relatedness) regardless of whether masculinity incongruence is high or low.

In terms of why the boundary value stays at a low level (i.e., more separateness between self and brand) when femininity incongruence is high (Mean = 4.4) regardless of the level of masculinity incongruence, one possible explanation is that men usually feel more negatively about being perceived as feminine, whereas women do not feel as negatively about being perceived as more masculine (e.g., Gal & Wilkie, 2010; Rothgerber, 2013). At the same time, women still face gender stereotypes and social judgment if they display a perceived lack of femininity. Therefore, when there is a relatively high femininity incongruence between consumers and brands, a lower masculinity incongruence does not significantly decrease an individual's boundary with this brand. The possibility of a predominance of femininity incongruence in determining boundary needs to be further tested empirically, however.

Based on the results of Study 1, Study 2 uses an experimental design to validate the boundary measure, explores the mediating role of boundary, and again examines the interaction between masculinity incongruence and femininity incongruence in influencing boundary, to replicate the initial results.

Study 2

The purpose of Study 2 is to build a nomological network for the boundary construct. It examines (1) to what extent anthropomorphizing a brand's package decreases the boundary between consumer and the brand (higher boundary value), (2) if the interaction between the masculinity and femininity incongruences consistently affects consumers' boundary, and (3) the

mediation effect of boundary on the relationship between anthropomorphism and brand-related consumer responses, and on the relationship between masculinity and femininity incongruence and the consumer responses.

Before to the main experiment, a pre-test was conducted to identify the most effective stimuli to manipulate gender perception and anthropomorphism in the study.

Pretest

Participants

For the pre-test, one hundred and twenty participants were recruited from MTurk. After eliminating the responses that did not correctly respond to the attention check question, one hundred and sixteen responses (50.86% female; M_{age} = 40.84; SD = 11.45) were valid and used in the analysis. MTurk participants were rewarded (0.5 USD) for their time (10 – 15 minutes). All participants were from the United States or Canada, whose approval rates were greater than .95 and the number of HITs approved was greater than 50.

Procedure

The pre-test examined the effectiveness of the experimental manipulations. To find the most effective stimuli, packaging of four categories of branded products (i.e., iced tea, body soap, deodorant, and moisturizer) were designed to activate consumer's perception of masculine / feminine brand gender and anthropomorphism. There were forty product stimuli in total: twelve for iced tea, six for body soap, twelve for deodorant, and ten for moisturizer (see Appendix 6). In line with prior research (Fugate & Phillips, 2010; Van Tilburg et al., 2015), for each category, different package colors were used to elicit brand gender perceptions, whereas anthropomorphism was manipulated by humanizing the package with the shape of the human

body. The font used in all the stimuli is Arial, which is perceived as gender-neutral (Grohmann, 2016). In each category, half of the packages were anthropomorphized (i.e., straight vs. curved/body-shaped). Participants were randomly assigned to one of the four product categories and answered two questions related to perceived gender evoked by a specific package, and one question about their global evaluation of the product. The order of packages and questions was randomized to avoid order effect bias. Demographics were collected after the attention check question.

Measures & Methods

The effectiveness of was verified with two measures: (1) please indicate how feminine or masculine this product looks to you ("Not at all feminine" to "Very feminine"; "Not at all masculine" to "Very masculine"); and (2) to what extent do you think this product is used by women or men ("Definitely NOT by women" to "Definitely by women"; "Definitely NOT by men" to "Definitely by men"). Global evaluation of the product was also measured ("Negative" to "Positive"; "Dislike" to "Like"; "Unfavorable" to "Favorable"). All measures were on 7-point bipolar scales. Unfortunately, we did not add a manipulation check question that assessed if the anthropomorphized designs were perceived more humanized, which may have contributed to the failure of the anthropomorphism manipulation in the main experiment. One sample t-tests (Mean = 4) were used to find the most masculine, feminine, and neutral design for each category. The pairs of products selected had to be perceived as both significantly "very masculine" ("very feminine") and "definitely by men" ("definitely by women"). In terms of neutral gender designs, the values of "very masculine" ("very feminine") and "definitely by men" ("definitely by women") had to be not significantly different from the mean value 4 or not different in terms of masculinity and femininity perceptions (see Appendix 7). Independent T-tests were applied to

ensure that there was no significantly different gender perception of products between male and female participants.

Results

The pre-test results showed that the anthropomorphized design (curved vs. straight packaging) of iced tea and deodorant showed clear results in terms of masculinity and femininity, compared to the anthropomorphized design (human shape vs. no human shape) of body soap and moisturizer. The anthropomorphized design using human shape (vs. only a curved line) may be perceived as more feminine, thus precluding masculinity perceptions. We, therefore, chose iced tea and deodorant as stimuli in the main experiment. Based on the one-sample t-tests (see Appendix 7), products in colors black, pink, and green were chosen to represent masculine, feminine, and neutral brand designs, respectively. The products in colors black, pink, and white were chosen to represent masculine, feminine, and neutral brand designs in the deodorant category. In total, there were six product images (three pairs) for each category. Overall, the independent sample T-tests showed no significantly different gender perceptions between male and female participants, although women perceived the black colored non-anthropomorphized iced tea package more for men ($Mean_{female}$ = 6.07, SD = 1.21; $Mean_{male}$ = 4.77, SD = 1.92; F (1, 25) = 2.714, p = .04, r^2 = .15), while both of them perceive it as a product for men based on the one-sample T-tests (see Appendix 7). The results of pretest helped to identify twelve effective stimuli to manipulate the gender perception of brands, which were used in the main experiment.

Discussion

Based on the results of the pre-test, twelve product images (six brand designs in the iced tea and deodorant categories; see Table 5) that showed significant masculine, feminine, or

neutral gender identity, and whose global evaluation did not significantly different within each pair, were selected. Although female participants perceived the black colored iced tea package more for men, both male and female participants think it is a product for men and the effect size of this difference is medium. In the main experiment, these twelve images were used to manipulate anthropomorphism and brand gender.

Main experiment

Participants

For the main experiment, three hundred and sixteen participants were recruited from MTurk. Two hundred and ninety-seven responses (52.19% male; M_{age} = 36.51; SD = 11.50) were valid after eliminating the responses that did not pass the attention check question. The participants were rewarded (1.0 USD) for their time (10 – 15 minutes) to complete the survey. All the participants were from the United States or Canada. Their approval ratings were greater than .95 and the number of HITs approved greater than 50. MTurk workers who had already participated in the pre-test could not participate in the main experiment.

Procedure

In the main experiment, participants received instructions regarding measure use (as in Study 1) and completed practice trials based on product images regarding four brands (Google doc, Amazon TV cast, Coca-Cola Zero, and WWF shampoo). Next, all the participants were randomly assigned to one of the twelve brand designs (six brand designs for iced tea and deodorant; see Table 5) and asked about their boundary with the brand, perceived masculine/feminine brand personality (MBP & FBP scale; Grohmann, 2009), manipulation check questions used in the pre-test (i.e., " how feminine or masculine this products looks to you"), awareness of this product, self-brand connection (Escalas & Bettman, 2003), self-brand

attachment (Thomson, MacInnis, & Park, 2005), and nine brand-related consumer responses used in study 1 (i.e., brand trust, brand affect, brand attitude, brand preference, purchase intention, attitudinal brand loyalty, behavioral brand loyalty, likelihood of recommendation, and WOM). Finally, the participants were asked to answer their masculine and feminine identity with the FTI&MTI scale (Stern, Barak, & Gould, 1987). Demographic information as obtained as well.

Table 5: Gender Identities of the Twelve Pretested stimuli

Anthropomorphism	Anthropomorphized group			Un-anthropomorphized group		
Gender identity	Masculine	Feminine	Neutral	Masculine	Feminine	Neutral
Iced tea						
Deodorant						

Measures & Methods

The results of reliability tests and principal factor analyses of all multi-item measures supported adequate reliability and validity (see Appendix 8 for the coefficient alphas and results of the factor analysis), thus the averaged scale score was computed to represent each construct. A correlation analysis between MBP, FBP, and the manipulation check questions ensured that the manipulation of masculine and feminine brand identities was successful. An independent sample T-tests was used to make sure that there are no significant differences in perceived brand gender identity between male and female participants. Secondly, a 2 (between: anthropomorphized vs. non-anthropomorphized) × 3 (between: masculine, feminine, or neutral) mixed MANOVA analysis assessed if the independent variables and their interaction significantly affected the

consumers' perception of brand gender identities (MBP & FBP), which served as the two dependent variables. Next, a 2 (between: anthropomorphized vs. Non-anthropomorphized) × 3 (between: masculine, feminine, or neutral) × 2 (sex of participants: male vs. female) MANOVA and a 3 (between: masculine, feminine, or neutral) × 2 (sex of participants: male vs. female) MANOVA were conducted to check if the sex of participants affected their perception of brands' gender identities.

Finally, the mediation effect of boundary on the relationship between consumer responses and the two predictors was assessed. More specifically, the mediation effect (model 4; Hayes, 2017) was tested in the relationship between brand-related consumer responses (criteria) and anthropomorphism (vs. non-anthropomorphism), which is treated as the predictor (see Figure 3). Next, a moderated mediation model (model 7; Hayes, 2017) was tested on the relationship between masculinity and femininity incongruences, boundary, and consumer responses (see Figure 4). As in study 1, masculinity incongruence and femininity incongruence were generated from the absolute values of two "distance scores" between MBP/FBP and MTI/FTI. The masculinity incongruence (X1) and femininity incongruence (X2) was respectively treated as the predictor and the moderator of the relationship between masculinity incongruence (X1) and boundary (M), and the roles of X1 and X2 were exchanged to explore if the results remained consistent.

Figure 3: Mediation Effect of Boundary

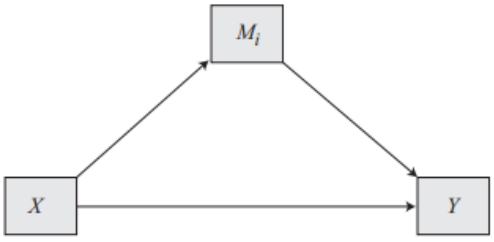
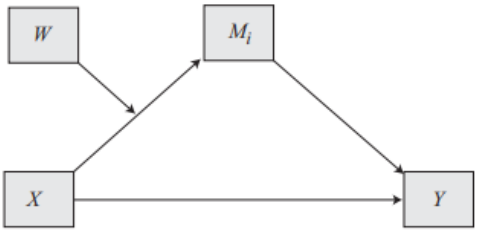


Figure 4: Moderated Mediation Model



Results

Overall, the correlation of gender-related variables shows that there are significantly positive correlations among MBP, “by men”, and “masculine”, significantly positive correlations among FBP, “by women”, and “feminine”, and mostly significantly negative correlations between genders (all $r > -.510$; see Appendix 9). The results of independent sample T-tests (see Appendix 9) show that (1) male participants tend to think that the anthropomorphized iced tea in black (labelled as 01) is more “for men” than female participants do ($Mean_{male} = 4.64$, $Mean_{female} = 2.73$; $F(1,20) = 3.10$, $p = .024$, $r^2 = .23$); (2) female participants think that the anthropomorphized deodorant in black (labelled 07) is more "masculine" than male participants think ($Mean_{male} = 4.71$, $Mean_{female} = 6.00$; $F(1,26) = .008$, $p = .030$, , $r^2 = .17$); (3) male participants think that the anthropomorphized deodorant in pink (labelled 08) is more “masculine” than female participants perceived ($Mean_{male} = 2.85$, $Mean_{female} = 1.53$; $F(1,30) = 10.184$, $p = .039$, $r^2 = .26$), while both men and women perceived it as low in masculinity; (4) male participants think that the non-anthropomorphized deodorant in black (labelled as 10) has higher feminine identities (FBP) ($Mean_{male} = 3.41$, $Mean_{female} = 1.47$; $F(1,17) = 2.704$, $p = .001$, $r^2 = .49$), is more “used by women” ($Mean_{male} = 4.78$, $Mean_{female} = 3.10$; $F(1,17) = .043$, $p = .027$, $r^2 = .26$), and is more “feminine” ($Mean_{male} = 4.33$, $Mean_{female} = 2.20$; $F(1,17) = .145$, $p = .002$, $r^2 = .44$) than female participants perceived, while female participants perceived the non-anthropomorphized deodorant in black (labelled 10) more “used by men” ($Mean_{male} = 4.33$, $Mean_{female} = 6.00$; $F(1,17) = .025$, $p = .03$, $r^2 = .25$) and more “masculine” ($Mean_{male} = 4.00$, $Mean_{female} = 6.10$; $F(1,17) = .307$, $p = .003$, $r^2 = .40$) than male participants; and (5) male participants perceived the non-anthropomorphized deodorant in white (labelled 12) as more feminine (FBP) ($Mean_{male} = 3.04$, $Mean_{female} = 1.53$; $F(1, 23) = 8.269$, $p = .01$, $r^2 = .32$), more “used by women” ($Mean_{male} = 4.57$, $Mean_{female} = 2.73$; $F(1, 23) = .72$, $p = .03$, $r^2 = .19$), and

more “feminine” ($Mean_{male}$ = 4.14, $Mean_{female}$ = 2.00; $F(1, 23) = 2.865$, $p = .008$, , $r^2 = .27$) than female participants.

The results of the 2 (between: anthropomorphized vs. non-anthropomorphized) × 3 (between: masculine, feminine, or neutral) MANOVA analysis indicates that there are significant between-subjects medium effects of brand designs ($F(2, 292)_{MBP} = 7.72$, $p = .001$, *partial* $\eta^2 = .051$; $F(2, 292)_{FBP} = 12.60$, $p < .001$, *partial* $\eta^2 = .08$) on MBP and FBP, while no significant between-subjects effects of anthropomorphism ($F(1, 293)_{MBP} = .151$, $p = .698$, *partial* $\eta^2 = .001$; $F(1, 293)_{FBP} = 2.131$, $p = .145$, *partial* $\eta^2 = .007$), or interaction between brand designs and anthropomorphism ($F(2, 292)_{MBP} = .063$, $p = .939$, *partial* $\eta^2 < .001$; $F(2, 292)_{FBP} = .685$, $p = .505$, *partial* $\eta^2 = .005$) is shown. The 2 (between: anthropomorphized vs. non-anthropomorphized) × 3 (between: masculine, feminine, or neutral) × 2 (sex of participants: male vs. female) multivariate analysis indicates a consistent result: anthropomorphism did not affect the MBP and FBP levels, and there is no significant interaction between anthropomorphism and sex of participants. To examine the possible interaction between the brand designs identity and the sex of participants, a 3 (between: masculine, feminine, or neutral) × 2 (sex of participants: male vs. female) multivariate analysis was conducted. The results indicate that (1) brand designs identity had a significant effect on MBP & FBP; (2) the sex of participants affects FBP ($F(1, 293) = 5.444$, $p = .020$, *partial* $\eta^2 = .018$; $Mean_{male} = 3.495$, $Mean_{female} = 3.076$) but not MBP ($F(1, 293) = .626$, $p = .429$, *partial* $\eta^2 = .002$; $Mean_{male} = 2.994$, $Mean_{female} = 2.860$); and (3) the interaction between brand design and sex of participants has a significant effect on FBP ($F(2, 292) = 3.192$, $p = .043$, *partial* $\eta^2 = .022$), but not on MBP ($F(2, 292) = 2.118$, $p = .122$, *partial* $\eta^2 = .014$). These results are consistent with the results of the independent T-tests conducted before MANOVA analysis: men tend to think that the black colored non-anthropomorphized deodorant (labelled 10) and white colored non-anthropomorphized deodorant (labelled 12) are more

feminine than women do. While female participants perceived the designed masculine package low on FBP ($Mean_{12\_female}$ = 1.53), male participants perceived it higher on FBP ($Mean_{12\_male}$ = 3.04), both groups, however, perceived it at a low FBP level (lower than 4). The same results are shown for the designed neutral package (see Appendix 10 for the full results).

The Effect of Anthropomorphism

The mediation effect of boundary (M) on the relationship between anthropomorphism (X) and brand-related consumer responses (Ys) (model 4; Hayes, 2017) were tested. Anthropomorphism is a two-dimensional categorical predictor, and boundary and the brand-related consumer responses are continuous variables measured on 7-point scales. Most of the total effects of X on Ys, direct effects of X on Ys, or the indirect effects of X on Ys are not significant, but we do see some significantly direct effect of anthropomorphism on word-of-mouth (coefficient β = .4098, p = .0084) and likelihood of recommendation (coefficient β = .3573, p = .0417), the total effect of anthropomorphism on these two criteria, however, are not significant (for WOM, $F(1, 293) = 3.84$, p = .051, r^2 = .013; for likelihood of recommendation, $F(1, 293) = 2.19$, p = .14, r^2 = .0074). The result showed that anthropomorphism did not significantly affect consumers' boundaries with different brands (coefficient β = - .0384, F (1, 293) = .0426, p = .8366, r^2 = .0001; see Appendix 11 for the full results.) Overall, the results indicate nonsignificant effect of anthropomorphism on neither boundary nor brand-related consumers, which are inconsistent with prior research. The outcomes can be thus explained by the weak manipulation design of anthropomorphism.

The Effect of Masculinity and Femininity Incongruence

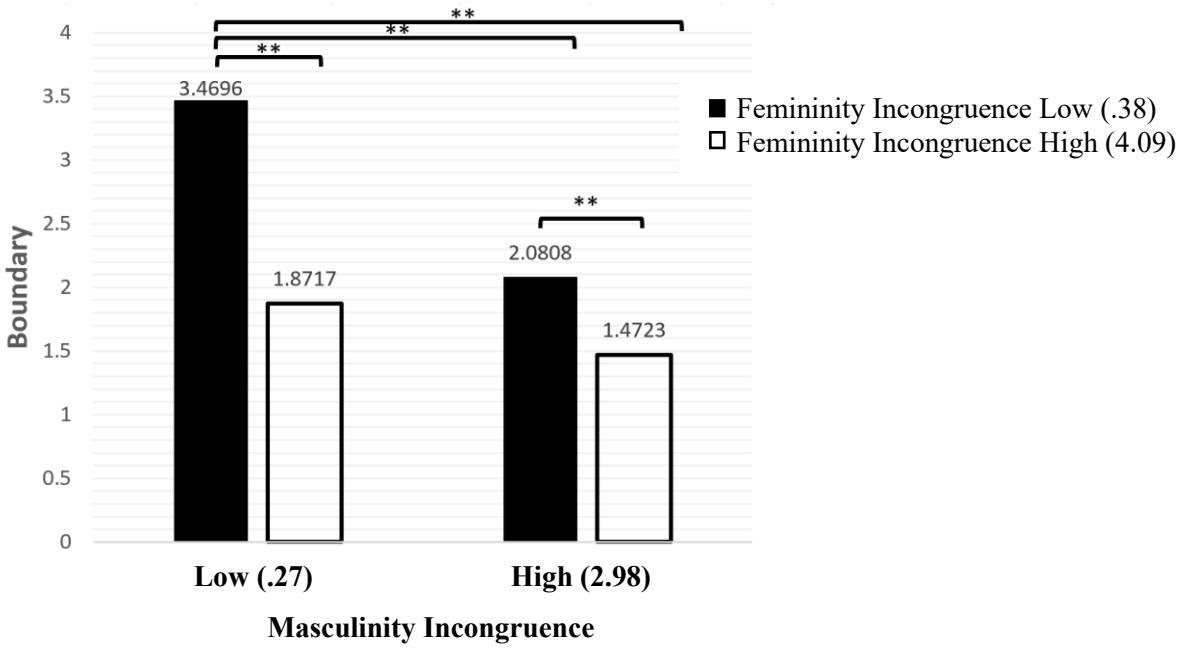
The moderated mediation effect of boundary (M) on the relationship between the two distance scores (X1 = |MBP-MTI|, X2 = |FBP-FTI|) and brand-related consumer responses

(eleven Ys) are tested. First of all, masculinity incongruence (β_{X1} = -.55, p < .001), femininity incongruence (β_{X2} = -.46, p < .001), and their interaction (β_{X1*X2} = .099, p = .011) have significant effects on the level of boundary (M). Secondly, all of the results show very strong mediation effects of boundary, no matter whether masculinity incongruence (X1) or femininity incongruence (X2) is treated as moderator (see Table 6). For example, when X1 is the predictor (X2 is the moderator), the coefficient β varies from 0.33 (p < .001, Y = global attitude) to 0.68 (p < .001, Y = likelihood of recommendation); and when X2 is the predictor (X1 is the moderator), the coefficient β varies from .29 (p < .001, Y = brand preference) to .67 (p < .001, Y = likelihood of recommendation).

The negative relationships between masculinity and femininity incongruence, and boundary arise again in Study 2; and the significant positive relationship (β = .0985, p = .01) between boundary and the interaction between the two incongruence scores suggests that the effect of masculinity incongruence depends on the level of femininity incongruence. In other words, masculinity incongruence is less powerful when the femininity incongruence is high (when X2 = 4.088, $Mean_{boundary1}$ = 1.87, $Mean_{boundary2}$ = 1.4723, p = .11), compared to when femininity incongruence is low (when X2 = 0.3787, $Mean_{boundary1\_lowX1}$ = 3.4696, $Mean_{boundary2\_highX1}$ = 2.0808, p < .001; see Figure 5). The positive interaction effect indicates that the lower femininity incongruence is, the less the effect of masculinity incongruence on boundary will be (when X1 = .27, $Mean_{boundary\_highX2}$ = 1.8717, $Mean_{boundary2\_lowX2}$ = 3.4696, p < .001; and when X1 = 2.98, , $Mean_{boundary1}$ = 1.4723, $Mean_{boundary2}$ = 2.0808, p = .03).

In terms of the moderated mediation effect, all indices of moderated mediation show that the confidence intervals do not include 0 (see Table 6), which means that there is a significant moderated mediation effect in the models.

Figure 5: The Moderation Effect of Femininity Incongruence (Study 2)



Finally, we compared the model (see Figure 6) in which masculinity incongruence (X1) is treated as the predictor (X2 as moderator) and the model in which femininity incongruence (X2) is treated as the predictor (X1 as moderator). The results show that the mediation of boundary holds regardless of whether masculinity incongruence or femininity incongruence serves as the predictor (see B path in Table 6). In terms of the direct effect of predictor X on Y, the effects are relatively consistent regardless of which variable is X and W (the moderator), although the path coefficients (see C' path in Table 6) tend to be greater when femininity incongruence served as the predictor. For example, the path coefficient β of the direct effect of femininity incongruence (X2) on brand trust (Y1) is -.11 (p = .009), while the path coefficient β of the direct effect of masculinity incongruence (X1) on brand trust (Y1) is -.04 (p = .41); the path coefficient β of the direct effect of femininity incongruence (X2) on brand preference (Y4) is -.11 (p = .02), while the path coefficient β of the direct effect of masculinity incongruence (X1) on brand preference (Y4) is -.02 (p = .73); and the path coefficient β of the direct effect of

Table 6: The Summary of Model Parameters in Study 2 (Model 7)

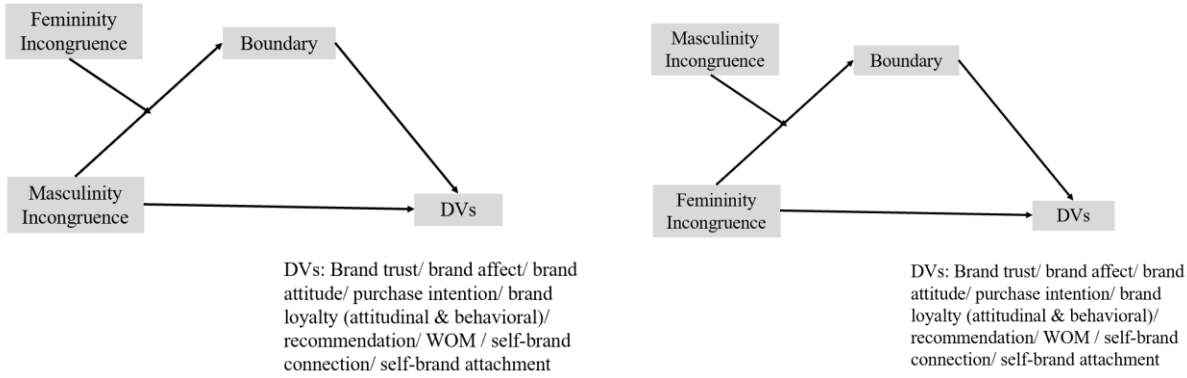
DVs	M	B path	C' path	C1 (low)	C2 (average)	C3 (high)	Index of moderated mediation
Brand trust (Y1)	X2	.36**	-.04	-.18, *CI* (-.26, -.11)	-.13, *CI* (-.18, -.08)	-.05, *CI* = (-.11, .001)	.03, *CI* = (.01, .06)
	X1	.33**	-.11*	-.14, *CI* = (-.20, -.08)	-.11, *CI* = (-.16, -.07)	-.05, *CI* = (-.10, -.01)	.03, *CI* = (.01, .05)
Brand affect (Y2)	X2	.48**	-.13*	-.25, *CI* = (-.34, -.15)	-.18, *CI* = (-.24, -.11)	-.07, *CI* = (-.15, .002)	.04, *CI* = (.01, .08)
	X1	.44**	-.21**	-.19, *CI* = (-.26, -.12)	-.15, *CI* = (-.21, -.10)	-.07, *CI* = (-.13, -.02)	.03, *CI* = (.01, .05)
Brand attitude (Y3)	X2	.33**	-.07	-.17, *CI* = (-.24, -.09)	-.12, *CI* = (-.17, -.07)	-.05, *CI* = (-.10, .002)	.03, *CI* = (.01, .06)
	X1	.31**	-.09	-.13, *CI* = (-.19, -.08)	-.11, *CI* = (-.15, -.06)	-.05, *CI* = (-.09, -.01)	.03, *CI* = (.01, .05)
Preference (Y4)	X2	.33**	-.02	-.17, *CI* = (-.25, -.10)	-.12, *CI* = (-.18, -.07)	-.05, *CI* = (-.11, .002)	.03, *CI* = (.01, .06)
	X1	.29**	-.11*	-.13, *CI* = (-.18, -.07)	-.10, *CI* = (-.15, -.06)	-.05, *CI* = (-.09, -.01)	.03, *CI* = (.01, .05)
Purchase intention (Y5)	X2	.71**	-.12	-.36, *CI* = (-.49, -.23)	-.26, *CI* = (-.35, -.17)	-.11, *CI* = (-.21, .01)	.07, *CI* = (.02, .12)
	X1	.66**	-.22**	-.28, *CI* = (-.40, -.18)	-.23, *CI* = (-.32, -.15)	-.11, *CI* = (-.19, -.02)	.06, *CI* = (.02, .11)
Attitudinal brand loyalty (Y6)	X2	.60**	-.23**	-.31, *CI* = (-.43, -.19)	-.22, *CI* = (-.31, -.14)	-.08, *CI* = (-.18, .003)	.06, *CI* = (.02, .10)
	X1	.59**	-.18**	-.25, *CI* = (-.37, -.16)	-.20, *CI* = (-.28, -.13)	-.09, *CI* = (-.17, -.02)	.06, *CI* = (.01, .10)
Behavioral brand loyalty (Y7)	X2	.61**	-.15*	-.31, *CI* = (-.43, -.19)	-.22, *CI* = (-.31, -.14)	-.07, *CI* = (-.18, .008)	.06, *CI* = (.02, .10)
	X1	.57**	-.22**	-.24, *CI* = (-.34, -.15)	-.19, *CI* = (-.27, -.12)	-.09, *CI* = (-.16, -.02)	.05, *CI* = (.01, .09)
Likelihood of recommendation (Y8)	X2	.68**	-.19*	-.34, *CI* = (-.47, -.22)	-.24, *CI* = (-.34, -.16)	-.10, *CI* = (-.20, .008)	.06, *CI* = (.02, .11)
	X1	.67**	-.17*	-.28, *CI* = (-.38, -.18)	-.22, *CI* = (-.31, -.15)	-.11, *CI* = (-.19, -.02)	.06, *CI* = (.02, .11)
Word-of-mouth (Y9)	X2	.60**	-.15*	-.31, *CI* = (-.43, -.19)	-.22, *CI* = (-.30, -.14)	-.08, *CI* = (-.18, .006)	.06, *CI* = (.02, .10)
	X1	.55**	-.25**	-.23, *CI* = (-.33, -.14)	-.18, *CI* = (-.26, -.11)	-.09, *CI* = (-.16, -.02)	.05, *CI* = (.02, .09)
Self-brand connection (Y10)	X2	.59**	-.17*	-.30, *CI* = (-.42, -.18)	-.21, *CI* = (-.29, -.14)	-.08, *CI* = (-.17, .004)	.06, *CI* = (.02, .10)
	X1	.55**	-.23**	-.24, *CI* = (-.33, -.15)	-.18, *CI* = (-.26, -.12)	-.09, *CI* = (-.16, -.02)	.05, *CI* = (.01, .09)
Self-brand attachment (Y11)	X2	.58**	-.28**	-.29, *CI* = (-.42, -.18)	-.21, *CI* = (-.29, -.14)	-.08, *CI* = (-.17, .005)	.06, *CI* = (.02, .10)
	X1	.49**	-.40**	-.21, *CI* = (-.31, -.13)	-.17, *CI* = (-.24, -.11)	-.08, *CI* = (-.15, -.02)	.05, *CI* = (.01, .08)

Note: ** $p < .001$, * $p < .05$;
X1 = masculinity incongruence, X2 = femininity incongruence; M = "moderator", B path = M → Y, C' path = X → Y (direct effect);
When X2 is the moderator, X2 (low) = .38, X2 (average) = 1.87, X2 (high) = 4.09;
When X1 is the moderator, X1 (low) = .26, X1 (average) = 1.17, X1 (high) = 2.98.

femininity incongruence (X2) on purchase intention (Y5) is -.22 ($p < .001$), while the path coefficient β of the direct effect of masculinity incongruence (X1) on purchase intention (Y5) is -.12 ($p = .09$).

Overall, the negative relationship between boundary and gender identity incongruences between consumers and brands are supported again in study 2 and there is a significant interaction between femininity incongruence and masculinity incongruence on the boundary value. Also, the mediation effect of boundary on the relationship between gender identity incongruences and brand-related consumer responses is validated. The moderated mediation effect sustained regardless which gender incongruence served as the predictor.

Figure 6: Femininity Incongruence (vs. Masculinity Incongruence) as Moderator



Discussion

Although prior studies showed a strong effect of anthropomorphism on consumer perceptions of and attitudes towards brands, because the design of anthropomorphism in this study may not have been prominent enough, the relationship between anthropomorphism and boundary could not be verified. However, Study 2 uses an experimental manipulation of brand designs to elicit masculine and feminine brand perceptions and shows that the negative relationship between masculinity/femininity consumer-brand incongruence and boundary are

again validated. A significant positive relationship between boundary and the interaction between the two incongruence scores also suggests that the effect of masculinity incongruence depends on the level of femininity incongruence. In other words, masculinity incongruence has less effect when the femininity incongruence is high, compared to the effect of masculinity incongruence when femininity incongruence is low. The positive interaction effect indicates that at lower levels of femininity incongruence, there is less of an effect of masculinity incongruence on boundary. In terms of the direct effect of predictor X on Y, the effects are consistent regardless of which variable is X and W (the moderator), although the path coefficients of direct effect tend to be greater when femininity incongruence served as the predictor. Finally, the mediation effects of boundary on the relationship between the masculinity and femininity incongruences and brand-related consumer responses are proved regardless of which incongruence value serves as the predictor.

General Discussion

Prior research on self-expansion and interpersonal or brand relationships mostly concentrates on the relatedness of self and others, but rarely focus on the separateness of self from others. However, individuals' feeling of autonomy is constructed by their perception of separateness and independence from other entities, including persons, emotions, and objects. In this research, we examine consumers' perceived distancing with regard to brands. Based on prior research using Venn diagram scales, which were validated by social psychologists in the study the interpersonal relationships (Lin & Rusbult, 1995) and the closeness between self and various others (Shvil, Krauss, & Midlarsky, 2013), this research applies a seven-point Venn diagram to capture the perceived psychological boundary between consumers and brands. The main objectives of this research were to validate the boundary measure, examine its correlations with

related concepts, differentiate it from other closely related brand constructs validated by prior research, and explore its potential effect on consumer responses to brands. The first study provides insights with regard to how boundary relates to other constructs. The second study moves forward to probe potential mediation effect of boundary in the relation between perceived gender incongruence between brands and consumers, and a range of brand-related consumer responses.

To summarize, the reliability and validity of the boundary measure are strongly supported by the findings. Awareness, affordability, and purchase history are related to consumers' boundary with brands. Brand-related consumer responses are significantly correlated with boundary level, especially brand loyalty and word-of-mouth. In terms of the discriminant and convergent validity, a significantly moderate correlation between boundary and self-brand connection or self-brand attachment emerged, while a significant but lower correlation between boundary and BESC is observed. Since the boundary measure assesses the relationship between consumer's self and one specific brand and the brand engagement in self-concept scale (BESC) examines the relationship between consumer's self and their favorite brands in a broad sense, the significantly minor correlation between boundary and BESC is as expected.

As an important part of self, consumers' masculine and feminine gender identities are used as the predictor to assess the concurrent validity of the boundary construct . The significantly negative relationship between masculinity/femininity incongruence and boundary level indicates that the more incongruent the consumer and brand's gender identity is, the lower the boundary value is (i.e., more perceived distance). The concurrent validity test also indicated that the interaction between masculinity incongruence and femininity incongruence has a positive relationship with boundary. When femininity incongruence is low, the boundary value

will be higher (i.e., more relatedness) if the masculinity incongruence decreases; when feminine incongruence is high, the boundary does not change significantly as a function of masculinity incongruence.

A nomological network of the boundary construct is built by validating its mediation effect on the relationship between anthropomorphism and brand-related consumer responses, and the relationship between masculinity/femininity incongruence and consumer responses. Results show the relationship between anthropomorphism and boundary is not significant. However, prior research has shown that anthropomorphizing a brand's image does enhance consumers' responses to brands. The non-significant effect of anthropomorphized brand design may be explained by the failure of the brand design to elicit strong anthropomorphism perceptions.

In the mediation analyses, the interaction between masculinity and femininity incongruence is consistent with the finding in study 1. The masculinity/femininity incongruences are negatively related to boundary and their interaction is positively related to boundary. More importantly, the mediation effect of boundary on the relationship between masculinity/femininity incongruence is supported regardless of masculinity incongruence or femininity incongruence serves as the predictor. Overall, the moderated mediation model is supported, and the effects of masculinity and femininity incongruences on consumers responses are consistent, although the direct effect of femininity incongruence on consumer responses tends to be stronger compared to the direct effect of masculinity incongruence.

Theoretical Contributions

Research on the consumer-brand relationship in consumer psychology field has been inspired by the theories of interpersonal relationship in social psychology research. For example, the relational-interdependent self-construal scale (Cross, Bacon, & Morris, 1999) has inspired the

development of brand engagement in self-concept scale (BESC; Sprott, Czellar, & Spangenberg, 2009). These two scales have a lot in common except that the former scale focuses on how close relationship form individual's self-construal, while the BESC scale emphasizes how individuals' favorite brands are incorporated in one's self-concept. Although the two scales seem different, they measure important methods of self-expansion—expanding the self to close relationships and expanding the self to various objects (brands, in this case), respectively.

In social psychology, self-expansion theories focus mainly on the relatedness of self, although the sense of mental self and the sense of autonomy (Laing, 1965; Strawson, 1997, 1999) theories emphasizes both the self's relatedness to and separateness from others. If a person does not feel autonomous, she or he cannot perceive relatedness to nor separateness from others. The insufficient study on separateness in self-expansion in social psychology to some extent explains the negligence regarding boundaries in consumer-brand relationships. Thus, the introduction of consumer and brand boundary measure in this study to some extent fills the gap in the brand relationship studies.

Secondly, although Venn diagrams have been used as a measurement tool in interpersonal relationship studies, research in branding has not widely applied this approach. This research provides consumer psychologists with a new measure to examine the relation and separation between consumers and brands. Thirdly, this study also provides evidence of the reliability and validity of this measure, clarifies the relationship between boundary and various consumer responses, and other commonly used scales. Fourthly, a nomological network is built for the boundary concept, and the theoretically negative relationship between boundary and masculinity/femininity incongruences is supported empirically. Finally, the mediation effect of

boundary between brand-consumer gender identity incongruences and various consumer responses are validated.

Managerial Implications

Managerially, this study provides a simple and time-efficient measure to evaluate the relationship between consumers and their brands. More specifically, the boundary measure is a tool to (1) evaluate consumers' overall attitudes and boundary towards the brands; (2) predict consumers' responses to a new brand; and (3) explore the potential consumers for a newly developed product category. For example, because of the significant correlation between boundary and other consumer responses, managers can use this measure to predict consumers' reaction to a new brand in a brand extension context. More specifically, managers can use this tool to evaluate the influence of brand extension of sub-brands on parent brands. Furthermore, entrepreneurs can use this measure to identify and target potential consumers for a newly developed product category. As a graphic tool, the boundary measure not only captures consumer's relation to and separation from brands, it may also evaluate consumer's overall boundary to a brand or product category. For example, compared to baby boomers, the millennial generation may perceive a lower level of boundary toward technology brands.

In addition, when brand managers evaluate a brand's product packages or logos, they may need to avoid violating their target consumers' gender identity, especially with regard to feminine gender identity. If their target consumers have a low level of feminine identity, managers should make sure that their logo or packages are not in a high feminine brand personality (FBP); if their target consumers have a high level of feminine identity, it is important for managers to make sure that their logo or packages are perceived in high feminine brand personality. In gender-identity sensitive product categories (such as skin-care, make-up, and

clothing), the boundary measure can be used together with the brand gender scale (Grohmann, 2009) to ascertain gender congruence between the brands or products and the consumers.

Limitations

Firstly, results show that in this research the anthropomorphism manipulation may not have been strong enough to examine whether anthropomorphizing a brand affects consumers' boundary with that brand. However, prior studies showed a strong effect of anthropomorphism on consumer perceptions of and attitudes towards brands. Because the design of anthropomorphism in this study may not have been prominent enough, the relationship between anthropomorphism and boundary could not be verified. Secondly, although the stimuli were successfully designed to represent masculine, feminine, and neutral gender perception, female participants perceived some black colored brands more for men than male participants. Finally, the number of participants assigned to each of the twelve brand's images could be larger to increase the representativeness for each condition. Also, this research recruited only American and Canadian participants, but it would provide more insights to include participants from other cultures, such as Eastern and Middle Eastern ones. As a single-item scale, boundary measure may not be able to adequately address the construct of boundary, which is a complex theoretical concept. It may also have limited capability to offer sufficient points of discrimination and variances, which means that larger sample size will be needed. The internal-consistency reliability is unable to be measured because of the single-item feature. Instead, a test-retest reliability could have been assessed in the study.

Future Research

First of all, the effect of anthropomorphism on the boundary should be tested again with other anthropomorphism manipulations. For example, instead of humanizing the packages by

using human shapes, a humanized introduction of a brand can be applied. Secondly, based on the findings in this research, the development of a Likert-type scale of boundary is a possibility. This could include a consideration of boundary as a multi-dimensional construct and thus clarify what boundary is, what it measures, and how many dimensions there are. The relatively higher correlation between boundary and self-brand connection, self-brand attachment, brand affect, and brand loyalty may give future researchers some hints about potential constructs to explore. Also, a comparison between the consumer-brand boundaries of Western and Eastern participants can be conducted to explore if different cultures (e.g., independent self-construal vs. relational self-construal) influence the boundary between consumers and brands. Furthermore, future research can explore how these dimensions of boundary are constructed, the different weights of each dimension for various consumers, and factors that make a difference.

From the practical perspective, the boundary measure can be applied to study (1) whether consumers have different boundaries with different product category; (2) whether specific groups of consumers perceive greater boundaries toward some brands; (3) if consumers' boundary with parent brands affect perceived boundaries with brand extensions and vice versa and how brand's betrayal and transgression behaviors influence consumers' boundary with brands. Furthermore, this boundary measure can be applied to study the relationship between users and various technological and digital brands, such as Google, Amazon, Facebook, and Instagram. It can also be applied to study whether consumer feel more bounded or related with online stores or physical stores (e.g., Best Buy website vs. Best Buy offline; Sephora website/ application vs. Sephora stores), and whether having both online and offline stores (e.g., Best Buy) increase or decrease consumer's boundary compared with online store only (e.g., Amazon).

Finally, the moderated mediation effects indicate that femininity incongruence may show a possible predominance on consumers' attitudes and decision making. However, this possible predominance of femininity incongruence was not empirically tested in this study. Future research can directly focus on the possible different power of brand gender identities and how they affect consumers' responses.

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Appendix 1: Symbolic and Utilitarian Brands Used in Study 1

Brand set 1	*Brand set 2*
Best Western hotels	Marriott hotels
Cover Girl cosmetics	Revlon cosmetics
Aquafresh toothpaste	Sensodyne toothpaste
Staples stores	Best Buy stores
Lexus automobiles	Porsche automobiles
Reebok athletic shoes	Nike athletic shoes
Tylenol pain reliever	Advil pain reliever
AT&T phone service	Bell phone service
Panasonic televisions	Sony televisions
Apple computers	Dell computers
Wrangler jeans	American Express credit card
BP gas stations	Shell gas stations
Gatorade sports drink	Aquafina water
Budweiser beer	Heineken beer
Absolut vodka	Bacardi rum
Starbucks coffee	Haagen-Dazs ice cream
Lysol cleaner	Pine Sol cleaner
Kleenex facial tissue	Scotties facial tissue
Scott toilet paper	Charmin toilet paper
Cheer laundry detergent	Arm & Hammer laundry detergent
Benadryl allergy medicine	Claritin allergy medicine
Tums Ex stomach medicine	Pepcid AC stomach medicine

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
401_google	451	1	7	4.50	1.584
402_amazon	451	1	7	4.68	1.473
403_cocacola	451	1	7	3.28	1.808
404_wwf	451	1	7	2.84	1.636
405_walmart	449	1	7	3.42	1.671
406_Canada government	451	1	7	1.80	1.388
01_Best western	25	1	6	2.80	1.871
02_covergril	22	1	7	1.82	1.532
03_Aquafresh	21	1	7	2.57	1.832
04_Staples	12	1	6	2.58	1.730
05_Lexus	17	1	6	2.18	1.741
06_Reebok	16	1	6	2.00	1.414
07_Tylenol	19	1	7	3.63	1.978
08_AT&T	18	1	5	2.50	1.383
09_Panasonic	20	1	6	2.15	1.387
10_Apple	25	1	7	3.60	2.121
11_Wrangler	15	1	5	2.20	1.207
12_BP	19	1	5	1.89	1.197
13_Gatorade	17	1	6	2.88	1.536
14_Budweised	24	1	5	2.00	1.383
15_Absolut	25	1	6	1.92	1.352
16_Starbucks	25	1	7	3.60	1.979
17_Lysol	22	1	7	3.09	1.411
18_Kleenex	15	1	6	2.80	1.474
19_Scott	29	1	7	3.52	1.957
20_Cheer	19	1	6	1.95	1.433
21_Benadry	20	1	6	2.85	1.843
22_Tums	22	1	7	2.45	1.711
23_Marriott	15	1	7	3.40	2.197
24_Revlon	19	1	6	2.05	1.433
25_Sensodyne	26	1	6	2.27	1.538
26_Best Buy	28	1	6	2.89	1.771
27_Porsche	20	1	5	1.80	1.281
28_Nike	15	1	6	3.93	1.751
29_Advil	19	1	7	3.42	1.502
30_Bell	36	1	5	1.69	1.283
31_Sony	15	1	6	2.67	1.589
32_Dell	19	1	5	2.11	1.197
33_American express	20	1	7	2.10	1.586
34_Shell	21	1	5	2.48	1.365
35_Aquafina	25	1	7	2.88	1.563
36_Heineken	23	1	7	2.74	1.888
37_Bacardi	24	1	6	2.13	1.361
38_Haagen-Dazes	18	1	5	2.61	1.539
39_Pinesol	18	1	7	2.28	1.776
40_Scotties	27	1	6	2.04	1.372
41_Charmin	14	1	5	3.43	1.399
42_Arm&Hammer	20	1	6	2.80	1.765
43_Claritin	23	1	7	2.52	1.780
44_Pepcid	10	1	4	1.80	1.033

Appendix 2: Factor Analysis of Multi-items Scale in Study 1

Scale name	Number of principal component extracted	Average variance extracted (Cumulative %)
Brand trust	1	74.030
Brand affect	1	91.228
Brand attitude	1	94.088
Brand preference	1	84.589
Purchase intention	1	98.411
Attitudinal brand loyalty	1	90.938
Behavioral brand loyalty	1	94.764
Likelihood of recommendation	1	98.113
Word-of-mouth	1	89.078
Self-brand connection	1	84.623
Self-brand attachment	1	82.168
BESC	1	64.645
MBP / FBP	2	71.322
MTI / FTI	3	61.209

* Pattern matrix of MBP & FBP and MTI & FTI

	Component	
	1	2
MBP & FBP_1	.222	.731
MBP & FBP_2	-.093	.811
MBP & FBP_3	.352	.657
MBP & FBP_4	.216	.754
MBP & FBP_5	-.089	.861
MBP & FBP_6	-.073	.730
MBP & FBP_7	.920	-.004
MBP & FBP_8	.743	.006
MBP & FBP_9	.761	.172
MBP & FBP_10	.901	-.042
MBP & FBP_11	.890	.002
MBP & FBP_12	.930	-.044

	Component	
	1	2
FTI&MTI_1	.799	.123
FTI&MTI_2	.528	.172
FTI&MTI_3	.806	.021
FTI&MTI_4	.870	-.091
FTI&MTI_5	.872	-.034
FTI&MTI_6	.879	-.016
FTI&MTI_7	.785	-.041
FTI&MTI_8	.811	-.042
FTI&MTI_9	.822	-.094
FTI&MTI_10	.853	.041
FTI&MTI_11	.060	.788
FTI&MTI_12	.215	.594
FTI&MTI_13	.148	.647
FTI&MTI_14	-.036	.690
FTI&MTI_15	-.042	.844
FTI&MTI_16	-.001	.814
FTI&MTI_17	.062	.769
FTI&MTI_18	-.186	.709
FTI&MTI_19	.058	.783
FTI&MTI_20	-.180	.731

Appendix 3: Correlation between Boundary and Brand-related Responses

Correlations

		Boundary	Awareness	Affordability	purchase history	authority	monopoly	approachability (downtoearth)	approachability (high-end)
Boundary	Pearson Correlation	1	.243**	.241**	.426**	.301**	.296**	.301**	.309**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
	N	902	901	901	901	901	901	901	901
Awareness	Pearson Correlation	.243**	1	.324**	.540**	.293**	.086*	.164**	.124**
	Sig. (2-tailed)	.000		.000	.000	.000	.010	.000	.000
	N	901	901	901	901	901	901	901	901
Affordability	Pearson Correlation	.241**	.324**	1	.447**	.053	-.025	.423**	-.182**
	Sig. (2-tailed)	.000	.000		.000	.114	.459	.000	.000
	N	901	901	901	901	901	901	901	901
purchase history	Pearson Correlation	.426**	.540**	.447**	1	.241**	.146**	.253**	.109**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.001
	N	901	901	901	901	901	901	901	901
authority	Pearson Correlation	.301**	.293**	.053	.241**	1	.451**	.147**	.375**
	Sig. (2-tailed)	.000	.000	.114	.000		.000	.000	.000
	N	901	901	901	901	901	901	901	901
monopoly	Pearson Correlation	.296**	.086*	-.025	.146**	.451**	1	.080*	.303**
	Sig. (2-tailed)	.000	.010	.459	.000	.000		.016	.000
	N	901	901	901	901	901	901	901	901
approachability (downtoearth)	Pearson Correlation	.301**	.164**	.423**	.253**	.147**	.080*	1	-.048
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.016		.151
	N	901	901	901	901	901	901	901	901
approachability (high-end)	Pearson Correlation	.309**	.124**	-.182**	.109**	.375**	.303**	-.048	1
	Sig. (2-tailed)	.000	.000	.000	.001	.000	.000	.151	
	N	901	901	901	901	901	901	901	901

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		Boundary	Brand trust	Brand affect	Global Attitude	Brand Preference	Purchase Intention	Attitudi Brand Loyalty	Behavi Brand Loyalty	Likeliho of Reccomendation	Word of mouth	connection	Brand attachment	BESC
Boundary	Pearson Correlation	1	.491**	.579**	.401**	.447**	.553**	.646**	.587**	.506**	.628**	.682**	.635**	.238**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	902	901	901	901	901	901	901	901	901	901	901	900	901
Brand trust	Pearson Correlation	.491**	1	.753**	.765**	.745**	.708**	.674**	.734**	.738**	.629**	.642**	.574**	.214**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Brand affect	Pearson Correlation	.579**	.753**	1	.733**	.750**	.745**	.765**	.767**	.768**	.730**	.765**	.713**	.266**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Global Attitude	Pearson Correlation	.401**	.765**	.733**	1	.830**	.650**	.606**	.647**	.752**	.579**	.600**	.546**	.209**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Brand Preference	Pearson Correlation	.447**	.745**	.750**	.830**	1	.720**	.666**	.720**	.780**	.616**	.630**	.577**	.164**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Purchase Intention	Pearson Correlation	.553**	.708**	.745**	.650**	.720**	1	.739**	.870**	.789**	.706**	.695**	.609**	.175**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Attitudi Brand Loyalty	Pearson Correlation	.646**	.674**	.765**	.606**	.666**	.739**	1	.821**	.753**	.808**	.845**	.758**	.296**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Behavi Brand Loyalty	Pearson Correlation	.587**	.734**	.767**	.647**	.720**	.870**	.821**	1	.792**	.764**	.758**	.659**	.197**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Likeliho of Reccomendation	Pearson Correlation	.506**	.738**	.768**	.752**	.780**	.789**	.753**	.792**	1	.768**	.716**	.654**	.254**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Word of mouth	Pearson Correlation	.628**	.629**	.730**	.579**	.616**	.706**	.808**	.764**	.768**	1	.823**	.736**	.282**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
connection	Pearson Correlation	.682**	.642**	.765**	.600**	.630**	.695**	.845**	.758**	.716**	.823**	1	.830**	.321**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	N	901	901	901	901	901	901	901	901	901	901	901	900	901
Brand attachment	Pearson Correlation	.635**	.574**	.713**	.546**	.577**	.609**	.758**	.659**	.654**	.736**	.830**	1	.330**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	N	900	900	900	900	900	900	900	900	900	900	900	900	900
BESC	Pearson Correlation	.238**	.214**	.266**	.209**	.164**	.175**	.296**	.197**	.254**	.282**	.321**	.330**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	901	901	901	901	901	901	901	901	901	901	901	900	901

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 4: The Correlation Matrix among MBP, FBP, MTI, and FTI; Two Distance Scores

Correlations

		MBP	FBP	MTI	FTI
MBP	Pearson Correlation	1	.551**	.390**	.263**
	Sig. (2-tailed)		.000	.000	.000
	N	901	901	901	901
FBP	Pearson Correlation	.551**	1	.341**	.227**
	Sig. (2-tailed)	.000		.000	.000
	N	901	901	901	901
MTI	Pearson Correlation	.390**	.341**	1	.144**
	Sig. (2-tailed)	.000	.000		.000
	N	901	901	901	901
FTI	Pearson Correlation	.263**	.227**	.144**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	901	901	901	901

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

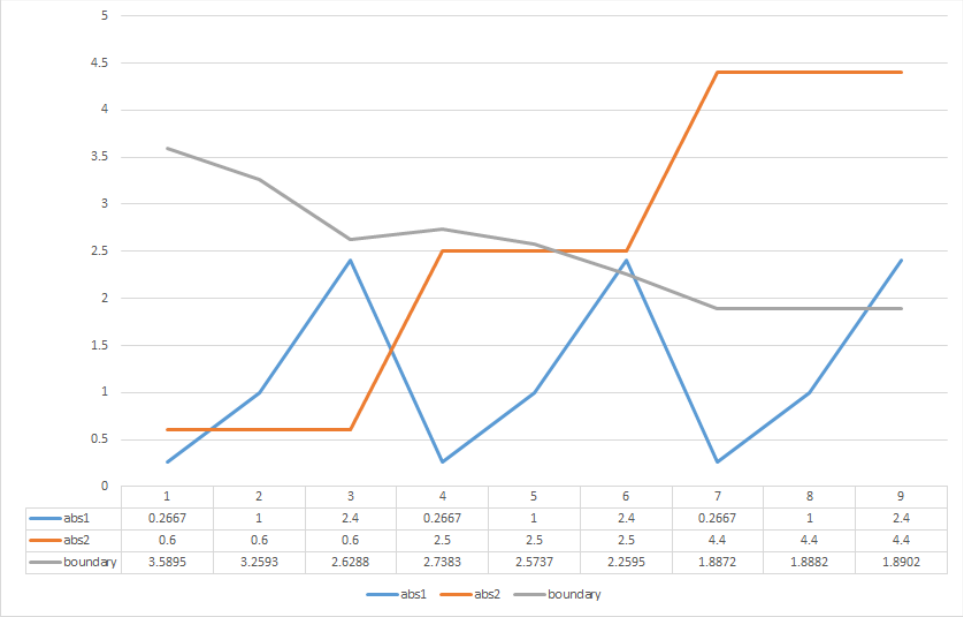
		ABS(MBP-MTI)	ABS(FBP-FTI)
ABS(MBP-MTI)	Pearson Correlation	1	.260**
	Sig. (2-tailed)		.000
	N	901	901
ABS(FBP-FTI)	Pearson Correlation	.260**	1
	Sig. (2-tailed)	.000	
	N	901	901

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 5: The Regression of Two Distance Scores on the Boundary Value (Study 1)

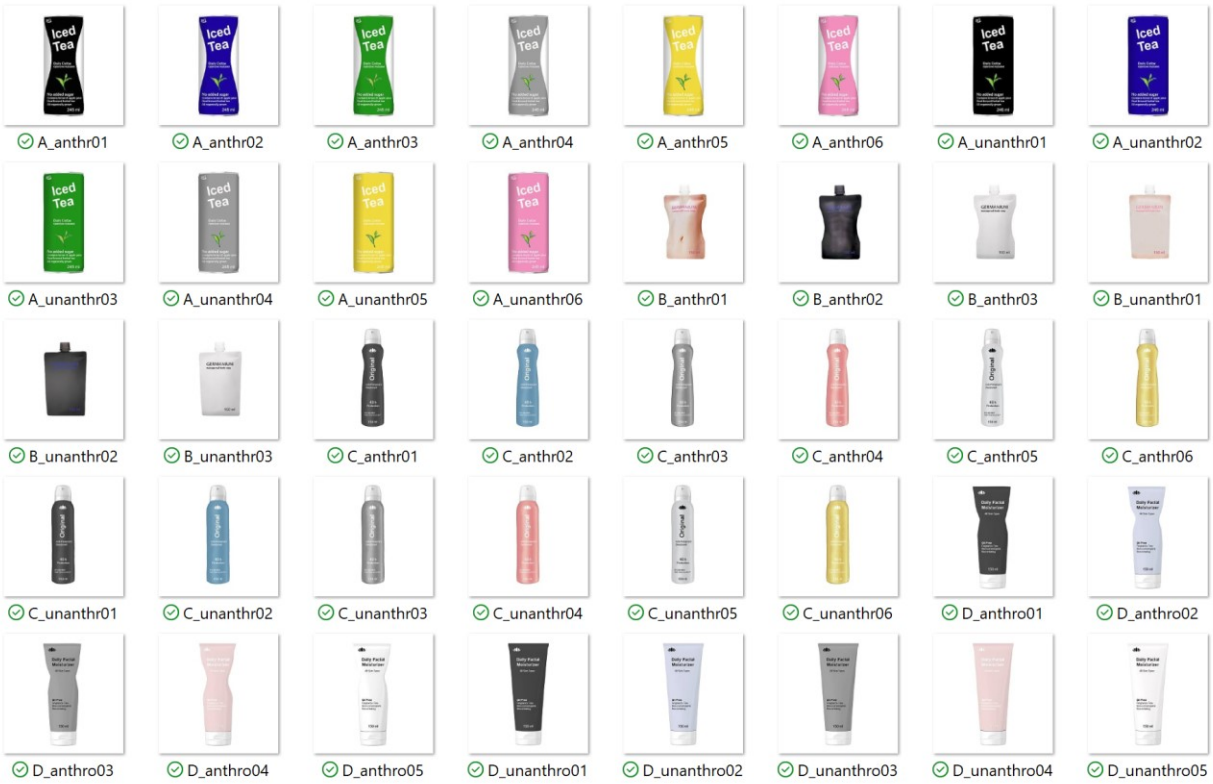
Matrix

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.3 *******************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : Boundary
    X  : abs1
    W  : abs2

Sample
Size:  901

**************************************************************************
OUTCOME VARIABLE:
 Boundary

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .3983      .1587     2.3788    56.3887     3.0000   897.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant    3.9974      .1351    29.5902      .0000     3.7323     4.2625
abs1        -.5217      .0965    -5.4049      .0000     -.7111     -.3322
abs2        -.4797      .0481    -9.9646      .0000     -.5742     -.3852
Int_1        .1189      .0295     4.0362      .0001      .0611      .1767

Product terms key:
 Int_1    :        abs1     x        abs2

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      .0153    16.2905     1.0000   897.0000      .0001
----------
    Focal predict: abs1     (X)
          Mod var: abs2     (W)

Conditional effects of the focal predictor at values of the moderator(s):

       abs2     Effect         se          t          p       LLCI       ULCI
      .6000     -.4503      .0819    -5.4966      .0000     -.6111     -.2895
     2.5000     -.2245      .0509    -4.4097      .0000     -.3244     -.1246
     4.4000      .0014      .0688      .0208      .9834     -.1336      .1365

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   abs1       abs2       Boundary   .
BEGIN DATA.
      .2667      .6000     3.5895
     1.0000      .6000     3.2593
     2.4000      .6000     2.6288
      .2667     2.5000     2.7383
     1.0000     2.5000     2.5737
     2.4000     2.5000     2.2595
      .2667     4.4000     1.8872
     1.0000     4.4000     1.8882
     2.4000     4.4000     1.8902
END DATA.
GRAPH/SCATTERPLOT=
 abs1     WITH     Boundary BY       abs2     .

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

W values in conditional tables are the 16th, 50th, and 84th percentiles.

------ END MATRIX -----
```



	1	2	3	4	5	6	7	8	9
abs1	0.2667	1	2.4	0.2667	1	2.4	0.2667	1	2.4
abs2	0.6	0.6	0.6	2.5	2.5	2.5	4.4	4.4	4.4
boundary	3.5895	3.2593	2.6288	2.7383	2.5737	2.2595	1.8872	1.8882	1.8902

Appendix 6: The Forty Packages Designs in the Pre-test (Study 2)



Appendix 7: The Results of the One Sample T-tests in Pre-test (Study 3)

		sample mean	SD	n	t value	p value	p < 0.05	mean >4 (Sig ~)	mean <4 (sig NOT ~)	Preceived as feminine	Preceived as NOT fem	Preceived as masculine	Prerceived as NOT mas	Preceived for women	Preceived NOT for women	Preceived for men	Preceived NOT for men
A_Anthr01	feminine	3.740740741	1.700511	27	-0.7922	0.435411						/	/	/	/	/	/
1_1_2	masculine	4.851851852	1.833528	27	2.414118	0.023112	Y	Y		/	/	1		/	/	/	/
1_2_1	women	4	1.709701	27	0	1				/	/	/	/			/	/
1_2_2	men	4.888888889	1.76141	27	2.622219	0.014412	Y	Y		/	/	/	/	/	/	1	
	Global attitude	5.160493827	1.783999	27	3.380104	0.002297	Y	Y		0	0	1	0	0	0	1	0
A_Anthr02	feminine	4	1.467599	27	0	1						/	/	/	/	/	/
2_1_2	masculine	4.296296296	1.682828	27	0.914889	0.368657				/	/			/	/	/	/
2_2_1	women	4.555555556	1.502135	27	1.921765	0.06566				/	/	/	/			/	/
2_2_2	men	4.666666667	1.519109	27	2.280351	0.031027	Y	Y		/	/	/	/	/	/	1	
	Global attitude	5.432098765	1.603455	27	4.640857	8.67E-05	Y	Y		0	0	0	0	0	0	1	0
A_Anthr03	feminine	4.555555556	1.476309	27	1.955385	0.061366						/	/	/	/	/	/
3_1_2	masculine	3.851851852	1.511589	27	-0.50927	0.614861				/	/			/	/	/	/
3_2_1	women	4.851851852	1.561649	27	2.83441	0.008763	Y	Y		/	/	/	/	1		/	/
3_2_2	men	4.703703704	1.381605	27	2.646597	0.013622	Y	Y		/	/	/	/	/	/	1	
	Global attitude	5.296296296	1.468569	27	4.58661	0.0001	Y	Y		0	0	0	0	1	0	1	0
A_Anthr04	feminine	3.888888889	1.450022	27	-0.39817	0.693758						/	/	/	/	/	/
4_1_2	masculine	4.481481481	1.695477	27	1.475603	0.152059				/	/			/	/	/	/
4_2_1	women	4.111111111	1.577079	27	0.366088	0.717261				/	/	/	/			/	/
4_2_2	men	4.777777778	1.671787	27	2.417444	0.022942	Y	Y		/	/	/	/	/	/	1	
	Global attitude	4.987654321	1.667901	27	3.076923	0.004879	Y	Y		0	0	0	0	0	0	1	0
A_Anthr05	feminine	5.259259259	1.375405	27	4.757366	6.38E-05	Y	Y		1		/	/	/	/	/	/
5_1_2	masculine	3.296296296	1.4888	27	-2.45604	0.021043	Y		Y	/	/		1	/	/	/	/
5_2_1	women	5.481481481	1.220667	27	6.30639	1.12E-06	Y	Y		/	/	/	/	1		/	/
5_2_2	men	3.925925926	1.542374	27	-0.24955	0.804896				/	/	/	/	/	/		
	Global attitude	5.407407407	1.311792	27	5.574896	7.42E-06	Y	Y		1	0	0	1	1	0	0	0
A_Anthr06	feminine	6.592592593	0.797074	27	16.90119	1.53E-15	Y	Y		1		/	/	/	/	/	/
6_1_2	masculine	1.62962963	1.181529	27	-10.4245	8.86E-11	Y		Y	/	/		1	/	/	/	/
6_2_1	women	6.592592593	0.636049	27	21.17998	6.37E-18	Y	Y		/	/	/	/	1		/	/
6_2_2	men	1.777777778	1.012739	27	-11.4018	1.29E-11	Y		Y	/	/	/	/	/	/		1
	Global attitude	5.012345679	1.735702	27	3.030648	0.005463	Y	Y		1	0	0	1	1	0	0	1
A_Unanthr01	feminine	2.592592593	1.278799	27	-5.71873	5.10E-06	Y		Y		1	/	/	/	/	/	/
7_1_2	masculine	5.444444444	1.64862	27	4.552627	0.000109	Y	Y		/	/	1		/	/	/	/
7_2_1	women	3.814814815	1.754928	27	-0.54831	0.588154				/	/	/	/			/	/
7_2_2	men	5.444444444	1.694637	27	4.429003	0.000152	Y	Y		/	/	/	/	/	/	1	
	Global attitude	4.962962963	2.026182	27	2.469523	0.020415	Y	Y		0	1	1	0	0	0	1	0
A_Unanthr02	feminine	3.592592593	1.366052	27	-1.54969	0.133305						/	/	/	/	/	/
8_1_2	masculine	4.925925926	1.356634	27	3.546463	0.001507	Y	Y		/	/	1		/	/	/	/
8_2_1	women	4.185185185	1.569837	27	0.612962	0.545226				/	/	/	/			/	/
8_2_2	men	5.259259259	1.227649	27	5.329945	1.41E-05	Y	Y		/	/	/	/	/	/	1	
	Global attitude	4.975308642	1.527318	27	3.318138	0.002684	Y	Y		0	0	1	0	0	0	1	0
A_Unanthr03	feminine	3.888888889	1.310705	27	-0.44049	0.663224						/	/	/	/	/	/
9_1_2	masculine	4.518518519	1.396985	27	1.928654	0.064759				/	/			/	/	/	/
9_2_1	women	4.407407407	1.393923	27	1.518701	0.140905				/	/	/	/			/	/
9_2_2	men	4.925925926	1.268734	27	3.792167	0.000802	Y	Y		/	/	/	/	/	/	1	
	Global attitude	5.382716049	1.42236	27	5.051325	2.94E-05	Y	Y		0	0	0	0	0	0	1	0
A_Unanthr04	feminine	3.259259259	1.347151	27	-2.85714	0.008301	Y		Y		1	/	/	/	/	/	/
10_1_2	masculine	5.074074074	1.465656	27	3.807887	0.00077	Y	Y		/	/	1		/	/	/	/
10_2_1	women	4.037037037	1.556166	27	0.123669	0.902528				/	/	/	/			/	/
10_2_2	men	5.148148148	1.536822	27	3.882005	0.000635	Y	Y		/	/	/	/	/	/	1	
	Global attitude	4.851851852	1.623369	27	2.726645	0.011303	Y	Y		0	1	1	0	0	0	1	0
A_Unanthr05	feminine	4.851851852	1.610153	27	2.749026	0.010725	Y	Y		1		/	/	/	/	/	/
11_1_2	masculine	3.814814815	1.442141	27	-0.66724	0.5105				/	/			/	/	/	/
11_2_1	women	5.296296296	1.265361	27	5.323185	1.43E-05	Y	Y		/	/	/	/	1		/	/
11_2_2	men	4	1.54422	27	0	1				/	/	/	/	/	/		
	Global attitude	5.209876543	1.340201	27	4.690867	7.60E-05	Y	Y		1	0	0	0	1	0	0	0
A_Unanthr06	feminine	6.62962963	0.741524	27	18.42686	1.91E-16	Y	Y		1		/	/	/	/	/	/
12_1_2	masculine	1.592592593	0.930643	27	-13.4415	3.26E-13	Y		Y	/	/		1	/	/	/	/
12_2_1	women	6.703703704	0.608581	27	23.08463	7.57E-19	Y	Y		/	/	/	/	1		/	/
12_2_2	men	1.518518519	0.935224	27	-13.7872	1.82E-13	Y		Y	/	/	/	/	/	/		1
	Global attitude	4.740740741	1.677741	27	2.294157	0.030109	Y	Y		1	0	0	1	1	0	0	1

B_Anthr01	feminine	6.424242424	0.969223	33	14.36842	1.66E-15	Y	Y		1		/	/	/	/	/	/
1_4_2	masculine	1.787878788	1.340652	33	-9.47872	8.26E-11	Y		Y	/	/		1	/	/	/	/
1_5_1	women	6.121212121	1.634732	33	7.454088	1.75E-08	Y	Y		/	/	/	/	1		/	/
1_5_2	men	2	1.414214	33	-8.12404	2.81E-09	Y		Y	/	/	/	/	/	/		1
	Global attitude	3.797979798	1.775488	33	-0.65363	0.518018				1	0	0	1	1	0	0	1
B_Anthr02	feminine	2.151515152	1.583533	33	-6.70573	1.43E-07	Y		Y		1	/	/	/	/	/	/
2_4_2	masculine	5.939393939	1.367923	33	8.144445	2.66E-09	Y	Y		/	/	1		/	/	/	/
2_5_1	women	2.484848485	1.563674	33	-5.5663	3.82E-06	Y		Y	/	/	/	/		1	/	/
2_5_2	men	5.575757576	1.47966	33	6.117647	7.72E-07	Y	Y		/	/	/	/	/	/	1	
	Global attitude	3.838383838	1.918697	33	-0.48388	0.631768				0	1	1	0	0	1	1	0
B_Anthr03	feminine	4.363636364	1.294657	33	1.613502	0.116455						/	/	/	/	/	/
3_4_2	masculine	3.909090909	1.58831	33	-0.3288	0.744451				/	/			/	/	/	/
3_5_1	women	4.787878788	1.243925	33	3.638499	0.000955	Y	Y		/	/	/	/	1		/	/
3_5_2	men	3.878787879	1.494941	33	-0.46578	0.644529				/	/	/	/	/	/		
	Global attitude	4.606060606	1.487108	33	2.341157	0.025616	Y	Y		0	0	0	0	1	0	0	0
B_Unanthr01	feminine	6.121212121	1.218544	33	10	2.27E-11	Y	Y		1		/	/	/	/	/	/
4_4_2	masculine	1.909090909	1.354706	33	-8.8664	3.95E-10	Y		Y	/	/		1	/	/	/	/
4_5_1	women	6.181818182	1.184656	33	10.57994	5.61E-12	Y	Y		/	/	/	/	1		/	/
4_5_2	men	2.090909091	1.444032	33	-7.59463	1.19E-08	Y		Y	/	/	/	/	/	/		1
	Global attitude	4.525252525	1.660468	33	1.817166	0.078567				1	0	0	1	1	0	0	1
B_Unanthr02	feminine	2.242424242	1.414883	33	-7.13593	4.24E-08	Y		Y		1	/	/	/	/	/	/
5_4_2	masculine	5.848484848	1.227834	33	8.648351	6.98E-10	Y	Y		/	/	1		/	/	/	/
5_5_1	women	2.727272727	1.64455	33	-4.44575	9.87E-05	Y		Y	/	/	/	/		1	/	/
5_5_2	men	5.696969697	1.131505	33	8.615385	7.61E-10	Y	Y		/	/	/	/	/	/	1	
	Global attitude	4.161616162	1.812612	33	0.512197	0.612031				0	1	1	0	0	1	1	0
B_Unanthr03	feminine	3.575757576	1.601373	33	-1.52187	0.137862						/	/	/	/	/	/
6_4_2	masculine	4.212121212	1.515701	33	0.803947	0.42736				/	/			/	/	/	/
6_5_1	women	4.303030303	1.446652	33	1.203314	0.237682				/	/	/	/			/	/
6_5_2	men	4.303030303	1.446652	33	1.203314	0.237682				/	/	/	/	/	/		
	Global attitude	4.383838384	1.504902	33	1.465201	0.152623				0	0	0	0	0	0	0	0

C_Anthr01	feminine	2.931034483	1.462167	29	-3.937	0.000497		Y			Y			1	/	/	/	/	/
1_7_2	masculine	5.206896552	1.497124	29	4.341216	0.000167		Y	Y			/	/	1		/	/	/	/
1_8_1	women	3.448275862	1.478083	29	-2.01012	0.054141						/	/	/	/			/	/
1_8_2	men	5.310344828	1.5143	29	4.659859	7.03E-05		Y	Y			/	/	/	/	/	/	1	
	Global attitude	4.459770115	1.572113	29	1.574911	0.12651						0	1	1	0	0	0	1	0
C_Anthr02	feminine	4.655172414	1.343659	29	2.625824	0.013853		Y	Y			1		/	/	/	/	/	/
2_7_2	masculine	3.275862069	1.031523	29	-3.78043	0.000755		Y			Y	/	/		1	/	/	/	/
2_8_1	women	4.724137931	1.278854	29	3.049294	0.004971		Y	Y			/	/	/	/	1		/	/
2_8_2	men	3.896551724	1.371777	29	-0.40611	0.687752						/	/	/	/	/	/		
	Global attitude	4.781609195	1.244913	29	3.381035	0.002145		Y	Y			1	0	0	1	1	0	0	0
C_Anthr03	feminine	3.517241379	1.404602	29	-1.85087	0.074765								/	/	/	/	/	/
3_7_2	masculine	4.551724138	1.403725	29	2.116601	0.043313		Y	Y			/	/	1		/	/	/	/
3_8_1	women	3.689655172	1.391388	29	-1.20114	0.239757						/	/	/	/			/	/
3_8_2	men	4.827586207	1.440956	29	3.092869	0.004459		Y	Y			/	/	/	/	/	/	1	
	Global attitude	4.379310345	1.314522	29	1.553909	0.131438						0	0	1	0	0	0	1	0
C_Anthr04	feminine	6	1.035098	29	10.40513	3.98E-11		Y	Y			1		/	/	/	/	/	/
4_7_2	masculine	1.862068966	0.915117	29	-12.581	4.84E-13		Y			Y	/	/		1	/	/	/	/
4_8_1	women	6.206896552	1.048104	29	11.33905	5.60E-12		Y	Y			/	/	/	/	1		/	/
4_8_2	men	2	1.336306	29	-8.05978	8.92E-09		Y			Y	/	/	/	/	/	/		1
	Global attitude	4.632183908	1.334359	29	2.551348	0.016479		Y	Y			1	0	0	1	1	0	0	1
C_Anthr05	feminine	4.034482759	1.267246	29	0.146535	0.884549								/	/	/	/	/	/
5_7_2	masculine	4	1.164965	29	0	1						/	/			/	/	/	/
5_8_1	women	4.413793103	1.50041	29	1.485156	0.148675						/	/	/	/			/	/
5_8_2	men	4.344827586	1.446075	29	1.284133	0.20962						/	/	/	/	/	/		
	Global attitude	4.471264368	1.219931	29	2.080311	0.046765		Y	Y			0	0	0	0	0	0	0	0
C_Anthr06	feminine	5.517241379	1.271127	29	6.427836	5.83E-07		Y	Y			1		/	/	/	/	/	/
6_7_2	masculine	2.448275862	1.152209	29	-7.25241	6.78E-08		Y			Y	/	/		1	/	/	/	/
6_8_1	women	5.551724138	1.325201	29	6.305678	8.07E-07		Y	Y			/	/	/	/	1		/	/
6_8_2	men	2.689655172	1.339068	29	-5.26965	1.33E-05		Y			Y	/	/	/	/	/	/		1
	Global attitude	4.505747126	1.349958	29	2.017494	0.053321						1	0	0	1	1	0	0	1
C_Unanthr01	feminine	2.172413793	1.037475	29	-9.48635	3.04E-10		Y			Y		1	/	/	/	/	/	/
7_7_2	masculine	5.793103448	0.977581	29	9.877601	1.26E-10		Y	Y			/	/	1		/	/	/	/
7_8_1	women	2.551724138	1.241721	29	-6.28096	8.62E-07		Y			Y	/	/	/	/		1	/	/
7_8_2	men	5.724137931	1.161789	29	7.991784	1.05E-08		Y	Y			/	/	/	/	/	/	1	
	Global attitude	4.471264368	1.418465	29	1.789143	0.084416						0	1	1	0	0	1	1	0
C_Unanthr02	feminine	4.206896552	1.611993	29	0.691177	0.495146								/	/	/	/	/	/
8_7_2	masculine	3.689655172	1.339068	29	-1.24808	0.22234						/	/			/	/	/	/
8_8_1	women	4.517241379	1.404602	29	1.983074	0.057246						/	/	/	/			/	/
8_8_2	men	3.827586207	1.489702	29	-0.62326	0.538156						/	/	/	/	/	/		
	Global attitude	4.804597701	1.248864	29	3.469467	0.001707		Y	Y			0	0	0	0	0	0	0	0
C_Unanthr03	feminine	3.068965517	1.510228	29	-3.31988	0.00251		Y			Y		1	/	/	/	/	/	/
9_7_2	masculine	4.931034483	1.334462	29	3.757151	0.000803		Y	Y			/	/	1		/	/	/	/
9_8_1	women	3.172413793	1.489702	29	-2.99166	0.005734		Y			Y	/	/	/	/		1	/	/
9_8_2	men	5.103448276	1.31868	29	4.506212	0.000107		Y	Y			/	/	/	/	/	/	1	
	Global attitude	4.459770115	1.258034	29	1.968101	0.059031						0	1	1	0	0	1	1	0
C_Unanthr04	feminine	6.034482759	1.051623	29	10.4182	3.87E-11		Y	Y			1		/	/	/	/	/	/
10_7_2	masculine	1.931034483	1.099709	29	-10.1315	7.21E-11		Y			Y	/	/		1	/	/	/	/
10_8_1	women	6.103448276	1.046928	29	10.81967	1.64E-11		Y	Y			/	/	/	/	1		/	/
10_8_2	men	2.034482759	1.179672	29	-8.97252	9.96E-10		Y			Y	/	/	/	/	/	/		1
	Global attitude	4.609195402	1.388927	29	2.36198	0.025365		Y	Y			1	0	0	1	1	0	0	1
C_Unanthr05	feminine	4.034482759	1.475581	29	0.125846	0.900753								/	/	/	/	/	/
11_7_2	masculine	3.965517241	1.451176	29	-0.12796	0.899094						/	/			/	/	/	/
11_8_1	women	4.413793103	1.427216	29	1.561322	0.129681						/	/	/	/			/	/
11_8_2	men	4.275862069	1.532891	29	0.969125	0.34078						/	/	/	/	/	/		
	Global attitude	4.701149425	1.292054	29	2.922328	0.006801		Y	Y			0	0	0	0	0	0	0	0
C_Unanthr06	feminine	5.172413793	1.28366	29	4.918468	3.47E-05		Y	Y			1		/	/	/	/	/	/
12_7_2	masculine	2.793103448	1.206509	29	-5.38689	9.64E-06		Y			Y	/	/		1	/	/	/	/
12_8_1	women	5.379310345	1.146853	29	6.476694	5.13E-07		Y	Y			/	/	/	/	1		/	/
12_8_2	men	3.068965517	1.360962	29	-3.68399	0.000974		Y			Y	/	/	/	/	/	/		1
	Global attitude	4.609195402	1.351275	29	2.427794	0.021872		Y	Y			1	0	0	1	1	0	0	1

D_Anthr01	feminine	3.464285714	1.502643	28	-1.8865	0.070026								/	/	/	/	/	/
1_10_2	masculine	4.571428571	1.549876	28	1.95094	0.061513						/	/			/	/	/	/
1_11_1	women	4.571428571	1.751794	28	1.726068	0.095763						/	/	/	/			/	/
1_11_2	men	4.214285714	1.812654	28	0.625543	0.536867						/	/	/	/	/	/		
	Global attitude	5.011904762	1.225525	28	4.369147	0.000166		Y	Y			0	0	0	0	0	0	0	0
D_Anthr02	feminine	4.857142857	1.671422	28	2.713602	0.011448		Y	Y			1		/	/	/	/	/	/
2_10_2	masculine	2.928571429	1.585316	28	-3.57624	0.001342		Y			Y	/	/		1	/	/	/	/
2_11_1	women	4.785714286	1.707438	28	2.434999	0.021778		Y	Y			/	/	/	/	1		/	/
2_11_2	men	3.357142857	1.682465	28	-2.02184	0.053205						/	/	/	/	/	/		
	Global attitude	4.821428571	1.452916	28	2.991634	0.005865		Y	Y			1	0	0	1	1	0	0	0
D_Anthr03	feminine	3.785714286	1.595297	28	-0.71077	0.48332								/	/	/	/	/	/
3_10_2	masculine	4.285714286	1.718249	28	0.879883	0.386687						/	/			/	/	/	/
3_11_1	women	4.285714286	1.863035	28	0.811503	0.424174						/	/	/	/			/	/
3_11_2	men	4.035714286	1.773929	28	0.106533	0.915947						/	/	/	/	/	/		
	Global attitude	4.392857143	1.625551	28	1.278831	0.21184						0	0	0	0	0	0	0	0
D_Anthr04	feminine	6.464285714	1.373887	28	9.491153	4.30E-10		Y	Y			1		/	/	/	/	/	/
4_10_2	masculine	1.535714286	1.373887	28	-9.49115	4.30E-10		Y			Y	/	/		1	/	/	/	/
4_11_1	women	6.285714286	1.436486	28	8.419757	4.96E-09		Y	Y			/	/	/	/	1		/	/
4_11_2	men	2.142857143	1.556689	28	-6.31281	9.32E-07		Y			Y	/	/	/	/	/	/		1
	Global attitude	4.761904762	1.557821	28	2.587987	0.015355		Y	Y			1	0	0	1	1	0	0	1
D_Anthr05	feminine	4.821428571	1.722478	28	2.523452	0.017814		Y	Y			1		/	/	/	/	/	/
5_10_2	masculine	3.214285714	1.571909	28	-2.64494	0.013451		Y			Y	/	/		1	/	/	/	/
5_11_1	women	5.107142857	1.594883	28	3.673279	0.001043		Y	Y			/	/	/	/	1		/	/
5_11_2	men	3.785714286	1.548168	28	-0.73241	0.470229						/	/	/	/	/	/		
	Global attitude	4.630952381	1.722137	28	1.938688	0.063058						1	0	0	1	1	0	0	0
D_Unanthr01	feminine	2.928571429	1.513607	28	-3.74567	0.000864		Y			Y		1	/	/	/	/	/	/
6_10_2	masculine	5.142857143	1.757825	28	3.440293	0.001904		Y	Y			/	/	1		/	/	/	/
6_11_1	women	3.75	2.011541	28	-0.65764	0.516336						/	/	/	/			/	/
6_11_2	men	5.071428571	1.824292	28	3.107762	0.004405		Y	Y			/	/	/	/	/	/	1	
	Global attitude	4.964285714	1.785491	28	2.857769	0.008118		Y	Y			0	1	1	0	0	0	1	0
D_Unanthr02	feminine	4.142857143	1.649114	28	-2.75031	0.010496		Y	Y			1		/	/	/	/	/	/
7_10_2	masculine	3.535714286	1.527092	28	-1.60879	0.119294						/	/			/	/	/	/
7_11_1	women	4.607142857	1.70705	28	1.882017	0.070654						/	/	/	/			/	/
7_11_2	men	3.571428571	1.476446	28	-1.53598	0.136181						/	/	/	/	/	/		
	Global attitude	5.142857143	1.406711	28	4.298986	0.0002		Y	Y			1	0	0	0	0	0	0	0
D_Unanthr03	feminine	3.321428571	1.540889	28	-2.33025	0.027512		Y			Y		1	/	/	/	/	/	/
8_10_2	masculine	4.678571429	1.56474	28	2.294734	0.02975		Y	Y			/	/	1		/	/	/	/
8_11_1	women	4.071428571	1.864454	28	0.202721	0.840873						/	/	/	/			/	/
8_11_2	men	4.428571429	1.854495	28	1.222859	0.23195						/	/	/	/	/	/		
	Global attitude	4.797619048	1.455341	28	2.900078	0.00733		Y	Y			0	1	1	0	0	0	0	0
D_Unanthr04	feminine	5.75	1.77691	28	5.211368	1.73E-05		Y	Y			1		/	/	/	/	/	/
9_10_2	masculine	2.071428571	1.513607	28	-6.7422	3.07E-07		Y			Y	/	/		1	/	/	/	/
9_11_1	women	5.642857143	1.72593	28	5.036809	2.76E-05		Y	Y			/	/	/	/	1		/	/
9_11_2	men	2.75	1.669442	28	-3.96203	0.000489		Y			Y	/	/	/	/	/	/		1
	Global attitude	4.69047619	1.578999	28	2.313906	0.028522		Y	Y			1	0	0	1	1	0	0	1
D_Unanthr05	feminine	4	1.632993	28	0	1								/	/	/	/	/	/
10_10_2	masculine	3.892857143	1.523624	28	-0.3721	0.71272						/	/			/	/	/	/
10_11_1	women	4.464285714	1.773929	28	1.384931	0.177412						/	/	/	/			/	/
10_11_2	men	4.285714286	1.674584	28	0.902826	0.374603						/	/	/	/	/	/		
	Global attitude	4.904761905	1.387354	28	3.45085	0.001853		Y	Y			0	0	0	0	0	0	0	0

	mas	fem	netural	androgyny
A_an_01	2	0		
A_an_02	1	0		
A_an_03	1	1		Y
A_an_04	1	0		
A_an_05	0	3		
A_an_06	0	4		
A_un_01	3	0		
A_un_02	2	0		
A_un_03	1	0		
A_un_04	3	0		
A_un_05	0	2		
A_un_06	0	4		
B_an_01	0	4		
B_an_02	4	0		
B_an_03	0	1		
B_un_01	0	4		
B_un_02	4	0		
B_un_03	0	0	Y	
C_an_01	3	0		
C_an_02	0	3		
C_an_03	2	0		
C_an_04	0	4		
C_an_05	0	0	Y	
C_an_06	0	4		
C_un_01	4	0		
C_un_02	0	0	Y	
C_un_03	4	0		
C_un_04	0	4		
C_un_05	0	0	Y	
C_un_06	0	4		
D_an_01	0	0	Y	
D_an_02	0	3		
D_an_03	0	0	Y	
D_an_04	0	4		
D_an_05	0	3		
D_un_01	3	0		
D_un_02	0	1		
D_un_03	2	0		
D_un_04	0	4		
D_un_05	0	0	Y	

Appendix 8: Mean Values of Boundary; Coefficient Alphas & Factor Analysis (Study 2)

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
1_google doc	297	1	7	3.63	0.099	1.714	2.937
2_amazon tvcast	297	1	7	3.13	0.111	1.908	3.639
3_cocacola zero	297	1	7	3.15	0.100	1.715	2.942
4_wwf shampoo	297	1	7	2.35	0.096	1.656	2.741
1_boundary	23	1	5	1.87	0.262	1.254	1.573
2_boundary	19	1	5	2.84	0.369	1.608	2.585
3_boundary	32	1	6	2.22	0.279	1.581	2.499
4_boundary	24	1	5	2.58	0.335	1.640	2.688
5_boundary	18	1	7	2.61	0.413	1.754	3.075
6_boundary	23	1	6	2.52	0.366	1.755	3.079
7_boundary	28	1	6	2.46	0.298	1.575	2.480
8_boundary	32	1	5	2.06	0.224	1.268	1.609
9_boundary	24	1	6	2.71	0.383	1.876	3.520
10_boundary	19	1	5	2.05	0.337	1.471	2.164
11_boundary	30	1	5	2.53	0.278	1.525	2.326
12_boundary	25	1	6	1.88	0.343	1.716	2.943
Valid N (listwise)	0						

Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
MBP	0.915	0.914	6
FBP	0.937	0.936	6
Brand trust	0.843	0.855	4
Brand affect	0.938	0.938	3
Global attitude	0.924	0.924	3
Preference	0.923	0.923	3
Purchase intention	0.949	0.949	2
Attitudinal brand loyalty	0.896	0.897	2
Behavioral brand loyalty	0.910	0.910	2
Likelihood of recomm	0.950	0.950	2
WOM	0.934	0.934	3
Connection	0.962	0.963	7
Attachment	0.972	0.972	10
FTI	0.925	0.925	10
MTI	0.925	0.925	10

Factor Analysis of Multi-items Scale in Study 2

Scale name	Number of principal component extracted	Average variance extracted (Cumulative %)
Brand trust	1	69.834
Brand affect	1	88.988
Brand attitude	1	86.821
Brand preference	1	86.731
Purchase intention	1	95.109
Attitudinal brand loyalty	1	90.626
Behavioral brand loyalty	1	91.741
Likelihood of recommendation	1	95.279
Word-of-mouth	1	88.350
Self-brand connection	1	81.696
Self-brand attachment	1	80.127
MBP / FBP	2	73.800
MTI / FTI	3	64.170

* Pattern matrix of MBP & FBP and MTI & FTI

	Component	
	1	2
MBP&FBP_1	.220	.689
MBP&FBP_2	-.140	.858
MBP&FBP_3	.057	.867
MBP&FBP_4	.109	.826
MBP&FBP_5	-.109	.910
MBP&FBP_6	.090	.762
MBP&FBP_7	.852	.070
MBP&FBP_8	.709	.060
MBP&FBP_9	.860	.043
MBP&FBP_10	.927	-.079
MBP&FBP_11	.900	-.036
MBP&FBP_12	.939	.008

	Component	
	1	2
FTI_1	.748	.084
FTI_2	.541	.202
FTI_3	.785	-.050
FTI_4	.834	-.026
FTI_5	.815	-.073
FTI_6	.830	-.021
FTI_7	.713	-.056
FTI_8	.757	.061
FTI_9	.802	-.076
FTI_10	.846	.046
MTI_1	.088	.791
MTI_2	.299	.609
MTI_3	.320	.584
MTI_4	.049	.701
MTI_5	-.185	.787
MTI_6	.063	.753
MTI_7	.058	.788
MTI_8	-.339	.700
MTI_9	.063	.819
MTI_10	-.377	.669

Appendix 9: The Correlation among Gender-related Variables; Independent T-tests (Study 2)

Correlations

		MBP	FBP	by women	by men	feminine	masculine
MBP	Pearson Correlation	1	.484**	-.079	.263**	-.032	.397**
	Sig. (2-tailed)		.000	.177	.000	.581	.000
	N	297	297	297	297	297	297
FBP	Pearson Correlation	.484**	1	.339**	-.155**	.422**	-.098
	Sig. (2-tailed)	.000		.000	.007	.000	.092
	N	297	297	297	297	297	297
by women	Pearson Correlation	-.079	.339**	1	-.522**	.638**	-.493**
	Sig. (2-tailed)	.177	.000		.000	.000	.000
	N	297	297	297	297	297	297
by men	Pearson Correlation	.263**	-.155**	-.522**	1	-.510**	.686**
	Sig. (2-tailed)	.000	.007	.000		.000	.000
	N	297	297	297	297	297	297
feminine	Pearson Correlation	-.032	.422**	.638**	-.510**	1	-.509**
	Sig. (2-tailed)	.581	.000	.000	.000		.000
	N	297	297	297	297	297	297
masculine	Pearson Correlation	.397**	-.098	-.493**	.686**	-.509**	1
	Sig. (2-tailed)	.000	.092	.000	.000	.000	
	N	297	297	297	297	297	297

**. Correlation is significant at the 0.01 level (2-tailed).

Independent Samples Test

													95% Confidence Interval of the Difference	
1_sex	N	Mean	Std. Deviation	Std. Error Mean		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
1_MBP 1	11	2.6061	1.60082049691080	0.48266554038497 0	1_MBP Equal variances assumed	2.061	0.167	0.633	20	0.534	0.378787878787879	0.598206686413167	-0.869049402979969	1.626625160555730
2	11	2.2273	1.17206543065380	0.35339102393001 8	Equal variances not assumed			0.633	18.328	0.534	0.378787878787879	0.598206686413167	-0.876386991467621	1.633962749043380
1_FBP 1	11	2.8333	1.75435964825440	0.52895933662048 2	1_FBP Equal variances assumed	0.616	0.442	0.737	20	0.469	0.530303030303031	0.719082672442580	-0.969677139974380	2.030283200580440
2	11	2.3030	1.61558070367933 0	0.48711591024024 5	Equal variances not assumed			0.737	19.866	0.469	0.530303030303031	0.719082672442580	-0.970327510936759	2.030933571542820
1_by women 1	11	5.4545	1.368	0.413	1_by women Equal variances assumed	0.674	0.421	0.285	20	0.779	0.182	0.639	-1.151	1.515
2	11	5.2727	1.618	0.488	Equal variances not assumed			0.285	19.464	0.779	0.182	0.639	-1.153	1.517
1_by men 1	11	4.6364	2.063	0.622	1_by men Equal variances assumed	3.102	0.094	2.451	20	0.024	1.909	0.779	0.284	3.534
2	11	2.7273	1.555	0.469	Equal variances not assumed			2.451	18.592	0.024	1.909	0.779	0.277	3.542
1_feminine 1	11	4.3636	1.963	0.592	1_feminine Equal variances assumed	0.038	0.847	0.964	20	0.347	0.818	0.849	-0.953	2.589
2	11	3.5455	2.018	0.608	Equal variances not assumed			0.964	19.985	0.347	0.818	0.849	-0.953	2.589
1_masculine 1	11	3.3636	1.963	0.592	1_masculine Equal variances assumed	0.008	0.928	0.442	20	0.663	0.364	0.823	-1.354	2.081
2	11	3.0000	1.897	0.572	Equal variances not assumed			0.442	19.977	0.663	0.364	0.823	-1.354	2.081

Group Statistics

													95% Confidence Interval of the Difference	
2_sex	N	Mean	Std. Deviation	Std. Error Mean		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
2_MBP 1	8	2.9583	1.32062356056510	0.46691107545329 5	2_MBP Equal variances assumed	0.752	0.398	0.116	17	0.909	0.079545454545455	0.686453716155662	-1.368745289261300	1.527836198352210
2	11	2.8788	1.57778133446747 0	0.47571897160498 4	Equal variances not assumed			0.119	16.574	0.906	0.079545454545455	0.666569195452247	-1.329550474317270	1.488641383408180
2_FBP 1	8	4.4375	1.47985814935860	0.52320886827467 9	2_FBP Equal variances assumed	0.000	0.998	0.105	17	0.918	0.073863636363637	0.706669639054797	-1.417078976183840	1.564806250911110
2	11	4.3636	1.54886729547431 0	0.46700106083098 3	Equal variances not assumed			0.105	15.645	0.917	0.073863636363637	0.701311279431989	-1.415593402797730	1.563329675525010
2_by women 1	8	5.3750	1.685	0.596	2_by women Equal variances assumed	2.232	0.154	-0.982	17	0.340	-0.625	0.636	-1.967	0.717
2	11	6.0000	1.095	0.330	Equal variances not assumed			-0.918	11.222	0.378	-0.625	0.681	-2.121	0.871
2_by men 1	8	2.3750	0.916	0.324	2_by men Equal variances assumed	0.130	0.723	-1.135	17	0.272	-0.625	0.551	-1.787	0.537
2	11	3.0000	1.342	0.405	Equal variances not assumed			-1.206	16.969	0.244	-0.625	0.518	-1.718	0.468
2_feminine 1	8	5.2500	1.832	0.648	2_feminine Equal variances assumed	0.170	0.685	-0.246	17	0.808	-0.205	0.830	-1.955	1.546
2	11	5.4545	1.753	0.529	Equal variances not assumed			-0.245	14.823	0.810	-0.205	0.836	-1.988	1.579
2_masculine 1	8	2.2500	0.886	0.313	2_masculine Equal variances assumed	4.262	0.055	-0.386	17	0.705	-0.295	0.766	-1.912	1.321
2	11	2.5455	2.018	0.608	Equal variances not assumed			-0.432	14.547	0.672	-0.295	0.684	-1.758	1.167

Group Statistics

													95% Confidence Interval of the Difference	
3_sex	N	Mean	Std. Deviation	Std. Error Mean		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
3_MBP 1	21	3.0556	1.58318712775259 0	0.34547975486695 0	3_MBP Equal variances assumed	0.090	0.766	1.241	30	0.224	0.752525252525252	0.606554232196022	-0.486223749141498	1.991274254192000
2	11	2.3030	1.71887912736082 0	0.51826155686324 4	Equal variances not assumed			1.298	18.987	0.242	0.752525252525252	0.622857369182738	-0.551188636756863	2.056239143807370
3_FBP 1	21	4.0556	1.66777407654120	0.36393886728153 4	3_FBP Equal variances assumed	0.176	0.678	1.416	30	0.167	0.904040404040404	0.638417933709971	-0.399782957584082	2.207863765664890
2	11	3.1515	1.80655372564349 0	0.54469644287073 6	Equal variances not assumed			1.380	19.026	0.184	0.904040404040404	0.655092141606201	-0.466958427951138	2.275039236031940
3_by women 1	21	5.4762	1.123	0.245	3_by women Equal variances assumed	2.098	0.158	-1.090	30	0.284	-0.433	0.397	-1.244	0.378
2	11	5.9091	0.944	0.285	Equal variances not assumed			-1.153	23.794	0.261	-0.433	0.376	-1.208	0.343
3_by men 1	21	4.3810	1.746	0.381	3_by men Equal variances assumed	0.028	0.868	0.861	30	0.396	0.563	0.654	-0.773	1.898
2	11	3.8182	1.779	0.536	Equal variances not assumed			0.856	20.082	0.402	0.563	0.658	-0.809	1.935
3_feminine 1	21	5.1429	1.711	0.373	3_feminine Equal variances assumed	3.764	0.062	0.254	30	0.801	0.143	0.563	-1.006	1.292
2	11	5.0000	1.000	0.302	Equal variances not assumed			0.298	29.501	0.768	0.143	0.480	-0.838	1.124
3_masculine 1	21	3.4762	1.632	0.356	3_masculine Equal variances assumed	0.000	0.990	0.336	30	0.739	0.203	0.606	-1.033	1.440
2	11	3.2727	1.618	0.488	Equal variances not assumed			0.337	20.570	0.740	0.203	0.604	-1.054	1.461

Group Statistics

													95% Confidence Interval of the Difference	
4_sex	N	Mean	Std. Deviation	Std. Error Mean		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
4_MBP 1	11	3.2879	1.73059922717321 0	0.52420739066854	4_MBP Equal variances assumed	0.140	0.711	-0.063	22	0.951	-0.045454545454545	0.726132821442684	-1.551361847565600	1.460452756656520
2	13	3.3333	1.80026574955774 0	0.49926724126273 2	Equal variances not assumed			-0.063	21.576	0.951	-0.045454545454545	0.723934484409675	-1.548514566510780	1.457605475691690
4_FBP 1	11	3.2879	1.85755351215114 0	0.56007345707363 9	4_FBP Equal variances assumed	0.385	0.541	0.685	22	0.500	0.480186480186481	0.700539271867854	-0.972643046749276	1.933016009122240
2	13	2.8077	1.57651478280378 0	0.43724652968661 7	Equal variances not assumed			0.676	19.781	0.507	0.480186480186481	0.710539796351669	-1.003026193561520	1.963399153934480
4_by women 1	11	5.6364	1.206	0.364	4_by women Equal variances assumed	0.508	0.483	1.029	22	0.315	0.559	0.549	-0.579	1.697
2	13	5.0769	1.441	0.400	Equal variances not assumed			1.035	22.000	0.312	0.559	0.540	-0.561	1.680
4_by men 1	11	4.7273	1.794	0.541	4_by men Equal variances assumed	0.000	0.988	1.847	22	0.078	1.343	0.727	-0.165	2.859
2	13	3.3846	1.758	0.488	Equal variances not assumed			1.844	21.192	0.079	1.343	0.728	-0.171	2.856
4_feminine 1	11	4.7273	1.737	0.524	4_feminine Equal variances assumed	0.591	0.450	0.827	22	0.417	0.650	0.787	-0.981	2.282
2	13	4.0769	2.060	0.571	Equal variances not assumed			0.839	22.000	0.410	0.650	0.775	-0.957	2.258
4_masculine 1	11	3.7273	1.618	0.488	4_masculine Equal variances assumed	0.549	0.466	0.146	22	0.885	0.112	0.768	-1.469	1.704
2	13	3.6154	2.063	0.572	Equal variances not assumed			0.149	21.900	0.883	0.112	0.752	-1.448	1.672

Group Statistics

5_sex		N	Mean	Std. Deviation	Std. Error Mean
5_MBP	1	12	2.5000	1.18278903416590	0.34144783592008
	2	5	3.0667	1.87305454627817	0.83765545828684
5_FBP	1	12	3.9861	1.35672349916947	0.39165233870692
	2	5	3.5667	1.59251722474555	0.71219535397405
5_by women	1	12	5.3333	1.670	0.482
	2	5	5.4000	1.140	0.510
5_by men	1	12	3.3333	1.231	0.355
	2	5	3.2000	1.304	0.583
5_feminine	1	12	5.8333	0.937	0.271
	2	5	6.2000	0.837	0.374
5_masculine	1	12	2.6667	1.435	0.414
	2	5	1.8000	0.837	0.374

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
5_MBP	Equal variances assumed	1.550	0.232	-0.769	15	0.459	-0.566666666666667	0.745488488455558	-2.155637666605300	1.022304433271960
	Equal variances not assumed			-0.626	5.386	0.557	-0.566666666666667	0.904571256590192	-2.842750931235800	1.709417597902460
5_FBP	Equal variances assumed	0.273	0.609	0.554	15	0.588	0.419444444444445	0.757676421482668	-1.195504619806130	2.034393508695020
	Equal variances not assumed			0.516	6.567	0.623	0.419444444444445	0.812761506098314	-1.528484430734200	2.367733196230990
5_by women	Equal variances assumed	0.278	0.606	-0.081	15	0.937	-0.067	0.823	-1.821	1.688
	Equal variances not assumed			-0.095	11.115	0.926	-0.067	0.702	-1.609	1.476
5_by men	Equal variances assumed	0.003	0.959	0.200	15	0.844	0.133	0.666	-1.286	1.552
	Equal variances not assumed			0.195	7.163	0.851	0.133	0.683	-1.474	1.741
5_feminine	Equal variances assumed	0.086	0.773	-0.756	15	0.462	-0.367	0.485	-1.401	0.668
	Equal variances not assumed			-0.794	8.439	0.449	-0.367	0.462	-1.422	0.689
5_masculine	Equal variances assumed	2.073	0.171	1.250	15	0.231	0.867	0.694	-0.612	2.345
	Equal variances not assumed			1.552	12.818	0.145	0.867	0.558	-0.341	2.075

Group Statistics

6_sex		N	Mean	Std. Deviation	Std. Error Mean
6_MBP	1	11	3.2727	1.71151772684157	0.51604201088679
	2	12	2.2917	1.23322071557906	0.35600015605489
6_FBP	1	11	3.5606	1.50973273491400	0.45520154699414
	2	12	2.8194	1.49655890368156	0.43201934294934
6_by women	1	11	5.8182	0.982	0.296
	2	12	5.5833	0.996	0.288
6_by men	1	11	4.2727	1.618	0.488
	2	12	4.0000	1.706	0.492
6_feminine	1	11	5.7273	1.009	0.304
	2	12	4.8333	1.467	0.423
6_masculine	1	11	3.2727	1.679	0.506
	2	12	3.5833	1.621	0.468

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
6_MBP	Equal variances assumed	1.288	0.269	1.588	21	0.127	0.981060606060606	0.617945966535890	-0.304028381240995	2.266149593362210
	Equal variances not assumed			1.565	18.064	0.135	0.981060606060606	0.626925408896114	-0.335727240708822	2.297848452829230
6_FBP	Equal variances assumed	0.628	0.437	1.181	21	0.251	0.741161616161618	0.627323553157945	-0.563429130109342	2.045752362432580
	Equal variances not assumed			1.181	20.792	0.251	0.741161616161618	0.627574028143229	-0.564744439575706	2.047067671898940
6_by women	Equal variances assumed	0.037	0.849	0.569	21	0.576	0.235	0.413	-0.624	1.094
	Equal variances not assumed			0.569	20.878	0.575	0.235	0.413	-0.624	1.093
6_by men	Equal variances assumed	0.093	0.764	0.393	21	0.699	0.273	0.695	-1.172	1.718
	Equal variances not assumed			0.393	20.969	0.698	0.273	0.693	-1.169	1.714
6_feminine	Equal variances assumed	1.671	0.210	1.687	21	0.106	0.894	0.530	-0.208	1.996
	Equal variances not assumed			1.715	19.556	0.102	0.894	0.521	-0.195	1.983
6_masculine	Equal variances assumed	0.038	0.847	-0.451	21	0.656	-0.311	0.688	-1.742	1.121
	Equal variances not assumed			-0.451	20.672	0.657	-0.311	0.689	-1.746	1.124

Group Statistics

7_sex		N	Mean	Std. Deviation	Std. Error Mean
7_MBP	1	17	3.8922	1.66764677642390	0.40446375857574
	2	11	4.4242	1.16753214650874	0.35202418733161
7_FBP	1	17	2.9804	1.34871640744540	0.32711177687527
	2	11	3.6818	1.66575732768836	0.50224473611581
7_by women	1	17	4.3529	1.579	0.383
	2	11	4.1818	2.040	0.615
7_by men	1	17	4.1765	1.845	0.448
	2	11	5.1818	1.834	0.553
7_feminine	1	17	4.0000	1.658	0.402
	2	11	3.9091	2.300	0.694
7_masculine	1	17	4.7059	1.572	0.381
	2	11	6.0000	1.265	0.381

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
7_MBP	Equal variances assumed	1.709	0.203	-0.920	26	0.366	-0.532085561497327	0.578581305886518	-1.721376468395400	0.657205345400750
	Equal variances not assumed			-0.992	25.766	0.330	-0.532085561497327	0.536201412748221	-1.634751428097100	0.570580305102449
7_FBP	Equal variances assumed	0.336	0.567	-1.226	26	0.231	-0.701426024955436	0.572195717046562	-1.877591166009920	0.474739116099043
	Equal variances not assumed			-1.170	18.233	0.257	-0.701426024955436	0.599376246612182	-1.959517654187840	0.556665604276966
7_by women	Equal variances assumed	0.585	0.451	0.250	26	0.805	0.171	0.685	-1.237	1.580
	Equal variances not assumed			0.236	17.598	0.816	0.171	0.725	-1.354	1.696
7_by men	Equal variances assumed	0.138	0.713	-1.411	26	0.170	-1.005	0.712	-2.470	0.459
	Equal variances not assumed			-1.413	21.598	0.172	-1.005	0.711	-2.482	0.472
7_feminine	Equal variances assumed	2.409	0.133	0.122	26	0.904	0.091	0.747	-1.445	1.627
	Equal variances not assumed			0.113	16.678	0.911	0.091	0.802	-1.603	1.785
7_masculine	Equal variances assumed	0.006	0.932	-2.288	26	0.030	-1.294	0.566	-2.457	-0.132
	Equal variances not assumed			-2.400	24.610	0.024	-1.294	0.539	-2.406	-0.183

Group Statistics

8_sex		N	Mean	Std. Deviation	Std. Error Mean
8_MBP	1	13	3.0385	1.27866044723190	0.35463648856657
	2	19	2.4474	1.08019864681600	0.24781456566199
8_FBP	1	13	3.6795	1.19695125535350	0.33197454108309
	2	19	3.7719	1.81829737056170	0.41714602583999
8_by women	1	13	6.1538	1.068	0.296
	2	19	6.4211	0.902	0.207
8_by men	1	13	2.6923	1.888	0.524
	2	19	2.0000	1.202	0.276
8_feminine	1	13	6.0769	1.320	0.366
	2	19	6.6316	0.761	0.175
8_masculine	1	13	2.8462	1.994	0.553
	2	19	1.5263	0.772	0.177

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
8_MBP	Equal variances assumed	0.046	0.831	1.411	30	0.168	0.591093117408907	0.418841443510178	-0.264295226229291	1.446481461047100
	Equal variances not assumed			1.366	22.935	0.185	0.591093117408907	0.432641997082707	-0.304035893624387	1.486222128442200
8_FBP	Equal variances assumed	3.787	0.061	-0.161	30	0.873	-0.092442645074224	0.575539190386436	-1.267850481122230	1.082965190973780
	Equal variances not assumed			-0.173	29.981	0.864	-0.092442645074224	0.533120912491408	-1.181249322059220	0.996364031916776
8_by women	Equal variances assumed	0.056	0.814	-0.764	30	0.451	-0.267	0.350	-0.981	0.447
	Equal variances not assumed			-0.740	22.919	0.467	-0.267	0.361	-1.015	0.480
8_by men	Equal variances assumed	4.115	0.051	1.270	30	0.214	0.692	0.545	-0.421	1.805
	Equal variances not assumed			1.170	18.623	0.257	0.692	0.592	-0.548	1.933
8_feminine	Equal variances assumed	3.654	0.066	-1.508	30	0.142	-0.555	0.368	-1.306	0.197
	Equal variances not assumed			-1.367	17.471	0.189	-0.555	0.406	-1.409	0.300
8_masculine	Equal variances assumed	10.184	0.003	2.627	30	0.013	1.320	0.502	0.294	2.346
	Equal variances not assumed			2.273	14.489	0.039	1.320	0.581	0.078	2.561

Group Statistics

9_sex		N	Mean	Std. Deviation	Std. Error Mean
9_MBP	1	12	2.2083	1.087404936051650	0.313906766273774
	2	12	2.5000	1.426427121138510	0.412351391453539
9_FBP	1	12	3.0270	1.979482298064360	0.571427318821779
	2	12	2.5417	1.810637758059050	0.522686098510146
9_by women	1	12	4.5000	1.243	0.359
	2	12	4.3333	1.670	0.482
9_by men	1	12	4.0000	1.279	0.369
	2	12	3.9167	1.443	0.417
9_feminine	1	12	4.7500	1.422	0.411
	2	12	3.4167	1.730	0.499
9_masculine	1	12	3.5000	1.168	0.337
	2	12	3.6667	1.875	0.541

			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
9_MBP	Equal variances assumed		2.039	0.167	-0.563	22	0.579	-0.291666666666667	0.518238485589528	-1.366427504682100	0.783094171348764
	Equal variances not assumed				-0.563	20.544	0.580	-0.291666666666667	0.518238485589529	-1.370860748388410	0.787527415055080
9_FBP	Equal variances assumed		0.332	0.570	0.628	22	0.537	0.486111111111110	0.774422325525036	-1.119924492978780	2.092164715201000
	Equal variances not assumed				0.628	21.827	0.537	0.486111111111110	0.774422325525036	-1.120679085585900	2.092901307808120
9_by women	Equal variances assumed		0.367	0.551	0.277	22	0.784	0.167	0.601	-1.080	1.413
	Equal variances not assumed				0.277	20.329	0.784	0.167	0.601	-1.086	1.419
9_by men	Equal variances assumed		0.013	0.911	0.150	22	0.882	0.083	0.557	-1.071	1.238
	Equal variances not assumed				0.150	21.687	0.882	0.083	0.557	-1.072	1.239
9_feminine	Equal variances assumed		0.252	0.620	2.062	22	0.051	1.333	0.646	-0.007	2.674
	Equal variances not assumed				2.062	21.207	0.052	1.333	0.646	-0.010	2.677
9_masculine	Equal variances assumed		1.568	0.224	-0.261	22	0.796	-0.167	0.638	-1.489	1.156
	Equal variances not assumed				-0.261	18.418	0.797	-0.167	0.638	-1.504	1.171

Group Statistics

10_sex		N	Mean	Std. Deviation	Std. Error Mean
10_MBP	1	9	3.2778	1.333333333333330	0.444444444444444
	2	10	4.1000	1.635259635965350	0.517114501254227
10_FBP	1	9	3.4074	1.121479402121460	0.373826467373821
	2	10	1.4667	0.932274531706801	0.294811092476036
10_by women	1	9	4.7778	1.641	0.547
	2	10	3.1000	1.370	0.433
10_by men	1	9	4.3333	1.581	0.527
	2	10	6.0000	1.491	0.471
10_feminine	1	9	4.3333	1.118	0.373
	2	10	2.2000	1.398	0.442
10_masculine	1	9	4.0000	1.414	0.471
	2	10	6.1000	1.287	0.407

			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
10_MBP	Equal variances assumed		0.039	0.845	-1.192	17	0.249	-0.822222222222222	0.689552705682681	-2.277051262408620	0.632606817964180
	Equal variances not assumed				-1.206	16.858	0.245	-0.822222222222222	0.681863821891834	-2.261749734098070	0.617305289653631
10_FBP	Equal variances assumed		2.704	0.118	4.118	17	0.001	1.940740740740740	0.471262427570323	0.946463929805349	2.935017551676130
	Equal variances not assumed				4.076	15.661	0.001	1.940740740740740	0.476088025426181	0.929699659108503	2.951781622372980
10_by women	Equal variances assumed		0.043	0.839	2.428	17	0.027	1.678	0.691	0.220	3.136
	Equal variances not assumed				2.404	15.694	0.029	1.678	0.698	0.196	3.160
10_by men	Equal variances assumed		0.025	0.876	-2.365	17	0.030	-1.667	0.705	-3.154	-0.180
	Equal variances not assumed				-2.357	16.521	0.031	-1.667	0.707	-3.162	-0.172
10_feminine	Equal variances assumed		0.145	0.708	3.644	17	0.002	2.133	0.585	0.898	3.369
	Equal variances not assumed				3.689	16.794	0.002	2.133	0.578	0.912	3.355
10_masculine	Equal variances assumed		0.307	0.587	-3.390	17	0.003	-2.100	0.619	-3.407	-0.793
	Equal variances not assumed				-3.372	16.312	0.004	-2.100	0.623	-3.418	-0.782

Group Statistics

11_sex		N	Mean	Std. Deviation	Std. Error Mean
11_MBP	1	16	2.6979	1.421030859618440	0.355257714879609
	2	14	3.2976	1.691075836483240	0.451959028226602
11_FBP	1	16	3.6667	1.623895636128450	0.405973909032114
	2	14	4.3095	1.729405241937960	0.462202992730196
11_by women	1	16	5.8125	1.109	0.277
	2	14	6.1429	1.027	0.275
11_by men	1	16	2.8125	1.601	0.400
	2	14	2.8571	1.916	0.512
11_feminine	1	16	5.6250	1.204	0.301
	2	14	6.0000	1.109	0.296
11_masculine	1	16	2.8750	1.784	0.446
	2	14	2.7857	1.718	0.459

			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
11_MBP	Equal variances assumed		0.008	0.931	-1.058	28	0.300	-0.599702380952380	0.566069863531243	-1.763340746448320	0.563935984543561
	Equal variances not assumed				-1.043	25.568	0.307	-0.599702380952380	0.574869556662219	-1.782336321814190	0.582931559909426
11_FBP	Equal variances assumed		0.003	0.957	-1.050	28	0.303	-0.642857142857143	0.612514998527217	-1.897537240296880	0.611822954582597
	Equal variances not assumed				-1.045	26.913	0.305	-0.642857142857143	0.615179990981147	-1.905292333219900	0.619578047505610
11_by women	Equal variances assumed		0.318	0.578	-0.842	28	0.407	-0.330	0.392	-1.134	0.473
	Equal variances not assumed				-0.847	27.893	0.404	-0.330	0.390	-1.130	0.469
11_by men	Equal variances assumed		0.356	0.556	-0.070	28	0.945	-0.045	0.642	-1.360	1.270
	Equal variances not assumed				-0.069	25.490	0.946	-0.045	0.650	-1.382	1.292
11_feminine	Equal variances assumed		1.769	0.194	-0.883	28	0.385	-0.375	0.425	-1.245	0.495
	Equal variances not assumed				-0.887	27.911	0.382	-0.375	0.423	-1.241	0.491
11_masculine	Equal variances assumed		0.028	0.868	0.139	28	0.890	0.089	0.642	-1.225	1.404
	Equal variances not assumed				0.139	27.720	0.890	0.089	0.640	-1.222	1.401

Group Statistics

12_sex		N	Mean	Std. Deviation	Std. Error Mean
12_MBP	1	14	2.8929	1.687823590825910	0.451089629013221
	2	11	1.8485	0.932304627893651	0.281100421912286
12_FBP	1	14	3.0357	1.863021362155730	0.497913402959117
	2	11	1.5303	0.649008567903476	0.195683445951066
12_by women	1	14	4.5714	2.138	0.571
	2	11	2.7273	1.794	0.541
12_by men	1	14	4.2143	1.847	0.494
	2	11	5.5455	1.753	0.529
12_feminine	1	14	4.1429	2.107	0.563
	2	11	2.0000	1.342	0.405
12_masculine	1	14	4.1429	1.875	0.501
	2	11	5.3636	1.748	0.527

			F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
										Lower	Upper
12_MBP	Equal variances assumed		4.766	0.039	1.838	23	0.079	1.044372294372290	0.568101147778092	-0.130834468466577	2.219579057211170
	Equal variances not assumed				1.965	20.950	0.063	1.044372294372290	0.531506802438541	-0.061117568974199	2.149862157718790
12_FBP	Equal variances assumed		8.269	0.009	2.551	23	0.018	1.505411255411260	0.590085797997902	0.284725778582775	2.726096732239740
	Equal variances not assumed				2.814	16.805	0.012	1.505411255411260	0.534985764170984	0.375690284584218	2.635132226238290
12_by women	Equal variances assumed		0.720	0.405	2.293	23	0.031	1.844	0.804	0.181	3.508
	Equal variances not assumed				2.344	22.867	0.028	1.844	0.787	0.216	3.472
12_by men	Equal variances assumed		0.030	0.864	-1.829	23	0.080	-1.331	0.728	-2.837	0.175
	Equal variances not assumed				-1.841	22.113	0.079	-1.331	0.723	-2.831	0.168
12_feminine	Equal variances assumed		2.865	0.104	2.931	23	0.008	2.143	0.731	0.631	3.655
	Equal variances not assumed				3.091	22.195	0.005	2.143	0.693	0.706	3.580
12_masculine	Equal variances assumed		0.182	0.674	-1.664	23	0.110	-1.221	0.734	-2.738	0.297
	Equal variances not assumed				-1.679	22.262	0.107	-1.221	0.727	-2.728	0.286

Appendix 10: The Results of the Three MANOVA Analysis (Study 2)

*** 2 (between: anthropomorphism vs. non-anthropomorphism) × 3 (between: masculine, feminine, or neutral)**

Multivariate Tests

Effect	Value	F	Error df	Sig.	Partial Eta Squared	Observed Power
Intercept	.163	738.407	288	.000	.837	1.000
Anthropomorphism	.986	2.084	288	.126	.014	.427
Gender of brand	.800	17.020	576	.000	.106	1.000
Anthropomorphism * Gender of brand	.995	.392	576	.814	.003	.141

* Wilks' Lambda is present.

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Corrected Model	MBP	35.511[a]	5	7.102	3.120	.009	.051	15.598	.874
	FBP	75.715[b]	5	15.143	5.661	.000	.089	28.304	.992
Intercept	MBP	2545.480	1	2545.480	1118.118	.000	.795	1118.118	1.000
	FBP	3158.675	1	3158.675	1180.780	.000	.803	1180.780	1.000
Anthropomorphism	MBP	.344	1	.344	.151	.698	.001	.151	.067
	FBP	5.701	1	5.701	2.131	.145	.007	2.131	.307
gender	MBP	35.152	2	17.576	7.720	.001	.051	15.441	.948
	FBP	67.430	2	33.715	12.603	.000	.080	25.207	.996
Anthropomorphism * gender	MBP	.287	2	.143	.063	.939	.000	.126	.059
	FBP	3.663	2	1.832	.685	.505	.005	1.369	.165
Error	MBP	657.930	289	2.277					
	FBP	773.097	289	2.675					
Total	MBP	3225.889	295						
	FBP	4053.667	295						
Corrected Total	MBP	693.441	294						
	FBP	848.812	294						

a. R Squared = .051 (Adjusted R Squared = .035)

b. R Squared = .089 (Adjusted R Squared = .073)

c. Computed using alpha = .05

*** 2 (between: anthropomorphism vs. non-anthropomorphism) × 3 (between: masculine, feminine, or neutral) × 2 (sex of participants: male vs. female)**

Multivariate Tests

Effect	Value	F	Error df	Sig.	Partial Eta Squared	Observed Power
Intercept	.160	737.698	282	.000	.840	1.000
Anthropomorphism	.988	1.707	282	.183	.012	.358
Gender of brand	.801	16.577	564	.000	.105	1.000
Sex of participants	.980	2.857	282	.059	.020	.557
Anthropomorphism * Gender	.995	.350	574	.844	.002	.130
Anthropomorphism * Sex	.988	1.736	282	.178	.012	.363
Gender * Sex	.969	2.204	564	.067	.015	.649
Anthropomorphism*Gender*Sex	.971	2.105	564	.079	.015	.626

* Wilks' Lambda is present.

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Corrected Model	MBP	56.627[a]	11	5.148	2.288	.011	.082	25.165	.942
	FBP	113.533[b]	11	10.321	3.973	.000	.134	43.698	.999
Intercept	MBP	2502.990	1	2502.990	1112.328	.000	.797	1112.328	1.000
	FBP	3087.958	1	3087.958	1188.518	.000	.808	1188.518	1.000
Anthropomorphism	MBP	.423	1	.423	.188	.665	.001	.188	.072
	FBP	4.102	1	4.102	1.579	.210	.006	1.579	.240
gender	MBP	34.931	2	17.466	7.762	.001	.052	15.523	.949
	FBP	68.389	2	34.194	13.161	.000	.085	26.322	.997
sex	MBP	1.209	1	1.209	.537	.464	.002	.537	.113
	FBP	13.784	1	13.784	5.305	.022	.018	5.305	.631
Anthropomorphism * gender	MBP	.258	2	.129	.057	.944	.000	.115	.059
	FBP	3.275	2	1.638	.630	.533	.004	1.261	.155
Anthropomorphism * sex	MBP	1.381	1	1.381	.614	.434	.002	.614	.122
	FBP	2.468	1	2.468	.950	.331	.003	.950	.163
gender * sex	MBP	10.462	2	5.231	2.325	.100	.016	4.649	.469
	FBP	15.592	2	7.796	3.001	.051	.021	6.001	.579
Anthropomorphism * gender * sex	MBP	8.796	2	4.398	1.954	.144	.014	3.909	.403
	FBP	6.542	2	3.271	1.259	.286	.009	2.518	.273
Error	MBP	636.814	283	2.250					
	FBP	735.279	283	2.598					
Total	MBP	3225.889	295						
	FBP	4053.667	295						
Corrected Total	MBP	693.441	294						
	FBP	848.812	294						

a. R Squared = .082 (Adjusted R Squared = .046)

b. R Squared = .134 (Adjusted R Squared = .100)

c. Computed using alpha = .05

*** 3 (between: masculine, feminine, or neutral) × 2 (sex of participants: male vs. female)**

Multivariate Tests

Effect	Value	F	Error df	Sig.	Partial Eta Squared	Observed Power
Intercept	.160	753.709	288	.000	.840	1.000
Sex of participants	.980	2.872	288	.058	.020	.560
Gender of brand	.795	17.500	576	.000	.108	1.000
Sex of participants * Gender of brand	.970	2.214	576	.066	.015	.651

* Wilks' Lambda is present.

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Corrected Model	MBP	46.076[a]	5	9.215	4.114	.001	.066	20.569	.954
	FBP	97.326[b]	5	19.465	7.486	.000	.115	37.429	.999
Intercept	MBP	2521.784	1	2521.784	1125.788	.000	.796	1125.788	1.000
	FBP	3136.513	1	3136.513	1206.213	.000	.807	1206.213	1.000
sex	MBP	1.403	1	1.403	.626	.429	.002	.626	.124
	FBP	14.155	1	14.155	5.444	.020	.018	5.444	.643
gender	MBP	37.571	2	18.785	8.386	.000	.055	16.772	.963
	FBP	69.489	2	34.745	13.362	.000	.085	26.724	.998
sex * gender	MBP	9.488	2	4.744	2.118	.122	.014	4.236	.433
	FBP	16.602	2	8.301	3.192	.043	.022	6.385	.608
Error	MBP	647.365	289	2.240					
	FBP	751.486	289	2.600					
Total	MBP	3225.889	295						
	FBP	4053.667	295						
Corrected Total	MBP	693.441	294						
	FBP	848.812	294						

a. R Squared = .066 (Adjusted R Squared = .050)

b. R Squared = .115 (Adjusted R Squared = .099)

c. Computed using alpha = .05

Appendix 11: The Results of Model 4 of Study 2

A. Y = "Word-of-mouth", X = "anthropomorphism", M = "boundary"

```
**************************************************************************
Model  : 4
    Y  : WOM
    X  : Anthropo
    M  : boundary

Sample
Size:  295

**************************************************************************
OUTCOME VARIABLE:
 boundary

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0121      .0001     2.5356      .0426     1.0000   293.0000      .8366

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.3696      .1356    17.4811      .0000     2.1028     2.6363
Anthropo     -.0384      .1858     -.2064      .8366     -.4040      .3273

Standardized coefficients
              coeff
Anthropo     -.0241

**************************************************************************
OUTCOME VARIABLE:
 WOM

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6254      .3912     1.7508    93.8008     2.0000   292.0000      .0000

Model
              coeff         se          t          p       LLCI       ULCI
constant     1.2720      .1610     7.9009      .0000      .9551     1.5888
Anthropo      .4098      .1544     2.6538      .0084      .1059      .7137
boundary      .6538      .0485    13.4682      .0000      .5583      .7494

Standardized coefficients
              coeff
Anthropo      .2425
boundary      .6150
```

```
************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 WOM

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .1138      .0129     2.8287     3.8422     1.0000   293.0000      .0509

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.8213      .1432    19.7054      .0000     2.5395     3.1030
Anthropo      .3847      .1963     1.9602      .0509     -.0016      .7709

Standardized coefficients
              coeff
Anthropo      .2276

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_ps
      .3847      .1963     1.9602      .0509     -.0016      .7709      .2276

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_ps
      .4098      .1544     2.6538      .0084      .1059      .7137      .2425

Indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
boundary     -.0251      .1213     -.2720      .2137

Partially standardized indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
boundary     -.0148      .0719     -.1610      .1250
```

B. Y = "Likelihood of recommendation", X = "anthropomorphism", M = "boundary"

```
**************************************************************************
Model  : 4
    Y  : Likeliho
    X  : Anthropo
    M  : boundary

Sample
Size:  295

**************************************************************************
OUTCOME VARIABLE:
 boundary

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0121      .0001     2.5356      .0426     1.0000   293.0000      .8366

Model
              coeff         se          t          p       LLCI       ULCI
constant     2.3696      .1356    17.4811      .0000     2.1028     2.6363
Anthropo     -.0384      .1858     -.2064      .8366     -.4040      .3273

Standardized coefficients
              coeff
Anthropo     -.0241
```

```
**************************************************************************
OUTCOME VARIABLE:
 Likeliho

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .6237      .3890     2.2395    92.9418     2.0000   292.0000      .0000

Model
             coeff         se          t          p       LLCI       ULCI
constant    1.5259      .1821     8.3801      .0000     1.1675     1.8842
Anthropo     .3573      .1746     2.0459      .0417      .0136      .7010
boundary     .7414      .0549    13.5032      .0000      .6333      .8494

Standardized coefficients
             coeff
Anthropo     .1873
boundary     .6177

************************** TOTAL EFFECT MODEL ****************************
OUTCOME VARIABLE:
 Likeliho

Model Summary
          R       R-sq        MSE          F        df1        df2          p
      .0861      .0074     3.6255     2.1908     1.0000   293.0000      .1399

Model
             coeff         se          t          p       LLCI       ULCI
constant    3.2826      .1621    20.2523      .0000     2.9636     3.6016
Anthropo     .3289      .2222     1.4801      .1399     -.1084      .7661

Standardized coefficients
             coeff
Anthropo     .1724

************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************

Total effect of X on Y
     Effect         se          t          p       LLCI       ULCI       c_ps
      .3289      .2222     1.4801      .1399     -.1084      .7661      .1724

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI      c'_ps
      .3573      .1746     2.0459      .0417      .0136      .7010      .1873

Indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
boundary     -.0284      .1398     -.3027      .2400

Partially standardized indirect effect(s) of X on Y:
             Effect     BootSE   BootLLCI   BootULCI
boundary     -.0149      .0734     -.1594      .1263
```