

**A META-ANALYTIC INVESTIGATION OF THE RELATIONSHIP BETWEEN
ANTHROPOMORPHISM AND CONSUMERS' RESPONSES: EFFECTS,
MECHANISM, AND BOUNDARY CONDITIONS**

by

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DISSERTATION

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ABSTRACT

A META-ANALYTIC INVESTIGATION OF THE RELATIONSHIP BETWEEN ANTHROPOMORPHISM AND CONSUMERS' RESPONSES: EFFECTS, MECHANISM, AND BOUNDARY CONDITIONS

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Almost one in three brands sold to adults and more than five in six brands sold to children use some form of anthropomorphic representation in promoting their products. Marketers probably hold an inherent belief that anthropomorphism increases consumer preference for their products. Extant research, however, offers no clear evidence to support this. Such mixed findings suggest that this is a prolific and complex problem that could benefit from a synthesis of research on the topic. In response to this call, this dissertation presents two essays applying the meta-analytic approach to understand where the inconsistency comes from and to identify the boundary conditions for the anthropomorphism effects.

Essay 1 focuses on how anthropomorphism affects brand evaluations. In a meta-analysis and two follow-up laboratory experiments, we show that anthropomorphism in general has a positive effect on brand attitude. The key mechanism is self-brand connection. Because of the self-brand connection account, brand familiarity, experience (vs. search) products, and high (vs.

low) symbolic products enhance the impact of anthropomorphism on brand evaluations.

Essay 2 investigates the effects of anthropomorphism on individuals' acts of social goodwill. We show that anthropomorphism generally has a positive influence on individuals' tendency to engage in acts of social goodwill. Affective thinking is the key process underlying these effects. We further show that Femininity (vs. Masculinity) mindset enhances the persuasive appeal of anthropomorphism when marketing social causes.

Overall results indicate that anthropomorphism does not work effectively for all type of products. The effect of anthropomorphism in persuading consumers' responses is stronger for familiar brands, experience products, high symbolic products, and for public goods (e.g., pro-environmental behavior, and pro social behavior) compared to the anthropomorphism effect on search products, low symbolic products, and unfamiliar brand products. Implications for both, marketing theory and marketing practitioners, are discussed.

Keywords: anthropomorphism, brand evaluations, acts of social goodwill, branding strategy

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DEDICATION

I dedicate this dissertation to my wife and kids. I thank them for the unconditional support given to me during the entire Ph.D. program. I feel very grateful to my wife, Maria Antonieta, and my two kids, Agustin and Maria Paula, who encouraged and motivated me through this fantastic journey. I also feel very grateful to my parents and entire family that cheered me in every step of the doctorate program.

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CHAPTER 1

GENERAL INTRODUCTION

Almost one in three brands sold to adults and more than five in six brands sold to children use some form of anthropomorphic representation in their brands (Triantos, Plakoyiannaki, Outra, & Petridis, 2016). A content analysis of 1968 examples of packages of grocery products drawn by Nielsen's database in the UK market shows that the use of anthropomorphism varies across product categories, with a relatively low incidence of anthropomorphism in frozen food (12%) and toiletries (24%), but relatively high incidence of anthropomorphism in other categories such as confectionaries (48%) and household items (47%) (Triantos et al., 2016). These results signal that anthropomorphism might present different variations of the strength of its effect on persuading consumers and that this effect depends on several individual and contextual factors. This dissertation aims to find an answer to these questions by providing a synthesis of the anthropomorphism literature and by identifying several factors that enhance or undermine the influence of anthropomorphism on consumers' responses.

Anthropomorphism is the attribution of human-like mental states to nonhuman agents allowing consumers to perceive products and brands as having human-characteristics (Epley, Waytz, & Cacioppo, 2007). Marketers have long facilitated anthropomorphism in their products and brands (Arnheim, 1969; Biel, 1993), using of visual cues (e.g., features resembling human body parts; Di Salvo & Gemperle, 2003), verbal cues (e.g., giving products human names or incorporating voice response systems; Waytz, Heafner, & Epley, 2014), brand personification (e.g., human brand characters and animation; Delbaere, McQuarrie, & Phillips, 2011; J. Wan &

Aggarwal, 2015), and implying that brands possess mental capabilities (e.g., Kwak, Puzakova, & Rocereto, 2015). Brands may be humanized because they not only activate the “human” schema, presenting the brand in consumers’ minds as the same category as “human”, but also because human-like brands are capable of building self-brand connections and brand relationships (MacInnis & Folkes, 2017).

The literature on anthropomorphism provides mixed findings. While some scholars suggest that anthropomorphism positively influence consumers’ responses toward anthropomorphic stimuli (e.g., Chen, Wan, & Levy, 2017; Mourey, Olson, & Yoon, 2017; Touré-Tillery & McGill, 2015; Ahn, Kim, & Aggarwal, 2014), others show no effect of anthropomorphism persuading consumers (e.g., Delbaere, 2017; Delgado-Ballester, Fernandez-Sabiote, & Hourubia-Pardo, 2013). Still others report that anthropomorphism has negative effects on consumers’ responses (e.g., Kim, Chen, & Zhang, 2016; Moon, Kim, Choi, & Sung, 2013). This issue represents an opportunity to examine more deeply the effect of anthropomorphism using a meta-analytic approach. This dissertation follows this call, providing a systematic synthesis of the literature on anthropomorphism and providing powerful insights of which factors enhance or diminish the anthropomorphism effects on consumers’ responses. To do this, this dissertation is divided in two parts. First, we investigate how anthropomorphism influences consumers’ brand evaluations (Essay 1). Second, we study how anthropomorphism influences consumers’ decisions to comply with marketing campaigns that promote social causes (Essay 2).

The strategy of this dissertation to separate consumers’ responses toward anthropomorphic marketing stimuli into brand evaluations and acts of social goodwill follows my extensive literature review on anthropomorphism studies. I found more than one hundred and

thirty empirical papers published between 2005 and 2018. From these papers, about sixty-seven percent investigate anthropomorphism outcomes following a branding strategy perspective.

Typical outcome variables in this category of papers correspond to consumer responses on brand attitudes, attitude toward the ad, attitude toward the product, and purchase intentions.

Meanwhile, thirty three percent of papers examine consumer responses toward social causes that use anthropomorphism as a tool of persuasion. For example, examining consumers' compliance to pro environmental posters or charities.

Following this structure that the literature on anthropomorphism presents, this dissertation presents the findings of these two different outcome variables, and compares the overall results, which are presented in the last chapter. The findings of my dissertation provide evidence that anthropomorphism in general is a powerful tool for marketers, as it facilitates consumers to connect with brands and social causes, helps to extract the necessary brand meanings when the purchase situation requires additional information, and create affective type of thoughts that induce them to react positively. I further present relevant marketing implications to both, theory and practice.

CHAPTER 2

ESSAY #1 - A META-ANALYTIC INVESTIGATION INTO THE RELATIONSHIP BETWEEN ANTHROPOMORPHISM AND BRAND EVALUATION

INTRODUCTION

Marketers probably hold an inherent belief that anthropomorphism increases consumer receptivity and preference for their brands. More recently with new brand humanization strategies, like devices operating with voice response technologies such as Siri[®] or Alexa[®] marketers have implemented, consumers might have an increasingly opportunity to build relationships with brands. Although anthropomorphism has received much attention from the marketers (e.g., Triantos, Plakoyiannaki, Outra, & Petridis, 2016), we still do not know if positioning the brand as human or having a “presence of mind” is pertinent for all product categories, and if anthropomorphism indeed fosters consumers to build self-brand relationships (MacInnis and Folkes (2017)).

The growth in the marketplace of product and brand humanization strategies has been accompanied by an equally expansive research on anthropomorphism. However, this extant research offers no clear evidence to support if anthropomorphism works effectively. While some scholars suggest that anthropomorphism enhances brand evaluations (Chen, Wan, & Levy, 2017; Touré-Tillery & McGill, 2015), others show no effect of anthropomorphism on brand attitudes (Delbaere, 2017; Delgado-Ballester, Fernandez-Sabiote, & Hourubia-Pardo, 2013). Still others report an opposite pattern, i.e., a negative effect of anthropomorphism in brand evaluations (S. Kim, Chen, & Zhang, 2016; Moon, Kim, Choi, & Sung, 2013). Such mixed findings suggest that

this is a prolific and complex problem that could benefit from a synthesis of the research on anthropomorphism. Toward this end, the purpose of this first essay is to conduct a meta-analysis of empirical research that explores consumers' attitudes toward brands associated with anthropomorphism.

The present research proposes the impact of anthropomorphism may increase, decrease, or have no effect on consumers' brand evaluations, depending on individual characteristics (i.e., brand familiarity), product characteristics (i.e., experience vs. search products), and type of anthropomorphism (imagined vs. real, and brand character vs. no brand character).

This research contributes to the literature in three important ways. First, it reconciles inconsistent findings documented in the domain of anthropomorphism. As indicated earlier, previous studies yield equivocal results on the effects of anthropomorphism. Given that these studies differ in many aspects, including study contexts, nature of stimulus products, and individual factors, it is difficult to draw a definitive conclusion of anthropomorphic effects. Conventional wisdom suggests that any anthropomorphism increases brand evaluations; however, we show that this is not always the case. Second, this research empirically tests self-brand connection as the key mechanism underlying the effect of anthropomorphism on brand evaluations. The combination of anthropomorphism and individual characteristics (e.g., brand familiarity) reduces the uncertainty involved in evaluating certain products (e.g., search vs. experience), thus facilitating self-brand connections and brand appeal. This research is the first to provide evidence of this underlying mechanism. Third, building upon the self-brand connection account, we extend the literature on anthropomorphism by further showing when a self-brand connection is made salient by situational factors; thereby increasing the positive effects associated with anthropomorphism. Finally, this study's findings provide novel and useful

insights to marketers regarding when to use anthropomorphism in persuasive appeals.

In the sections that follow, we first introduce key constructs and develop hypotheses about when anthropomorphism does not affect consumer evaluations, when it does, and why. Next, we describe the meta-analytic procedures employed to test these hypotheses and report results. Following the meta-analysis, we detail two follow-up experiments conducted to more closely examine how key theoretical variables interact affect individuals' responses to messages featuring anthropomorphism. Finally, we conclude with a discussion of key findings from both the meta-analysis and the experimental studies, including takeaways that inform theory and marketing practice.

ANTHROPOMORPHISM AND BRAND EVALUATION

Enacting or communicating one's self-identity through material acquisition is a powerful and pervasive human motive. People buy products not only for the benefits they provide can do but also for what they symbolize about oneself (Berger & Heath, 2007). The extent to which products reflect or affirm one's sense of self plays an important role in shaping consumers' purchase decisions (Escalas & Bettman, 2005; Swaminathan, Page, & Gürhan-Canli, 2007). Humanizing brands tends to foster relationships between consumers and brands, and lead individuals to see the brands as part of themselves (MacInnis & Folkes, 2017). In fact, anthropomorphism may act as source of empathic connection between individuals and brands (Waytz, Klein, & Epley, 2013), leading individuals to form favorable attitudes towards anthropomorphic brands (H. C. Kim & Kramer, 2015). Because of this, anthropomorphism is thought to increase attention (Basfirinci & Cilingir, 2015), brand trust (Waytz, Heafner, & Epley, 2014), and brand preference (Chen et al., 2017). The forgoing discussion leads us to suggest that

anthropomorphism, in general, increases attitudes toward the brand because the brand might be perceived as closer to the self and encourage consumers to establish a connection with it, which reduces uncertainty involved in evaluating products.

Anthropomorphism and Effectance Motivation

We consulted the Sociality, Effectance, and Elicited Knowledge SEEK framework (Epley, Waytz, & Cacioppo, 2007) to understand how anthropomorphism facilitates relationships between brands and consumers, which in turn enables self-brand connections and enhances brand evaluations. We argue that in situations where consumers feel a need to interact effectively with non-human objects, as with experience products, anthropomorphism psychologically reduces the uncertainty associated with a brand's performance and increases one's confidence in evaluating the brand.

This conceptual path is supported by consumers using a reduced perspective toward brands, which generate on them perceptions to reach fine-grained representations of the brand and to “unpack” additional meanings (Escalas & Bettman, 2005). Among these meanings, consumers will enable perceptions of seen the brand with communal expressive roles. For example, when brands are humanized, consumers evoke human type of beliefs and expectations like see a brand as a partner (Aggarwal & McGill, 2012), demonstrate love to the brand (Rauschnabel & Ahuvia, 2014), and interpret the brand as having goodwill (Touré-Tillery & McGill, 2015). Therefore, in many ways the reduced uncertainty perspective of relationships between a human-like brands and consumers' minds arises because people relate to brands similar to how they relate to other people (Fournier & Alvarez, 2011).

In addition to the warm types of emotions that bring the brand closer to the self, Haslam,

Loughnan, & Kashima (2008) acknowledge that in the process of attributing humanness to others, individuals emphasize on openness, agency, and depth. Meanwhile, denying humanness involves reactions characterized by as coldness, rigidity, passivity, and superficiality. Applying these concepts to the current context, we argue that brand humanization helps consumers to extract essential brand meanings, which decreases insecurity that characterizes brand evaluations. The reduced perspective of seeing the brand as human would therefore help consumers to add depth to their brand experiences, and at the same time downgrade their uncertainty so they have more control of the consumption situation.

Given the natural tendency of consumers to try to control the shopping environment and to attempt to lower their insecurity levels when making judgments, the SEEK framework is a suitable conceptualization when trying to predict the effects of brand humanization on self-brand connection and brand evaluation. This is because when consumers face self-verification or self-enhancement consumption goals, in-group versus out-group brand scenarios emerge (Escalas & Bettman, 2003). In these scenarios, the humanization factor becomes a more central criterion to decide on investing resources to extract the necessary brand meanings that are congruent to the consumption context. In such scenario, a human-like brand might be construed as a social “actor”, operating as a catalyst, and showing in-group membership (Chan, Berger, & Van Boven, 2012), social signaling (Escalas & Bettman, 2003, 2005), and facilitating a self-brand connection (Escalas, 2004). As the SEEK model further describes, processing these social cues still requires the application of accessible knowledge and egocentric biases to integrate the brand meanings and structures to the self.

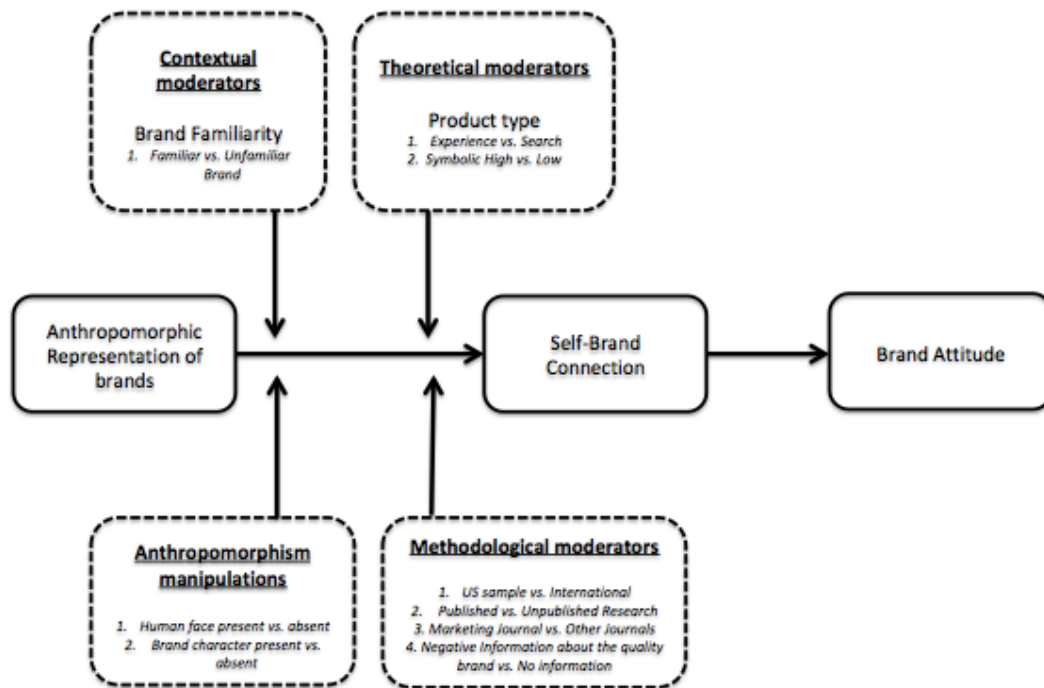
In anthropomorphism literature there are examples of studies that coincide with our conceptualization from studies concentrating on the self-focused and the brand relationship

perspectives. For example, Eskine and Locander (2014) found that a human-named brand was regardless more trustworthy to consumers than a nonhuman-named brand, and that a lower level of trust is accompanied by more uncertainty (i.e., less comfort, reassurance, and less familiarity with an object). Moreover, Waytz et al., (2014) presented evidence that anthropomorphism helps consumers to feel more certainty in the consumption process when evaluating unpredictable products. Finally, Wan and Aggarwal (2015) suggested that anthropomorphism serves as a reference point for consumers to reduce ambiguity of the consumption process and help build a relationship with the brand.

Anthropomorphism, Self-Brand Connection, and Brand Evaluation

As discussed next, we anticipate that anthropomorphism significantly and positively affects consumer brand evaluations, and that this relationship is driven by self-brand connection (see Figure 1). Self-brand connection is the extent to which consumers incorporate brand values into their self-concept (Escalas & Bettman, 2003). When consumers use brand meanings to construct the self or to communicate the self-concept to others, a connection is formed with the brand. These self-brand connections then reflect the similarities and shared attributes between one's view of the brand and one's view of oneself (Chaplin & Roedder, 2005). The validity of this mediation hypothesis relies on the proposed link between self-brand connection and brand evaluations. To the best of our knowledge, no previous research has examined this link; however, we expect to observe this relationship based on several theoretical reasons.

Figure 1
Meta-Analysis Model



First, self-brand connection drives consumers to treat the product as an extended self. Self-connected brands not only are capable of being perceived as consumers' possessions, but also assist consumers in signaling self-identities to relevant others (Escalas & Bettman, 2005). When a brand becomes relevant to the self and to social identity, it is likely to increase consumers' preference (Reed, 2004). Consistent with this reasoning, previous research shows that self-brand connection to a destination induces positive evaluations of that place (Kemp, Childers, & Williams, 2012). Consumers with stronger self-brand connections are more likely to maintain positive brand evaluations, despite the accessibility of negative information about the brand (Cheng, White, & Chaplin, 2011).

Second, self-brand connection helps customers overcome the uncertainty related to the assessment of product quality. When consumers establish self-brand connections, they tend to

see a brand as part of their in-group (Moore & Homer, 2008). Self-brand connection aids consumers' understanding of how the product will perform when they face particular consumption goals. Self-brand connection helps customers define their "social roles" because the brand reflects individuals' self-identity and facilitates the process of reflexive comparisons between the self and important others.

H₁: Consumers will hold more positive attitudes toward anthropomorphized brands, as compared to brands lacking anthropomorphic representation.

H₂: The relationship between anthropomorphism and brand evaluation will be mediated by self-brand connection.

Factors that Enhance or Undermine Salience of Self-Brand Connection

To enhance our understanding about the mediating role of self-brand connection, we also examine potential moderators that may strengthen or weaken the effect of anthropomorphism on brand evaluations. We posit that self-brand connection when consumers behave less egocentric due to the reduced uncertainty they experience with human-like brands. This is more evident as consumers make judgments about familiar (vs. unfamiliar) brands, experience (vs. search) products, or products with high (vs. low) symbolic values.

Brand familiarity reflects a consumer's level of direct and indirect experiences with a brand (Alba & Hutchinson, 1987). Since familiar brands can increase chronic accessibility of human agentic beliefs (Chandler & Schwarz, 2010), we believe that brand familiarity may reduce uncertainty perceptions and foster anthropomorphic beliefs about objects. Our expectation is that familiar brands are likely to activate accessibility of agentic beliefs associated with anthropomorphism much more than unfamiliar brands due to two reasons. First, for familiar (vs. unfamiliar) brands, consumers hold a broader and better developed knowledge structure (Kent & Allen, 1994). The schemata for familiar brands in particular has been shown to contain

more brand personality components than the knowledge structure for unfamiliar brands (Campbell & Keller, 2003). Thus, agentic beliefs due to brand personification are likely to be more pronounced for familiar (vs. unfamiliar) brands. This is consistent with the required depth and openness dimensions that are necessary to attribute humanness to objects (Haslam, Loughnan, & Kashima, 2008). Second, the SEEK framework suggests that social motivation increases accessibility of humanlike representations of non-human agents (Epley et al., 2007). Also, brand familiarity increases the chances of extracting the brand meanings (Keller, 2003) and drives consumers to engage in self-referencing processes. In the same vein, higher levels of familiarity drives use of relational (vs. exchange) norms (Aggarwal, 2004). Taken together, we anticipate that brand familiarity enhances the effect of anthropomorphism on brand evaluations.

H₃: The positive effect of anthropomorphism on brand attitudes will be stronger for familiar brands than for unfamiliar brands.

Experience vs. Search Products. We further expect that experience (vs. search) products will enhance the desire for self-brand connection and therefore increase the effect of anthropomorphism on brand evaluations. According to Nelson, (1974), products can be classified into two categories, namely *search products* and *experience products*. *Search products* are dominated by attributes for which full information can be acquired prior to purchase, whereas *experience products* are dominated by attributes that cannot be known until the product is purchased and used (Klein, 1998). Experience (vs. search) products evoke a higher degree of uncertainty among consumers and encourage self-verification goals (Girard & Dion, 2010; Mitra, Reiss, & Capella, 1999). The use of interactive media, (i.e., use of animations, brand characters, or recommendation agents in the advertisements), reduces the associated levels of uncertainty and perceived risk associated with using an experience product (Hudson, Huang,

Roth, & Madden, 2016; Klein, 1998; Waytz & Epley, 2012), and increases the desire for self-brand associations.

H_{4a}: The effect of anthropomorphism on brand attitudes will be stronger for experience products than for search products.

Value-expressive vs. Utilitarian Products. We anticipate that value-expressive (vs. utilitarian) products will strengthen the self-brand connection, thereby enhancing the effect of anthropomorphism on brand evaluations. Value-expressive brands help consumers satisfy symbolic needs such as prestige, self-expression, and self-enhancement goals (Park, Jaworski, & MacInnis, 1986), and shape an individual's assessment of identity to oneself and in conveying meaning about the self to others (Dommer, Swaminathan, & Ahluwalia, 2013). Symbolism in brands provides cues about the kind of person who uses the brand (Wright, Claiborne, & Sirgy, 1992) and how they fit their social roles (Solomon, 1983). Given that symbolic brands are used to express one's identity, the overlap between one's identity and the brands identity or self-brand connection, should be stronger for value-expressive products (Escalas & Bettman, 2005). As a consequence, value-expressive products are likely to result in satisfying consumers' social identity needs and favorable brand evaluations. On the other hand, when a product is seen as being primarily functional instead of value-expressive (e.g., as is the case for utilitarian products), desire for social connection has been shown to be low leading to lower preference for these products (Aggarwal & McGill, 2012).

H_{4b}: The effect of anthropomorphism on brand attitude will be stronger for symbolic brands than for non-symbolic brands.

Next, we report results of the meta-analysis conducted to summarize this literature and test the hypotheses, followed by two follow-up experimental studies that enable us to

demonstrate the mediating effect of self-brand connection and the interaction effects of brand familiarity and product type. In the final study we report results of an implicit association test to show that self-brand associations are implicitly associated with familiar brands.

STUDY 1: META ANALYSIS

Dataset Development

In creating our meta-analytic database, we sought to identify all published and unpublished work that empirically explored the relationship between anthropomorphism and brand attitudes. We conducted an exhaustive search among several databases, and also requested relevant working papers from researchers by posting on marketing list-serves and through individual emails to authors that published work on anthropomorphism. Finally, for each paper that was identified as relevant in the search, we carefully examined the papers they cited and other papers that cited them. Through these means, we located a total of 116 papers.

We then narrowed down our database based on two conditions: (1) the study should compare and report the effect of both anthropomorphic and non-anthropomorphic branding strategies on brand attitudes or brand preferences, and (2) the statistics reported should allow us to calculate a common effect size (see Glass, McGaw, & Smith, 1981; Janiszewski, Noel, & Sawyer, 2003). Imposing these criteria resulted in a reduced final set of 38 papers¹ (including 32 published articles and 6 unpublished manuscripts), ranging from 2004 to 2017 with 136 effect sizes with a total sample size of 10,722 observations. Appendix A displays the studies on anthropomorphism included in our meta-analysis in a forest plot.

¹ These papers are denoted with an asterisk in our References section.

Coding Procedures

We used effect sizes and other statistics reported in the studies such as means, standard deviations, and sample sizes to calculate the correlation (r) between anthropomorphism and brand attitudes for each study. This correlation captures the strength of the relationship between anthropomorphized brand representation and resulting brand attitudes. In addition, we developed a coding scheme to examine several potential sources of variation for this effect.

Two independent coders with 90% coded the data for nine different moderators resolving all disagreements through discussion. We considered if known brands were used in each study to code the variable as *brand familiarity* (familiar = 1; unfamiliar = 0). Next, we examined the stimulus products investigated in the original studies, and categorized them as *experience product* (experience = 1 vs. search = 0), and *value-expressive product* (value-expressive product = 1 vs. utilitarian product = 0) using previous literature to guide our coding of each product category (Babin, Darden, & Griffin, 1994; Dommer et al., 2013; Girard & Dion, 2010). Two moderators captured how anthropomorphic cues were used in the original studies. *Brand characters* captured use of brand characters (yes = 1; no = 0); and *imagined cues* captured if imagination prompts to perceive the brand as human or actual humanlike cues were presented (imagine brands as humans = 1; react to humanized brand stimuli = 0).

Four other moderators captured methodological factors, including *US participants* (US = 1; non-US = 0), *publication status* (published = 1; unpublished = 0), *journal type* (marketing = 1; non-marketing = 0), and whether *negative information* was present or absent about the brand (negative information = 1; no-negative information = 0). Appendix B displays the coding scheme we used.

Results

Main effects. Table 1 shows the overall main effect of the weighted correlation between anthropomorphism and brand attitude is .127, which is positive and significant as indicated by the 95% bootstrapped confidence interval around the mean correlation CI [.108, .145], $p < .001$. This supports **H₁**, which predicts that consumers have more positive attitudes toward anthropomorphized (vs. non-anthropomorphized) brands. There is substantial heterogeneity in the dataset ($\chi^2 = 1,161.62$, $p < .001$), indicating the need to examine potential moderators to the relationship between anthropomorphism and brand attitudes.

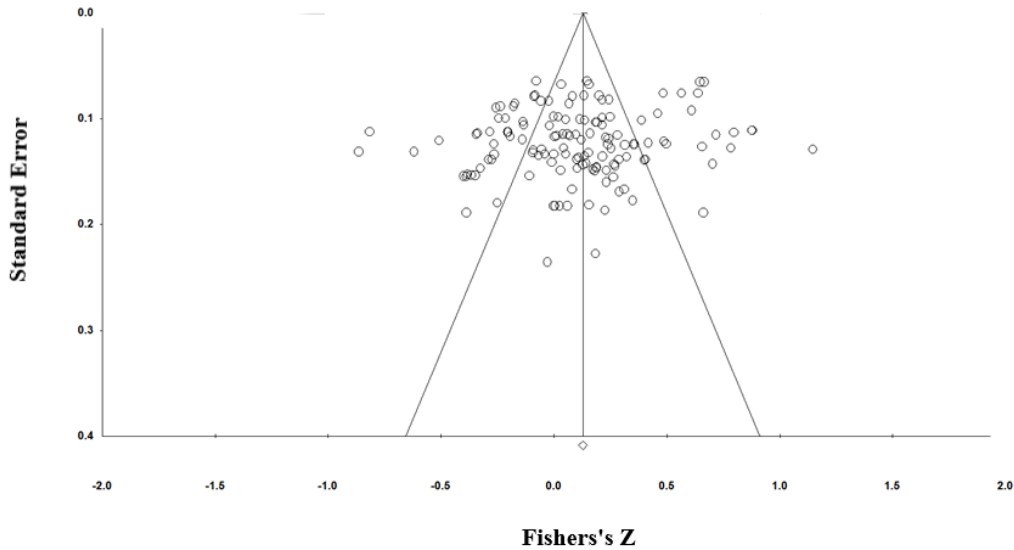
TABLE 2
Main Effect Results for Anthropomorphism effects

	Number of samples (k)	Number of observations (N)	Weighted r	Standard Error SE	95% Confidence interval (CI _{BS})	Unaccounted variance (χ^2)	Fail-safe sample size (N_{FS})
Anthropomorphism effect	136	10,722	.127**	.015	[.108, .145]	1,161.62	4,517

Note: ** $p < .01$

Rosenthal's Fail-safe N ($N_{FS} = 4,517$) suggests publication bias is not likely to be a problem in our analysis. A funnel plot of all effect sizes plotted against their respective precision metrics also confirms no publication bias, as shown in Figure 2.

FIGURE 2
Funnel Plot of Standard Error by Fisher's



Estimation model and moderating effects. Our analysis consisted of three parts. First, we conducted several tests to ensure the robustness of our final meta-regression model. Following Ofir & Khuri's (1986) framework we compared the bivariate correlations for all of our proposed moderators and analyzed multi-collinearity statistics to identify potential issues. Second, we estimated our meta-regression model following Bijmolt and Pieters (2001), using Hierarchical Linear Modeling HLM to correct for each effect sizes' nested nature and account for within-study error correlations. More specifically, by using a HLM approach we tried to account for the variation and covariation induced by the facts that our measurements differ in their dependent measures, the potential existence of interdependence among moderators, and the nested structures among our measurements. After careful analysis, we decided on a two-level structure with effect size moderators at level-1 and studies moderators at level-2, at the same time controlling for key methodological covariates. The estimated model is as follows:

$$\text{Level 1: } Y_{ij} = \beta_{0j} + \beta_j \times X_{1ij} + e_{ij}, \text{ and}$$

$$\text{Level 2: } \beta_j = \gamma_{00} + \gamma_{01} \times X_{2ij} + \mu_{0j}$$

where Y_{ij} is the i th effect size from study j , β_{0j} is the intercept for the j th study, β_j is the parameter estimate of the moderating factors for the j^{th} study-level, γ_{01} is the parameter estimate of the moderating factors for the j^{th} paper-level, e_{ij} is the random error associated with the i^{th} effect size in study j , γ_{00} is the overall intercept, μ_{0j} and is the paper-level residual error term. The level-1 equation describes the impact of brand familiarity, experience (vs. search) product type, value expressive (vs. utilitarian) product type, type of anthropomorphism variables, and negative appraisal. The level-2 equation describes the impact of paper's methodological variables: sample's nationality US (vs. non-US), publish paper (vs. unpublished), and type of journal marketing (vs. others). We analyzed the data using Raudenbush and Bryk's (2002) HLM based on 136 effect sizes collected from 59 studies, nested within 38 papers. All independent variables were centered to their grand means following Raudenbush and Bryk's (2002) recommendation.

Our analysis revealed several significant moderators to the anthropomorphism and brand attitudes relationship. Table 2 displays the estimation results of HLM.

TABLE 2
Moderator Estimates in the HLM Meta-Regression

Type of Moderator	Factor	Estimate	SE	<i>p</i>-value
Study-level	Brand Familiarity	.142	.050	.005
	Negative Information About the Brand (Present vs. Absent)	-.310	.034	<.001
Product Type	Value-Expressive vs. Utilitarian	.157	.067	.021
	Experience vs. Search	.271	.070	<.001
Anthropomorphism	Brand Character vs. Not	-.007	.069	.914
Related	Face vs. No Face	-.073	.110	.505
Paper-Level Variables	Participants from the US vs. Non-US	-.020	.078	.797
	Published vs. Unpublished Study	.223	.111	.053
	Marketing vs. Non-Marketing Journal	-.144	.086	.101

The meta-regression analysis reveals that the effect of anthropomorphism is exacerbated when consumers are familiar (vs. not familiar) with the brands, when the evaluation objects are experience (vs. search) products, or high (vs. low) value-expressive products. Further, relative to the neutral condition, when negative information about the brand is presented, the effect of anthropomorphism on brand evaluation is mitigated. In addition, non-marketing papers show greater levels of anthropomorphism effects compared to papers published in marketing journals. Papers with published status showed stronger anthropomorphic effects than unpublished papers.

Third, to test our hypotheses we conducted weighted univariate analysis for all moderators found significant in the HLM meta-regression. See Table 3.

TABLE 3
Weighted Univariate Results for Moderators

	Number of samples	Number of observations	Mean effect	Std. error
Brand Familiarity				
Familiar Brand	38	3547	.296***	.027
Unfamiliar Brand	98	7175	.039***	.014
Negative Information				
Present	7	1827	-.172**	.049
Absent	129	8895	.134**	.015
Experience vs. Search				
Experience	57	4511	.210***	.022
Search	79	6211	.067***	.019
Value-expressive vs. Utilitarian				
High Symbolic	58	4475	.250**	.027
Low Symbolic	78	6247	.034**	.014
Published Status				
Published	119	9129	.150**	.017
Unpublished	17	1593	-.007	.013
Journal Type				
Marketing	75	4468	.102**	.021
Non-Marketing	61	6254	.160**	.021

Note: *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$

Our analysis supports **H3**. First, in the HLM meta-regression the estimate for brand familiarity was positive and significant ($\beta = .142, p < .001$). Second, the univariate analysis shows that the correlation coefficient for more familiar brands ($M = .296, p < .001$) was significantly higher than for less familiar brands ($M = .039, p < .001$).

Examining results from the product type variables reveals support for **H4a** and **H4b**. High value-expressive products significantly influences the impact of anthropomorphism on brand attitudes ($\beta = .157, p < .05$), more for value-expressive products ($M = .250, p < .001$) than utilitarian products ($M = .034, p < .001$). Similarly, experience products (vs. search) significantly affect brand attitudes ($\beta = .271, p < .001$), with higher effect on experience products ($M = .210, p < .001$) than search products ($M = .067, p < .001$).

We also conducted a sub-group analysis, examining the joint impact of brand familiarity

and product type on the anthropomorphism and brand attitudes relationship. As shown in Table 4, greater brand familiarity leads to higher anthropomorphic effects for experience, and high symbolic products, as compared to search, and low symbolic products.

TABLE 4
Subgroup Analysis

		Brand Familiarity	
		Familiar Brand	Unfamiliar Brand
Experience vs. Search			
Experience	r	.398**	.104**
	SE	.037	.018
	N	12	45
Search	R	.216**	-.006 ^{ns}
	SE	.034	.020
	N	26	53
High vs. Low Symbolic			
Value-expressive	R	.443**	.061**
	SE	.026	.023
	N	22	36
Utilitarian	R	.056**	.028**
	SE	.013	.018
	N	16	62

Note: ** $p < .01$, * $p < .05$, + $p < .10$
r = effect, SE = Standard Error and N = sample size.

Among the methodological variables, publication status has a marginal effect ($\beta = .22$, $p < .10$), with published studies ($M = .150$, $p < .001$) having a stronger moderating effect than unpublished manuscripts ($M = -.007$, $p = .771$). Journal type also marginally affects the impact of anthropomorphism on brand attitudes, ($\beta = -.146$, $p = .10$), with weaker effects reported in marketing journals ($M = .102$, $p < .001$) than in non-marketing journals ($M = .160$, $p < .001$).

The presence or absence of negative information about the brand, has a significant moderator effect ($\beta = -.310$, $p < .001$); presenting negative information about the brand

negatively influences the impact of anthropomorphism on brand attitude ($M = -.172, p < .001$) while providing non-negative information strengthens the anthropomorphism effect ($M = .134, p < .001$).

Discussion

The meta-analysis was conducted primarily to provide confirmation for **H₁** (the main effect of anthropomorphism) and to study the effects of theoretical moderators such as brand familiarity and product type (**H₃** and **H_{4a-c}**). We find unambiguous support that anthropomorphic brands enhance brand attitudes (**H₁** supported). However, what probably explains the mixed effects of anthropomorphism in prior research can be found by examining the impact of proposed moderators.

We find that for brands that are highly familiar (**H₃**), for experience type of product categories, and for value-expressive products (**H_{4a}** and **H_{4b}**) the effect of anthropomorphism is more pronounced. Hence careful thought needs to be given when selecting brands as stimuli in experiments. For marketing practitioners our results offer guidance as well. Specifically, more mature brands would benefit from the use of anthropomorphism more than new entrant brands. Then, in product categories where uncertainty is experienced (e.g., experience products as compared to search products) and where the brand can be used to communicate one's identity (high symbolic as compared to utilitarian products) the effect of anthropomorphism is stronger on brand attitudes.

Interestingly, the type of anthropomorphism cues does not significantly affect the impact of anthropomorphism on brand attitudes, suggesting different executional tools are equally persuasive. However, providing negative brand-related information diminishes the effect of

anthropomorphism. This may happen because humanizing the brand seems more threatening in these circumstances, as compared to helping build higher self-brand connections in positive appraisal situations.

We acknowledge that study 1 had two limitations that we attempt to address in our follow-up experiment. First, the nature of the data was correlational, with no empirical evidence to support the causal direction inferred in our theorizing. Second, the secondary data comprising our meta-analytic database did not allow us to test the key mechanism underlying the findings. To overcome these issues, we conducted subsequent laboratory studies.

STUDY 2: FOLLOW-UP EXPERIMENT

Participants, Design, and Procedure

Three hundred and twenty-four M-Turk workers (53.0% female; $M_{\text{age}} = 37.24$, $SD = 11.77$) participated in our study in exchange for a small monetary incentive. This study featured a 2 (Brand Anthropomorphism: anthropomorphic vs. non-anthropomorphic) \times 2 (Brand Type: familiar vs. unfamiliar brand) between-subjects design. Below is the stimulus for an unfamiliar brand, “Zelt”. For familiar brands the name “Zelt” was replaced by either “Kenmore or Black + Decker”. This particular manipulation of anthropomorphism was adapted from (Puzakova, Kwak, & Rocereto, 2013). Figure 3 shows the study’s stimulus, materials, and conditions.

Figure 3
Study 2 Experimental Conditions

Zelt!



It is the most reliable and leading brand of steam irons on the market. It has a very high, continuous steam output, an extra powerful shot of concentrated steam, elongated steam slots, as well as special safety features. The electronic safety shut-off will activate when it is left unattended. It also has changeable anti-calcium steam iron cartridges. Its cord is 9 feet long and allows for maximum reach. You will also enjoy its soft handle for lasting ironing comfort!

Zelt

www.zelt.com

I am Zelt!



I am the most reliable and leading brand of steam irons on the market. I have a very high, continuous steam output, an extra powerful shot of concentrated steam, elongated steam slots, as well as special safety features. My electronic safety shut-off will activate when I am left unattended. I also have changeable anti-calcium steam iron cartridges. My cord is 9 feet long and allows for maximum reach. You will also enjoy my soft handle for lasting ironing comfort!

I am Zelt

www.zelt.com

Kenmore!



It is the most friendly and leading brand of steam irons on the market. It has a very high, continuous steam output, an extra powerful shot of concentrated steam, elongated steam slots, as well as special safety features. The electronic safety shut-off will activate when it is left unattended. It also has changeable anti-calcium steam iron cartridges. Its cord is 9 feet long and allows for maximum reach. You will also enjoy its soft handle for lasting ironing comfort!

Kenmore

www.kenmore.com

I am Kenmore!



I am the most friendly and leading brand of steam irons on the market. I have a very high, continuous steam output, an extra powerful shot of concentrated steam, elongated steam slots, as well as special safety features. My electronic safety shut-off will activate when I am left unattended. I also have changeable anti-calcium steam iron cartridges. My cord is 9 feet long and allows for maximum reach. You will also enjoy my soft handle for lasting ironing comfort!

I am Kenmore

www.kenmore.com

Participants were asked to imagine they were in the market for a steam iron and were randomly assigned to one of four conditions to evaluate an advertisement for a steam iron. After viewing the advertisement, participants indicated their attitudes toward the brand by rating nine items using a 7-point scale (bad-good; unpleasant-pleasant; unfavorable-favorable; don't like it -

like it; not reliable-reliable; not appealing-appealing; not sturdy-sturdy; low quality-high quality; not efficient-efficient; $\alpha = .93$). They also responded to two purchase intention items using a 7-point scale (very unlikely to purchase-very likely to purchase; not at all interested-extremely interested; $\alpha = .82$). In addition, participants provided responses to the following self-brand connection items, “How much similarity do you perceive between your image and that of [Brand Name]” using a 7-point scale (1 = very dissimilar; 7 = very similar). Then, participants answered our manipulation check question for brand familiarity, indicating how familiar they were with the stimulus brand (1 = not at all familiar; 7 = very familiar).

Results

An ANOVA on our manipulation check suggests that individuals were significantly less familiar with the fictitious brand ($M = 2.81, SD = 1.64$) and more familiar with the real brand ($M = 3.78, SD = 1.87$); $t(323) = 5.01, p < .01$)².

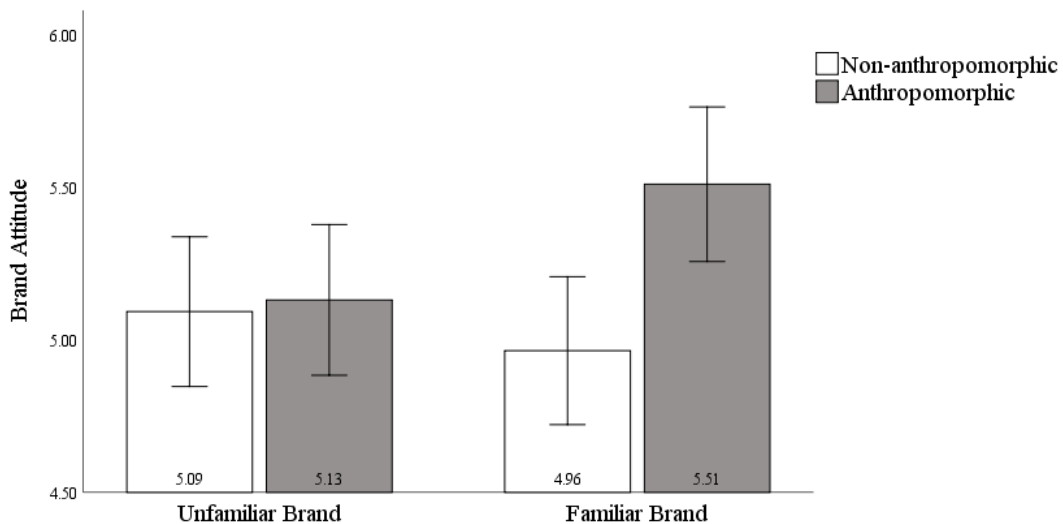
A 2×2 factorial ANOVA of brand familiarity and anthropomorphism on brand attitudes was run. The main effect of brand familiarity was not significant ($F(1, 320) = 1.02, p = .31$), but the main effect for anthropomorphism was significant, with higher brand attitudes for the anthropomorphized brand ($M = 5.37$) than for the non-anthropomorphized brand ($M = 5.02$; $F(1, 320) = 5.40, p < .02$).³ More importantly, the interaction effect between brand familiarity and anthropomorphism was significant ($F(1, 320) = 4.08, p = .04$), supporting **H3** (see Figure 4). The simple effects indicate that when brand familiarity is high, anthropomorphized brands exert a greater impact on brand attitudes ($M_{Anthropomorphized} = 5.51, M_{Non-Anthropomorphized} = 4.96$; $F(1, 320)$

² There was no significant difference between the effects of Kenmore and Black + Decker on familiarity so we collapsed the data across the two brands.

³ Results for purchase intentions as a dependent variable were similar to those for brand attitude as a dependent variable, and hence were not presented.

= 12.28, $p < .01$). However, when brand familiarity is low, there is no effect of anthropomorphism ($M_{Anthropomorphized} = 5.13$, $M_{Non-Anthropomorphized} = 5.09$; $F(1, 320) = .038$, $p = .84$).

FIGURE 4
Interaction Effect of Brand Familiarity and Anthropomorphism on Brand Attitude



Note: Error bars show 95% CI

Moderated Mediation: Given that brand familiarity moderated the effect of anthropomorphism on brand attitude, and we expected self-brand connection to mediate this effect, so we tested a moderated mediation model using bootstrapping procedures (Hayes, 2013); PROCESS model 7; 5,000 bootstrapping samples). Consistent with our expectations, the effect of anthropomorphism on brand attitudes was moderated by brand familiarity and mediated by self-brand connection (95% CI: .04 to .58). Specifically, the indirect effect of self-brand connection was significant only in the familiar brand condition ($b = .26$, 95% CI [.09 to .45]), but not in the unfamiliar brand condition ($b = -.03$, 95% CI [-.23 to .16]). These results provide support for **H₂**.

STUDY 3: IMPLICIT ASSOCIATION TEST STUDY

In this study, we examine the influence of Experience (vs. Search) type of products on purchase intentions toward the anthropomorphic brand strategy. The purpose of Study 3 is to further replicate our meta-analytic findings and to provide further support H_{4a}. Furthermore, we sought to provide evidence for the mediating role of Self-Brand Connection on consumers' preferences for anthropomorphic (vs. nonanthropomorphic) branding strategies. H_{4a} predict that the extent to which the anthropomorphized brand is preferred is explained by how consumers perceive their connection to the brand being advertised and whether that alleviates the typical uncertainty that experience products generate. To test this proposed mechanism, participants rated their purchase intentions for the brand being advertised, as well as how connected they felt with the brand. Specifically, this study consisted of a 2 (Brand Anthropomorphism: anthropomorphic vs. non-anthropomorphic) x 2 (Product Type: experience vs. search) between-subjects factorial design.

Participants, Design, and Procedure

Three hundred eighty-seven workers from M-Turk participants completed our study in exchange of a monetary compensation (53.0% female; $M_{\text{age}} = 37.24$, $SD = 11.77$). First, participants were instructed to provide their opinions about a print advertisement and respond to some questions about the product being advertised. Based on studies in this area (Suwelack, Hogreve, & Hoyer, 2011), we chose a pair of shoes as the Experience type of product and a battery charger as the Search type of product. Participants were exposed to one of two versions of the copy of the ad that primed either an anthropomorphic or nonanthropomorphic branding

strategy, which was manipulated using Kwak, Puzakova, & Rocereto (2017) manipulation for brand anthropomorphism. Specifically, this manipulation uses verbal and visual elements embedded in the ad to resemble human-like characteristics (i.e. a human figure as a logo and used first person language) in advertising a fictitious shoe brand, Darro and a fictitious brand of battery charger, PowerX. Figure 5 illustrates the advertisements used for the four conditions in this study.

Figure 5
Study 3 Experimental Conditions

Anthropomorphic

Non-anthropomorphic



I am Darro!

I offer the widest selection of footwear for men and women anywhere!
 I carry a multitude of styles in casualwear, formalwear, sneakers, sandals, and more! All my shoes are made to last for years!

Visit me at Darro.com to complete any wardrobe for every season!



Darro®



This is Darro!

It offers the widest selection of footwear for men and women anywhere!
 It carries a multitude of styles in casualwear, formalwear, sneakers, sandals, and more! All its shoes are made to last for years!

Visit Darro.com to complete any wardrobe for every season!



Darro®



I am PowerX!



I am a battery charger for smartphones that have been built and tested to meet the highest quality standards. I use Grade A cells which ensure reliable performance. My Li-polymer technology allows for longer battery life and frequent recharging. I have a high capacity of 10,000 mAh that adds 40 hours of talk time to your smartphone. I come complete with a set of connectors to fit all mobile devices including Android/Windows smartphones and iPhones 3G/4G/4GS/5.

Charge your mobile device anytime, anywhere. I am the must-have convenience for today's busy lifestyle. ©

Input: 100V - 240V
 Output: DC 9V / 12V 2A, 2 x USB 5V 3A
 (dual charge @ 2A Max)
 Size: 4.9 x 2.9 x 0.9 inches
 Weight: 10.2 ounces
 Warranty: 1-year limited

Available at our website:
www.PowerX.com



PowerX!



The PowerX is a battery charger for smartphones that has been built and tested to meet the highest quality standards. The PowerX uses Grade A cells which ensure reliable performance. Its Li-polymer technology allows for longer battery life and frequent recharging. The PowerX has a high capacity of 10,000 mAh that adds 40 hours of talk time to your smartphone. The PowerX comes complete with a set of connectors to fit all mobile devices including Android/Windows smartphones and iPhones 3G/4G/4GS/5.

Charge your mobile device anytime, anywhere. The PowerX is the must-have convenience for today's busy lifestyle. ©

Input: 100V - 240V
 Output: DC 9V / 12V 2A, 2 x USB 5V 3A
 (dual charge @ 2A Max)
 Size: 4.9 x 2.9 x 0.9 inches
 Weight: 10.2 ounces
 Warranty: 1-year limited

Available at our website:
www.PowerX.com

Participants were asked to imagine they are in the market for a new pair of shoes or for a new battery charger and were randomly assigned to see one of the advertisements. Then, participants indicated how likely they would purchase the product being advertised using two items (1= “very unlikely, not interested at all” and 7= “very likely, extremely interested”; $r = .82$, $p < .001$). Additionally, participants completed a short questionnaire in which we include the Self-Brand Connection Scale (Escalas & Bettman, 2003). The Self-Brand Connection measure consisted of seven items (anchored by 1=strongly disagree, 7=strongly agree), averaged to form a self-brand connection score for each participant ($\alpha = .97$). Examples of these items are “The brand Darro[PowerX] reflects who I am”, “I can identify with this brand Darro[PowerX]”, “I feel a personal connection with this brand Darro[PowerX]”, “I will use this brand to communicate who I am with other people”, “The brand suits me well”, “I consider Darro[PowerX] to be “me””, and “Darro[PowerX] will help me become the type of person I want to be”. Following this, participants were prompted to recall the ad and answer our manipulation check questions, “The ad I just for Darro[PowerX] saw contains human-like characteristics,” “The advertisement for brand Darro[PowerX] tries to humanize the product” (anchored by 1=strongly disagree, 7=strongly agree; $r = .78$, $p < .001$). Finally, participants answered several demographic questions.

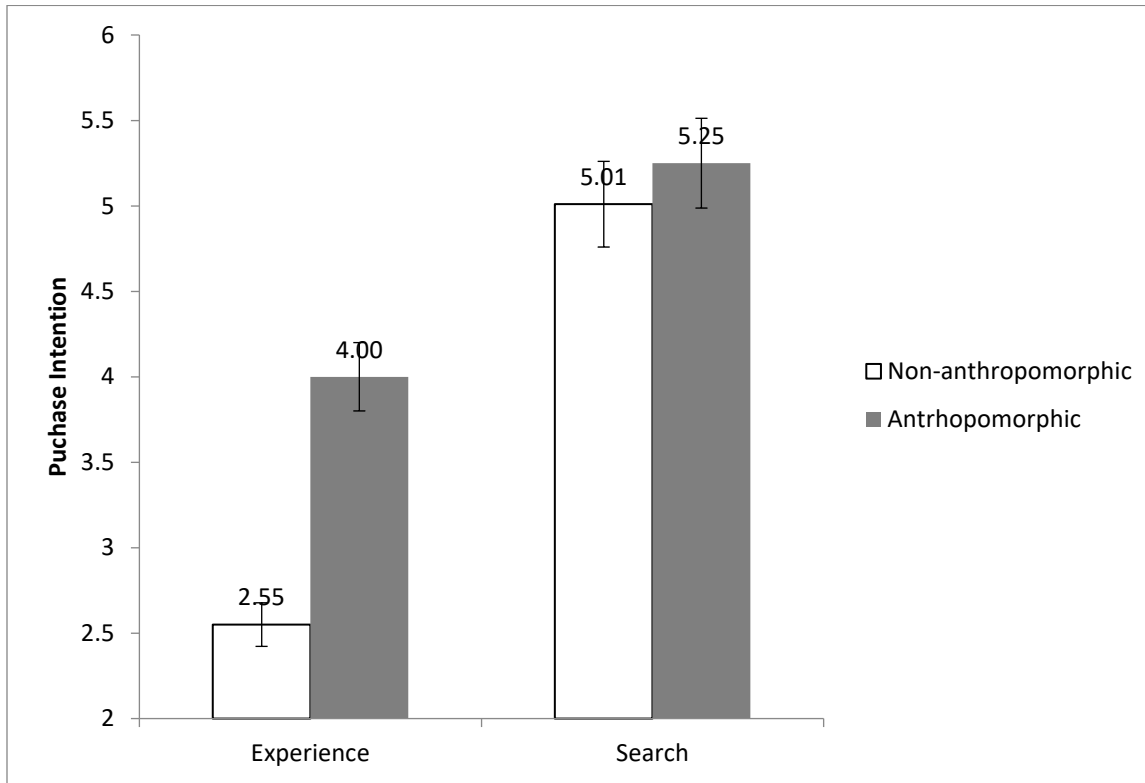
Results

To check the validity of our brand anthropomorphism manipulation, we first conducted a one-way ANOVA, using as dependent variable the score index of the two manipulation check items. As expected, participants in the anthropomorphic brand condition ($M = 3.65$, $SD = 1.80$) perceived the ad to contain more human-like characteristics and the ad presenting a humanized

product compared to participants in the nonanthropomorphic condition ($M = 2.89, SD = 1.52$); and this difference was significant ($F(1, 385) = 20.35, p < .001$). These results suggest our anthropomorphism manipulation was successful.

We averaged ratings of the advertised product's purchase intention to form a product preference index as our dependent variable. To test the proposed hypothesis H_{4a}, moderation was assessed with the bootstrapping method (Hayes, 2013), PROCESS MACRO. We standardized and mean centered the ratings for the two items measuring purchase intention to form a product preference index. We ran a regression on this index with (1) anthropomorphism brand, (2) Product Type (1=experience, 0=search), and (3) the two-way interaction of Brand anthropomorphism x Product Type. We found a significant main effect for Brand Anthropomorphism ($\beta = .261, t(383) = 5.13, p < .001$) and for Product Type ($\beta = -2.060, t(383) = -13.07, p < .001$). More importantly, and consistent with our expectations, the analysis revealed a significant Brand Anthropomorphism and Product Type interaction ($\beta = .245, t(383) = 2.41, p < .05$). As Figure 6 shows, consumers expressed a stronger preference for the shoes promoted using anthropomorphic elements in the ad than for the shoes featured in a nonanthropomorphic ad. This effect is stronger ($b = .383, t=5.55, p < .001$) for the experience product, as compared to preferences for the search product ($b = .138, t = 1.86, p = .063$). These results confirm our expectations that the preference for the anthropomorphic brand strategy is stronger for experience type of products than for search type of products and replicate our meta-analytic findings.

Figure 6
Interaction Effect of Experience Products and Anthropomorphism on Purchase Intention



Mediation. To test whether perceived Self-Brand connection mediated the effect of anthropomorphism on purchase intentions, we conducted a mediation analysis using bootstrapping procedures (Hayes, 2013); PROCESS model 4; 5,000 bootstrapping samples). However, first, and consistent with our expectations, the results revealed that the anthropomorphism effect on purchase intentions is positive and statistically significant ($\beta = 0.34$, $p < 0.001$). We then evaluated the significance of the indirect effect of self-brand connection. This analysis shows that when self-brand connection was examined as the mediating factor, a 95% CI for the indirect effect excluded zero (indirect effect = .31, SE= .04, CI= [.23 to .40]). Therefore, the bootstrap analysis provided further evidence that the effect of brand anthropomorphism on purchase intentions is mediated by self-brand connection.

Discussion

Study 3 replicates the findings of Study 1 in an experimental setting by providing further evidence for the moderating effect of Experience (vs. Search) type of products influencing purchase intentions toward products promoted using anthropomorphic (vs. nonanthropomorphic) branding strategies. Additionally, Study 3 provides evidence for the underlying process, Self-Brand Connection on the effect of brand anthropomorphism and purchase intentions. When consumers make judgments about a product that employs an anthropomorphic brand strategy, they are more likely to perceive themselves connected to the brand, which leads to purchase intentions for the promoted product.

STUDY 4: IMPLICIT ASSOCIATION TEST

Participants, Design, and Procedure

In Study 2 we provided evidence for the mediating effect of self-brand connection using explicit measures. A primary goal of Study 3 was to provide evidence that the self-brand connection happens at an implicit level when brands are humanized, especially for familiar brands, which usually have a well-formed schema in the consumer's mind. We ran an Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998; Greenwald, Nosek, & Banaji, 2003) using Millisecond software Inquisit 5.0 to test the strength of association between anthropomorphism (category) and self-brand connection (attribute) for familiar brands vs. unfamiliar brands. Eighty M-Turk participants completed our study (49.0% female; $M_{\text{age}} = 32.14$, $SD = 10.66$), with half of the participants seeing unfamiliar brands and half seeing familiar brands.

Reaction times to anthropomorphism stimuli were measured by asking individuals to

classify photographs shown on screen into “Brand like human” vs. “Brand not like human.” For brand like human photographs we included a humanizing cue (e.g., including two dots next to each other to make it look human eyes) and mentioned “I’m [Brand Name],”, while for brand not like human photographs we included a dehumanizing cue (e.g., including the two dots one on top of each other) and just mentioned [Brand Name] in the photograph. Such anthropomorphic and non-anthropomorphic representations of brands have been shown to affect anthropomorphism in prior research (Mourey, Olson, & Yoon, 2017; Puzakova et al., 2013; Wan, Chen, & Jin, 2016), and were adapted for this study by retaining the fictitious brand name used in the study (for participants in the unfamiliar brand name condition) and incorporating real brand names (for participants in the familiar brand name condition). Figure 7 displays the stimuli we used for the test.

Figure 7
Implicit Association Test Stimuli

Familiar Brands



Unfamiliar Brands



Reaction times for self-brand connection were measured by asking individuals to classify words shown on the screen into “Self” or “Other” categories. Words were selected based on prior implicit research on self-brand connection by Perkins and Forehand (2012). For the self category words included—*I, self, me, my, and mine*—while for the other category words included—*they, other, them, their, and theirs*.

We measured the speed of responses expecting that for congruent pairings of attribute and categories (Brand like human/Self, and Brand not like human/Other) responses would be faster than for incongruent pairings (Brand like human/Other, and Brand not like human/Self). The metric that captures the level of association is the *d*-score (Greenwald et al., 2003), with higher *d*-scores indicating a stronger association between self-brand connection and anthropomorphism.

Results

IAT data revealed that the *d*-score for familiar brands ($M = .692, SD = .280, CI [.602, .781]$) was significantly higher than for unfamiliar brands ($M = .514, SD = .262, CI [.431, .597]$), $t(79) = 2.94, p < .01$. This indicates that for both familiar and unfamiliar brands, the self-brand connection is associated with anthropomorphic brands. However, the self-brand connection is stronger for familiar brands than for unfamiliar brands.

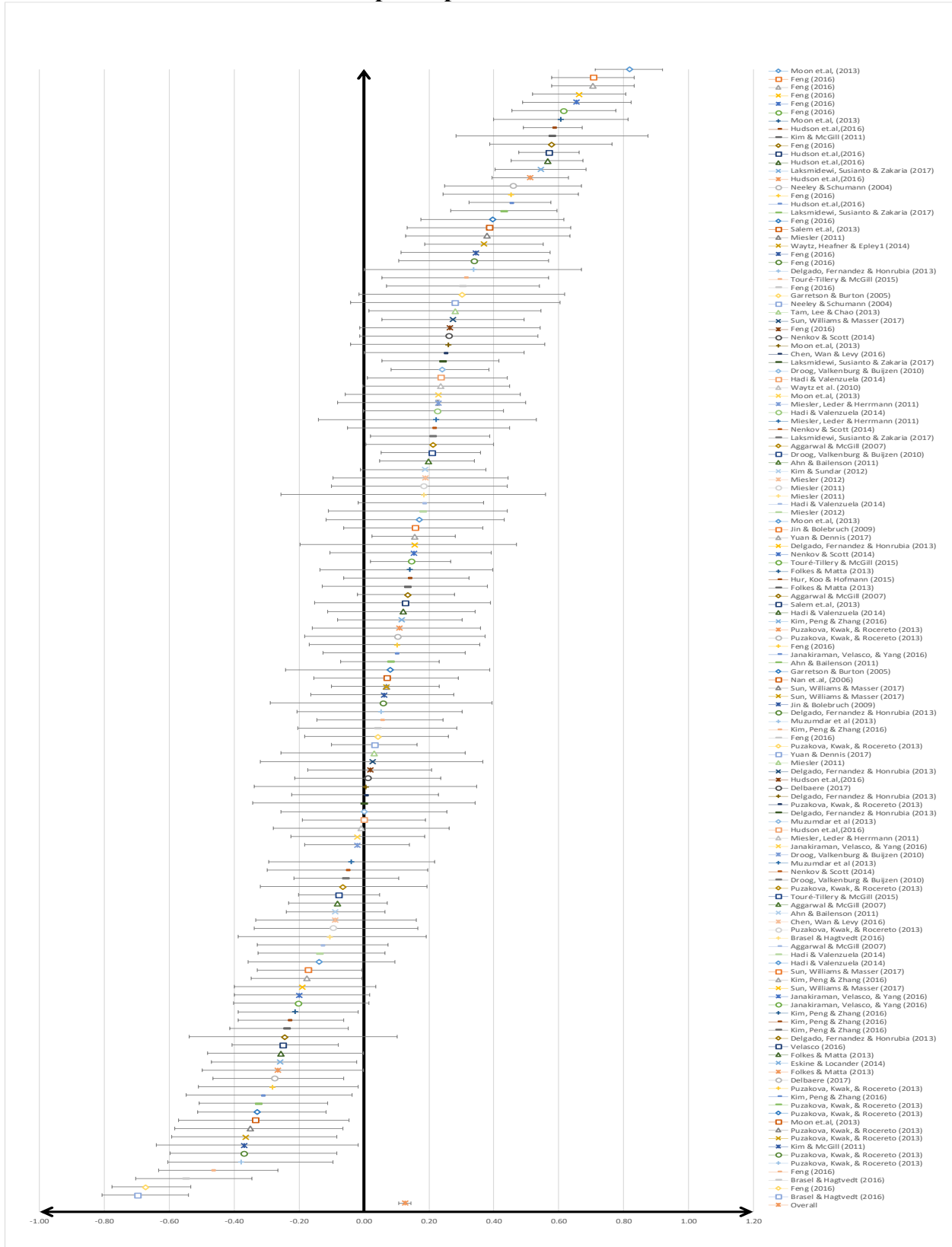
CONCLUSIONS

Anthropomorphism is a fairly recent research topic among marketing academics with most work following seminal works by Aggarwal and McGill (2007). In the last ten years there

has been a literal explosion in interest in this phenomenon, with a total of 116 papers published examining the impact of anthropomorphism on various different dependent variables (e.g., brand evaluations, environmentalism, and charity). Of these papers, a smaller subset of 38 papers considers brand evaluations as the dependent variable and was thus relevant to this first essay. These studies show mixed findings regarding the effect of anthropomorphism on brand evaluations. While some research shows that there is a positive association between anthropomorphism and brand evaluations (Chen et al., 2017), other studies report a negative relationship (S. Kim et al., 2016). Still others show no effect (Delgado-Ballester et al., 2013). In three studies, we show that anthropomorphism positively and significantly influences brand attitudes. The key mechanism underlying the effect of anthropomorphism is self-brand connection. When there is a self-brand connection account, brand familiarity, experience (vs. search) products, and high (vs. low) symbolic product enhance the impact of anthropomorphism on brand evaluations.

APPENDIX A

Forrest Plot of the Anthropomorphism Studies Included in the Database



APPENDIX B
Factors Included in the Meta-Analysis and Coding Scheme

Variable Name	Coding Scheme
Brand Familiarity	Brand name used in the study.
Familiar Brand	Familiar brand = 1
Unfamiliar Brand	Fictitious brand=0
Negative Information	Negative information about the brand present vs. absent in the study.
Present	Present=1
Absent	Absent=0
Experience vs. Search	Type of product used in the study.
Experience	Experience product type =1
Search	Search Product type=0
Value-expressive vs. Utilitarian	Type of product used in the study.
High Symbolic	High symbolic=1
Low Symbolic	Low Symbolic=0
Anthropomorphic cues	Method use to manipulate anthropomorphism
Brand characters	Brand Characters presence=1 Brand Characters absent=0
Imagined cues	Anthropomorphism primed through thinking the product or brand becomes alive=1 Actual presentation of human-like cues=0
US participants	Sample's nationality
	US participants=1 International=0
Published Status	Study published or not
	Published=1 Unpublished=0

Journal Type	Name of the Journal where study was published
Marketing	Marketing Journal=1
Non-Marketing	Other Journal=0

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CHAPTER 3

ESSAY #2 - A Meta-Analytic Investigation into the Relationship between Anthropomorphism and Acts of Social Goodwill

INTRODUCTION

Consumers instinctively attribute anthropomorphic characteristics to nature and non-human agents. To illustrate, an experiment by Tam, Lee, and Chao (2013) showed that 36% of the posters designed by participants to promote pro-environmental behaviors spontaneously included anthropomorphic forms. Substantial body of work on anthropomorphism investigates its effects on consumers' acts of social goodwill, including consumer compliance with campaigns that promote eco-friendly behaviors, pro-social behaviors, and green consumption. Research suggests that using anthropomorphism strategies in social marketing campaigns increases consumers' confidence to engage in green consumption, pro-social behaviors, and pro-environmental behaviors (e.g., Aggarwal & McGill, 2012; Tam, 2015).

A close look at this domain of research shows no clear evidence on whether anthropomorphism is effective in increasing compliance with social initiatives. While some of the findings suggest that anthropomorphism boosts consumers' confidence and enable consumers to engage in acts of social goodwill (Zhou, Kim, Wang, & Aggarwal, 2018; Mourey, Olson, & Yoon, 2017; Ahn, Kim, & Aggarwal, 2014; Timpano & Shaw, 2013), other investigations report negative effects on consumers' behaviors (Tan, Sun, & Šabanović, 2016; Williams, Masser, & Sun, 2015). These mixed findings suggest the need for a synthesis on this topic. Toward this end, the purpose of this second essay is to conduct a meta-analysis of empirical research that explores consumers' responses to appeals for social causes that use anthropomorphism as a persuasive

tool. To this end, we examine how culture, affective thinking, and contextual factors set up boundary conditions for the effects of anthropomorphism on consumers' decisions to engage in acts of social goodwill. We propose that anthropomorphism may increase, decrease, or have no effect on consumers' acts of social goodwill, depending on the social cause advertising characteristics (i.e., frame used in the ad), contextual factors (i.e., when the ad suggests a direct experience versus an indirect experience of the social cause), and type of anthropomorphism induction (imagined anthropomorphic thinking versus real, and visual cues versus other cues).

This research contributes to the literature in several important ways. First, it reconciles inconsistent findings documented in the domain of anthropomorphism. As indicated earlier, previous studies have produced equivocal results on how anthropomorphism affects consumers' acts of social goodwill. Given that these studies differ in many aspects including study contexts, product nature, and individual factors, it is hard to draw a firm conclusion of anthropomorphism effects. This research represents the first effort to identify some important boundary conditions of these effects. Second, we are also the first to uncover affective thinking as a key mechanism underlying the effect of anthropomorphism on consumers' acts of social goodwill. This theorization is important, as it provides a solid conceptual foundation to understand why anthropomorphism may affect consumers' acts of social goodwill. Finally, because of the affective thinking account, we identify important theoretical moderators of the anthropomorphism effects. Apart from its theoretical contributions, this study's findings also provide novel and useful guidelines to marketing practitioners regarding how to develop effective social marketing campaigns.

In the sections that follow, we first introduce key constructs and develop hypotheses about the effect of anthropomorphism on consumers' engagement in acts of social goodwill, and

the key process underlying the effect. Furthermore, we develop hypotheses on theoretical moderators that set up boundary conditions for the effectiveness of the anthropomorphism effect. Next, we describe the meta-analytic procedures employed to test the hypotheses. Following the meta-analysis, we detail a follow-up experiment conducted to more closely examine how one theoretical moderator, namely masculinity/femininity, affects the relationship between anthropomorphism and consumers' responses, and test the mediating role of affective thinking. We conclude with a discussion of key findings from both the meta-analysis and the experimental study, and offering takeaways that inform marketing theory and practice.

ANTHROPOMORPHISM AND ACTS OF SOCIAL GOODWILL

One of the most fundamental activities in human societies is maintaining social relations and social well-being. Depending on a society's structure, people vary considerably in their predisposition to share resources, provide help to others, or feel moral emotions linked to social needs. When promoting social causes (e.g., recycling, water conservation, blood donation, pet adoption, and food waste composting), marketers often include anthropomorphic elements, which are thought to provide consumers with an intrinsic motivation to positively react (Ahn et al., 2014). Moreover, when an appeal for a social cause includes anthropomorphic elements, this strategy helps elicit a sense of social connection (Mourey et al., 2017; Tam et al., 2013), a sense of relatedness (Tam 2015, 2013), and a greater sense of control (Tam 2015). For instance, increasing perceptions of efficacy in social campaigns, and enhances compliance despite the monetary, physical and psychological costs involved in such decisions.

Previous research shows some indecisive evidence on the effects of anthropomorphism on consumers' prosocial behaviors. For example, Ahn et.al (2014) suggests that the positive

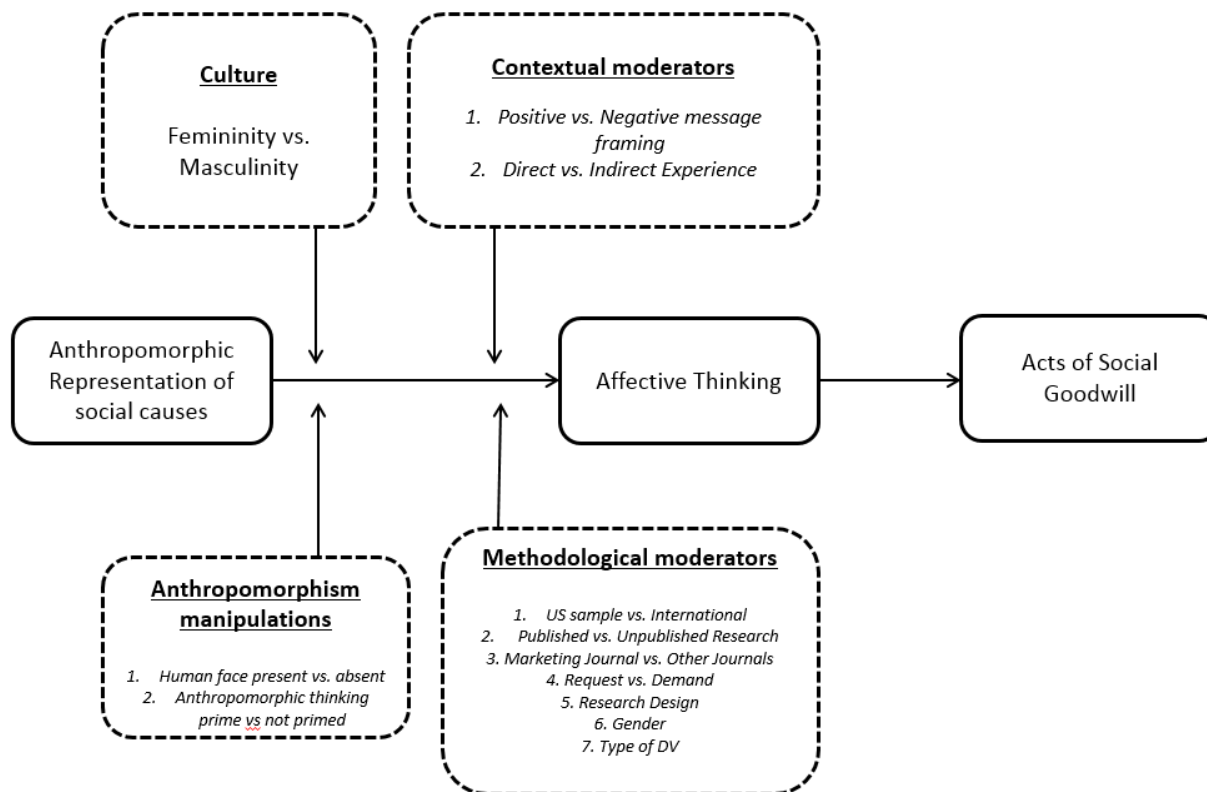
effect of anthropomorphism on consumers' responses to comply with social appeals is a consequence of an increased moral concern. Meanwhile, Williams et.al, (2015) described that this positive effect is subject to the presence of negative affect cues implanted in the appeal. Despite such mixed findings, we conceptualize that anthropomorphism in general has a positive effect on consumers' acts of social goodwill because in the context of social campaigns, anthropomorphism induces affective thinking, which in turn, increases social good will, as discussed in the next section.

H₁: Consumers hold more (less) positive attitudes toward social causes promoted with (without) anthropomorphic representation.

Anthropomorphism, Affective Thinking, and Acts of Social Goodwill

We predict that the activation of the human schema through the presence of anthropomorphic features in the social campaign appeals will trigger consumers' affective responses, which will encourage them to more open engaging in acts of social goodwill (see Figure 1).

Figure 1
Meta-Analysis Model



Consumers exhibit a wide range of responses to advertising appeals, depending on the type of ad (e.g., emotional charge ad versus an informational ad) (Aaker, Stayman, & Vezina, 1988; Aaker, Stayman, & Hagerty, 1986; Caccioppo & Petty, 1982). Social cause marketing attempts to evoke feelings toward the cause (i.e., sympathy, warmth, empathy) and to evoke feelings of efficacy (i.e., assurance that people actions are effective to solve the social issue) (Small & Verochi, 2009). People use affective thinking as a strategy to categorize objects and better understand of their environment (Fiske, 2014; Rosch & Mervis, 1981; Rosch, 1975). Sujan (1985) asserts that such categorization approach leads to positive affect as a result of “schema-driven affect.” This means that consumers’ prior experiences with the “human” category orient them in their decisions. Therefore, when marketers use anthropomorphism as tool to market

social causes, the activation of the human schema in consumers' minds will trigger a sense of familiarity and connection (being in the same human category) with the social cause.

The affect-as-information thesis suggests that consumers use minimal information processing when positive affect directs them to devote as little attention as is necessary (Herr, Page, Pfeiffer, & Davis, 2011; Anand, Holbrook, & Stephens, 1988). This decreased information processing is a result of people feeling they are in a benign decision situation, and can thus rely on heuristics to make judgments (Schwarz, Bless, & Bohner 1991; Schwarz & Clore, 1983;). Consistent with this reasoning, recent research shows that rational thinking reduces individuals' empathy toward people who need help (Small, Loewenstein, & Slovic 2007). To the opposite, the emotional expression of victims enhances potential donors' empathy, and thus increases their donation intention (Small & Verrocchi 2009).

Research on affective thinking also suggests that positive affect enables individuals to categorize things more freely (Murray, Sujan, & Hirt, 1990; Isen & Daubman, 1984), and to better comprehend metaphors (Roehm & Sternthal, 2001). Studies have shown that anthropomorphism increases proximity toward an object, thereby engendering a sense of trust in the information source (Nan, Angelcev, Myers, Sar, & Faber, 2006). Taken together, the forgoing discussion suggests that a social campaign with anthropomorphic elements induces consumers' affective thinking, which in turn increases their social goodwill.

H₂: The relationship between anthropomorphism and acts of social goodwill is mediated by affective thinking.

Factors that Enhance or Undermine Affective Responses

The combination of ad features (e.g., anthropomorphism) with consumers' individual differences generate differences in the intensity of emotions when evaluating how to respond to an ad (Escalas, Moore & Britton 2004). To advance our understanding of how anthropomorphism operates in social cause marketing, as well as the mediating role of affective thinking, in this essay we examine three potential moderators to the relationship between anthropomorphism and consumers' decisions on acts of social goodwill. First, we examine at the moderating role of culture, and how a feminine (vs. masculine) mindset may affect the effect of anthropomorphism on acts of social goodwill. Second, we investigate two other contextual factors that may influence the persuasive impact of advertising for social causes: (1) whether the social cause is framed positively or negatively; and, (2) whether the social cause ad is directly (vs. indirectly) framed as connected to the consumer.

Femininity (vs. Masculinity) and Anthropomorphism. In our research we focus on the Femininity (vs. Masculinity) mindset and test whether consumers with a Femininity (vs. Masculinity) mindset exhibit stronger intentions to engage in acts of social goodwill following exposure to anthropomorphic social campaigns. We focus on Femininity (vs. Masculinity) in this research because it is directly related to social cause marketing and to anthropomorphism.

Hofstede (1991) described Femininity societies as relationship-oriented and characterized by showing minimal social differentiation. Individuals in Femininity societies develop strong values, such as showing care for other needs and working toward a “welfare” society that governs their interaction with others. Additionally, Femininity exhibit affective responses such as cooperation, sympathy, modesty, and an emphasis on quality of life (Spence & Helmreich, 1979). Examples of countries with high Femininity scores include Netherlands, Chile, and

Thailand (see Hofstede [2018], <https://geert-hofstede.com/national-culture.html>). Therefore, individuals from Feminine countries are more likely to show care for other needs and work toward a “welfare” society that governs their interaction with others; however, those from more Masculine countries (e.g., Japan, Italy, UK and the U.S.) tend to have a strong preference for values such as assertiveness, achievement, and competitiveness.

Although not having been used in the previous research, we expect that Femininity and Masculinity can be fruitfully studied at the individual level (e.g., by assessing femininity and masculinity via scales) and can also be activated via priming procedures, in a similar way as previous research on individualism-collectivism and power distance belief. Since the success of social cause marketing involves a relationship orientation, Femininity (vs. Masculinity) constitutes a more relevant cultural dimension to explore than the other dimensions. Since in Femininity societies individuals learn and develop skills towards relationship-oriented goals and these individuals have developed values for caring for others (Palan, 2001; Hofstede, 1991; Spence & Helmreich, 1979), anthropomorphism will facilitate the accessibility in their mental representations of positive affect. Furthermore, we can expect that in Femininity societies, compared to Masculinity societies, individuals are likely to show affective responses because Femininity societies are associated with high communal and expressive tendencies (Palan, 2001). Moreover, a feminine mindset seems to facilitate the activation of the human schema needed for anthropomorphism to work effectively. Therefore, when a social cause is anthropomorphized, we can expect that consumers would automatically interpret the humanness factors in the appeal and develop affective responses towards that social cause.

In sum, when anthropomorphizing a social cause, we expect that consumers will easily recognize humanness in the social claim the campaign proposes and develop sympathy towards

the social cause. This is because in high Femininity societies, the goal for people is to work together towards a common goal and individuals show a stronger proclivity to be more affective rather than rational. Moreover, in Femininity societies people prioritize building relationships and showing warmth responses compared to Masculinity societies that focus on achievement, assertiveness, and independence.

H3: The effect of anthropomorphism on social goodwill is moderated by consumers' femininity (vs. masculinity) mindset, in such a way that the effect becomes stronger for consumers with a femininity (vs. masculinity) mindset.

Positive (vs. Negative) Advertising Frame and Anthropomorphism. We expect that the effect of anthropomorphism on consumer social goodwill is stronger for positive (vs. negative advertising frame). Since negative affect triggers systematic processing, a negative frame of the social cause is likely to heighten the attention level of audience members, and a more elaborate processing will be used when making decisions to comply with the social cause or not (Schwarz et.al., 1991; Schwarz & Clore, 1983). A positive frame, on the other hand, will signal congruency with the positive point of view that the anthropomorphism effect causes in consumer minds, which will further trigger affective thinking. This schema-driven affect is reflected in anthropomorphism literature. For example, Tam (2015) show that when nature is portrayed as mindful and having emotions, consumers are more likely to engage in acts of social goodwill. Mourey et.al, (2017) show evidence that when anthropomorphism is framed in a positive way, as satisfying social needs; consumers are more likely to engage in prosocial behaviors. In sum, we expect that a positive frame will increase consumer engagement in affective thinking, resulting in greater compliance with the social cause.

H4: The effect of anthropomorphism on acts of social goodwill is stronger for appeals for social causes that use a positive frame compared to those featuring a negative frame.

Direct (vs. Indirect) Experience with the Social Cause and Anthropomorphism. Prior research suggests consumers with a direct experience with a product are more favorable in their product evaluations and purchasing intentions. Experiential aspects in the consumption process increase the chances of using affective thinking (Holbrook & Hirschman, 1982), increases consumer confidence in their decisions (Hoch & Ha, 1986), and dictates different processing styles (Alba & Hutchinson, 1987; Bettman & Park, 1980). A direct experience with the social cause is defined as consumers' level of association and affinity with the cause (Drumwright, 1996). We believe that a social cause promoted using an appeal that is more related, experiential, and connected to the audience will follow the schema-driven effect whereby familiarity with the cause induces affective thinking. Moreover, we expect that this effect will enhance likelihood of consumers engaging in acts of social goodwill. Previous literature in social cause marketing has shown this link. For example, Bamber and Möser (2007) described cause relatedness and experience as a psychological determinant for pro-environmental behavior. There is also evidence that a social cause that is familiar or well-known is more likely to be supported by consumers (Sheikh & Beise-Zee, 2011; Lafferty, Goldsmith, & Hult, 2004; Bendapudi, Singh, & Bendapudi, 1996). Further, Gleim, Smith, Andrews, and Cronin (2013) demonstrate that non-familiarity becomes a barrier for consumers' green consumption. Taking these findings in consideration, we hypothesize that a social cause that directly shows a cause relatedness to the audience paired with anthropomorphic elements in the ad will induce affective thinking in consumers and lead to greater compliance with the social campaign.

H5: The effect of anthropomorphism on acts of social goodwill is stronger for appeals promoting social causes that reference a direct experience and induce relatedness, compared to those featuring an indirect experience.

STUDY 1: META-ANALYSIS

Dataset Development

First, we identify all published and unpublished work that connected anthropomorphism and acts of social goodwill. We used the following keywords to identify relevant articles: *anthropomorphism*, *social-cause marketing*, *conservation attitudes*, *mind attribution to nature*, *dispositional empathy with nature*, and *green consumption*. We conducted an exhaustive search among of several databases, such as EBSCOhost, Emerald, JSTOR, and Google Scholar. For each paper that was identified as relevant, we carefully examined the articles cited as well as other papers that cited that paper. We also contacted several authors requesting working papers or studies that had not been published. Through these means, we located a total of 17 papers.

We then evaluated each paper for inclusion based on two conditions: (1) the study must examine and report the effect of both anthropomorphic and non-anthropomorphic cues in social-cause marketing campaigns on acts of social goodwill; and, (2) the statistics reported must allow us to calculate a common effect size (see Janiszewski, Noel, & Sawyer, 2003; Glass, McGaw, & Smith, 1981;). Applying these criteria reduced the final meta-analytic database to 17 papers⁴ (including 14 published articles and 3 unpublished manuscripts). The papers ranged from 2005 to 2018, and yielded a total of 55 effect sizes with a total sample size of 6,656 observations. Appendix A illustrates the list of studies included in the meta-analytic database in a forest plot.

Coding Procedures

To code each study in our meta-analytic database we used effect sizes and other statistics

⁴ These papers are denoted with an asterisk in our References section.

reported in the studies such as means, standard deviations, and sample sizes to calculate the correlation (r) between anthropomorphism and acts of social goodwill. This correlation captures the strength of the relationship between anthropomorphism representations in an appeal of a social cause and consumers' reactions toward it, expressed as acts of social goodwill. These reactions include pro-social behaviors, pro-environmental behaviors, and green consumption preferences.

We developed a coding scheme to examine several potential sources of variation of the anthropomorphism effects. Two independent coders coded the data for 11 different moderators. There was 90% agreement between these coders; disagreements were resolved through discussion.

Masculinity/Femininity was coded using the Hofstede's Cultural Score associated with the nationality of each study's sample. We used the same approach to code the other cultural variables: *Individualism*, *Power Distance*, *Uncertainty Avoidance*, *Long Term Orientation*, and *Indulgence*.

Additionally, we coded two contextual factors that literature on social-cause marketing suggests may influence acts of social goodwill. First, we considered if the social cause was positioned positively or negatively in the appeal and was coded this variable as *message frame* (positive = 1; negative = 0). Second, coded the extent to which audience members were likely to have experience with the social cause (direct = 1 vs. indirect = 0).

Two moderators captured how anthropomorphic cues were manipulated. *Visual cues* captured whether an appeal featured a human-like face (yes = 1; no = 0); while *imagined cues* captured if instructions prompted audience members to imagine the cause in human terms or actually presented human-like cues (imagine objects as humans = 1; react to humanized pro-

social stimuli = 0).

The rest of the moderators we included in our model captured methodological factors, including *research design* (between-subjects = 1; within subjects = 0), *sample type* (student = 1; non-student = 0), *publication status* (published = 1; unpublished = 0), *journal type* (marketing = 1; non-marketing = 0), and whether the *outcome variable* of the study was behavioral or attitudinal (behavioral = 1; attitudinal = 0). In addition to this, our model controlled for *gender* (i.e., the proportion of females in the study's sample). Since the literature on acts of social goodwill suggests that females are more inclined to engage in pro-social and pro-environmental behaviors. Appendix B shows the moderating factors included in the meta-analysis and the coding scheme we used.

Results

Main effects. Table 1 shows the overall main effect of the weighted correlation between anthropomorphism and acts of social goodwill is .068. This is a positive significant effect size, as indicated by the 95% bootstrapped confidence interval around the mean correlation CI [.044, .092], $p < .001$. This supports **H₁**, that consumers are more positive toward engaging in acts of social goodwill toward anthropomorphized (vs. non-anthropomorphized) social causes. There is substantial heterogeneity in the dataset ($\chi^2 = 198.74, p < .001$), indicating the need to examine potential moderators to the relationship between anthropomorphism and consumers' acts of social goodwill.

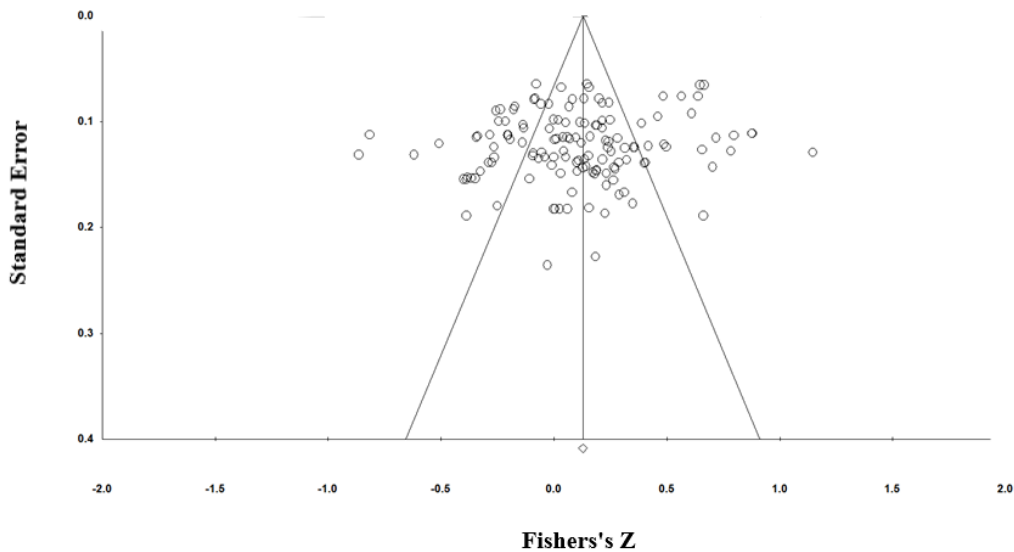
TABLE 2
Main Effect Results for Anthropomorphism effects

	Number of samples (<i>k</i>)	Number of observations (N)	Weighted <i>r</i>	Standard Error SE	95% Confidence interval (<i>CI</i> _{BS})	Unaccounted variance (χ^2)	Fail-safe sample size (<i>N</i> _{FS})
Anthropomorphism effect	55	6,656	.068**	.006	[.044, .092]	198.74	483

Note: ** $p < .001$

Rosenthal's Fail-safe N ($N_{FS} = 483$) suggests publication bias is not a problem in our analysis. A funnel plot of all effect sizes plotted against their respective precision metric also supports this conclusion, as shown in Figure 2.

FIGURE 2
Funnel Plot of Standard Error by Fisher's



Estimation model and moderating effects. Our analysis consisted of multiple phases. First, we conducted several tests to ensure the robustness of our final meta-regression model.

Following Ofir and Khuri's (1986) framework, we compared the bivariate correlations for all our proposed moderators and analyzed multi-collinearity statistics to identify potential issues.

Second, we estimated our meta-regression model following Bijmolt and Pieters (2001) using Hierarchical Linear Modeling HLM to correct each effect sizes' nested nature and account for within-study error correlations. To be more specific, by using an HLM approach we tried to account for the variation and covariation induced by differences in dependent measures across studies, the potential existence of interdependence among moderators, and the nesting structures among our measurements. After careful analysis, we decided on a two-level structure with effect size moderators at level-1 and study moderators at level-2, at the same time controlling for key methodological covariates. The estimated model is as follows:

$$\text{Level 1: } Y_{ij} = \beta_{0j} + \beta_j \times X_{1ij} + e_{ij}, \text{ and}$$

$$\text{Level 2: } \beta_j = \gamma_{00} + \gamma_{01} \times X_{2ij} + \mu_{0j}$$

where Y_{ij} is the i^{th} effect size from study j , β_{0j} is the intercept for the j^{th} study, β_j is the parameter estimate of the moderating factors for the j^{th} study-level, γ_{01} is the parameter estimate of the moderating factors for the j^{th} paper-level, e_{ij} is the random error associated with the i^{th} effect size in study j , γ_{00} is the overall intercept, μ_{0j} and is the paper-level residual error term. The level-1 equation describes the impact of masculinity, positive (vs. negative) message frame, direct (vs. indirect) experience, types of anthropomorphism cues, research design, student sample, and gender. The level-2 equation describes the impact of paper's methodological variables: publish paper (vs. unpublished), and type of journal marketing (vs. others). We performed the data analysis using Raudenbush and Bryk's (2002) HLM based on 55 effect sizes collected from 59 studies, nested within 17 papers. All

independent variables were centered to their grand means following Raudenbush and Bryk's (2002) recommendation. Several moderators have significant coefficients, Table 2 shows the estimation results of our HLM analysis.

TABLE 2
Moderator estimates in the HLM Meta-Regression

Type of Moderator	Factor	Estimate	SE	p-value
Cultural Orientation	Masculinity	-.005	.001	.061
Contextual Factors	Positive Frame	.082	.047	.094
	Direct (vs. Indirect) Experience	.138	.042	.004
Anthropomorphism	Visual Cues (Face vs. No Face)	.142	.096	.152
Related	Anthropomorphism Thinking	.137	.062	.040
Methodological Variables	Gender (% Females in the Sample)	-.001	.001	.634
	Design (Between vs. Within-Subjects)	-.044	.047	.361
	Student Sample	-.013	.034	.716
	Behavioral vs. Attitudinal	-.014	.032	.656
	L ₂ : Publication Status	-.068	.067	.329
	L ₂ : Journal Type	-.054	.050	.297

Note: L₂ = level-2 variables

The meta-regression analysis reveals that the positive effect of anthropomorphism on acts of social goodwill is intensified when consumers belong to feminine societies, when social appeals use a positive (vs. negative) frame, or reference direct (vs. indirect) experience with the cause, and when consumers are stimulated to think in anthropomorphic terms.

In our conceptual framework we identified Femininity (Masculinity) as a more relevant cultural factor to our research context because it is closely associated with research on social cause marketing and anthropomorphism. To examine this variable’s impact, and observe if other cultural variables (i.e., individualism/collectivism, power distance, and uncertainty avoidance) are indeed less proximate to our research focus, the third step we took was entering these variables in turn into the HLM-meta regression model replacing Femininity (Masculinity). The results demonstrate that none of these dimensions have a significant effect on anthropomorphism, providing support for our focus on Femininity (Masculinity) as a key theoretical moderator to the anthropomorphism and consumers’ acts of social goodwill relationship.

Fourth, to further test our hypotheses, we conducted the weighted univariate analysis for all significant moderators found significant in the HLM meta-regression, as shown Table 3.

TABLE 3
Weighted Univariate Results for Moderators

	Number of samples	Number of observations	Mean effect	Std. error
Cultural Orientation				
Femininity	17	1571	.201***	.008
Masculinity	38	5085	.027 *	.006
Message Frame				
Positive	24	3037	.134**	.006
Negative	31	3619	.001	.009
Direct Experience vs. Indirect				
Direct	39	5133	.098***	.006
Indirect	16	1523	-.034	.014
Anthropomorphic Thinking				
Prime	18	1550	.167***	.008
No prime	37	5106	.038***	.007

Note: *** $p < .001$, * $p < .10$

Univariate analysis support **H3**. First, in the HLM meta-regression the estimate for masculinity was negative and significant ($\beta = -.005, p < .10$). Second, the univariate analysis shows that the correlation coefficient for femininity ($M = .201, p < .001$) was significantly higher than for masculinity ($M = .027, p < .10$).

Univariate results for the two contextual factors we hypothesize as moderators also reveal support for **H4** and **H5**. A positive message frame included in a social-cause appeal significantly influences consumers' acts of social goodwill ($\beta = .082, p < .10$), much more for a positive frame ($M = .134, p < .001$) than messages featuring a negative frame ($M = .001, p = .477$). Similarly, when the social campaign reference consumers might directly (vs. indirectly) suffer the cause, this significantly affects acts of social goodwill ($\beta = .138, p < .05$), with higher effect on direct experience narratives ($M = .098, p < .001$) than indirect experience narratives ($M = -.034, p = .181$).

We also conducted a sub-group analysis between Femininity (Masculinity) and Direct (vs. Indirect) experience. As illustrated in Table 4, being part of a feminine society leads to higher appreciation of social causes that include anthropomorphic elements in the ad. This effect is stronger for those social causes that use a context that shows relatedness and connection to the consumer (direct experience).

TABLE 4
Subgroup Analysis

		Cultural Orientation		
		Femininity	Masculinity	
Direct Experience vs. Indirect	Direct	r	.222***	.056***
		SE	.006	.007
		N	12	27
	Indirect	R	.105*	-.068**
		SE	.047	.013
		N	5	11

Note: *** $p < .001$, * $p < .05$,
r = effect, SE = Standard Error and N = sample size.

Among the anthropomorphism variables, studies that induce anthropomorphic thinking for the social causes more strongly affect acts of social goodwill ($\beta = .137$, $p < .05$), with anthropomorphism primes ($M = .167$, $p < .001$) having a stronger effect than messages with no anthropomorphic prime ($M = .038$, $p = .833$).

STUDY 2: FOLLOW-UP EXPERIMENT

Method

Pretests. To induce a Femininity (vs. Masculinity) cultural orientation, we adapted a manipulation that has been widely used in previous research (Trafimow, Triandis, & Goto, 1991). Eighty-one members of M-Turk participated in our study in exchange for financial compensation (55.6% female; $M_{\text{age}} = 37.45$, $SD = 9.58$). First, participants were instructed to read a couple of paragraphs about a decision scenario and respond to some questions about the main character. Next, all participants read a short story that started “It has been over 10 years after Walt Disney Company acquired Pixar Animation Studios. Disney’s Board of Directors is

now facing the decision to appoint a new Chief Creative Officer (CCO) to replace the current CCO Jesse Smith. The first challenge for the new executive is to bring together the Disney team of producers with Jesse’s team.”

At this point, participants read the second paragraph with the priming manipulation. Each participant was randomly assigned to one of two decision scenarios. In the *Femininity* condition, the story continued using keywords associated to a more feminine cultural orientation (see Hofstede, 1991) describing the CCO qualifications “...After thinking about it carefully, Disney’s Board is inclined to appoint Logan Lasseter for this position. Lasseter is a *nurturing* Pixar Director, and has demonstrated to be very *cooperative, modest, and relationship-oriented*.”

In the *Masculinity* condition, the story continued using keywords associated to the masculinity cultural orientation (see Hofstede, 1991) describing the CCO qualifications “...After thinking about it carefully, Disney’s Board is inclined to appoint Logan Lasseter for this position. Lasseter is a competitive Pixar Director, and has demonstrated to be very *aggressive, goal-oriented, assertive and firm* in making decisions.” Figure 1 presents the two manipulations.

Figure 1

Manipulation of Femininity versus Masculinity in Study 2

Is This A Good Decision for Disney?

It has been over 10 years after Walt Disney Company acquired Pixar Animation Studios. Disney's Board of Directors is now facing the decision to appoint a new Chief Creative Officer (CCO) - to replace the current CCO Jesse Smith. The first challenge for the new executive is to bring together the Disney team of producers with Jesse's team.

After thinking about it carefully, Disney's Board is inclined to appoint Logan Lasseeter for this position. Lasseeter is a competitive Pixar Director, and has demonstrated to be very aggressive, goal-oriented, assertive and firm in making decisions.

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After thinking about it carefully, Disney's Board is inclined to appoint Logan Lasseeter for this position. Lasseeter is a nurturing Pixar Director, and has demonstrated to be very cooperative, modest, and relationship-oriented.

After reading the decision scenario, participants were asked to provide reasons in support of Logan Lasseeter appointment, and to answer some questions related to the main character: "To what extent do you agree with Disney's decision to choose Lasseeter as the CCO?" (1= "strongly disagree", 7= "strongly agree"), "To what extent do you believe Lasseeter will be successful in

this position?” (1= “extremely unsuccessful”, 7= “extremely successful”), and “How much do you think you will like Lasseter?” (1= “dislike a great deal”, 7= “like a great deal”).

Then, participants were asked to complete the sentence, “I am _____”, using four words that best describes themselves. This measure, which served an implicit manipulation check of our Femininity and Masculinity priming, was adapted from the self-attitudes measure developed by Kuhn and McPartland (1954). To answer the question, participants were asked to choose four words among eight to complete the sentence; half of the words were associated with a femininity mindset (i.e., *modest*, *nurturing*, *considerate*, and *cooperative*), while half were reflective of a masculinity mindset (i.e., *aggressive*, *competitive*, *independent*, and *dominant*.)

To check the validity of the Femininity / Masculinity manipulation, results of the pretest were analyzed using a one-way ANOVA with the percentage of masculine words the participants selected as the dependent variable. As expected, participants in the Femininity condition ($M = 0.27$, $SD = 0.20$) used significantly lower percentage of masculine words to describe themselves compared to participants in the Masculinity condition ($M = 0.39$, $SD = 0.22$), who used more masculine words ($F(1, 80) = 6.16$, $p < .05$).

Participants, Design, and Procedure. One hundred eighty-three undergraduate students from a large university in the Midwest (42.0% female; $M_{\text{age}} = 24.94$, $SD = 11.77$) participated in our study in exchange for course credit. This study featured a 2 (Cultural Orientation: Femininity vs. Masculinity) \times 2 (Anthropomorphic Representation of a Social-Cause Campaign: Anthropomorphic vs. Non-anthropomorphic) between-subjects design. Shown below are the stimuli we used in our study, which was adapted from Ahn et al., 2014.

Figure 2

Study 2 Anthropomorphism Manipulation



We asked participants to imagine they were reading a local newsletter, where they see an ad encouraging citizens to engage in food waste composting activities. Subjects were randomly assigned to one of the two conditions before evaluating the composting campaign. After reading the ad, participants answered our pro-environmental question with two items indicating, “how likely they would be to participate in the food waste composting initiative” (1 = very unlikely; 7 = very likely), and “how interested they are in food waste composting” (1 = not interested at all; 7 = very interested); $\alpha = .83$). In addition, participants responded to two items following the affective-thinking scale, “In indicating my preference to comply with the campaign, I primarily relied on my instincts”, and “I primarily relied on my gut feelings” (1= strongly disagree; 7= strongly agree); $r = .79$. Then, participants responded to our manipulation check question for anthropomorphism by recalling if “the poster contains human-like characteristics”, “the poster

tries to humanize the claim that food-waste composting is necessary”, and “if the trashcan seem to greet me for correctly classifying waste” (1 = strongly disagree; 7= strongly agree).

Results

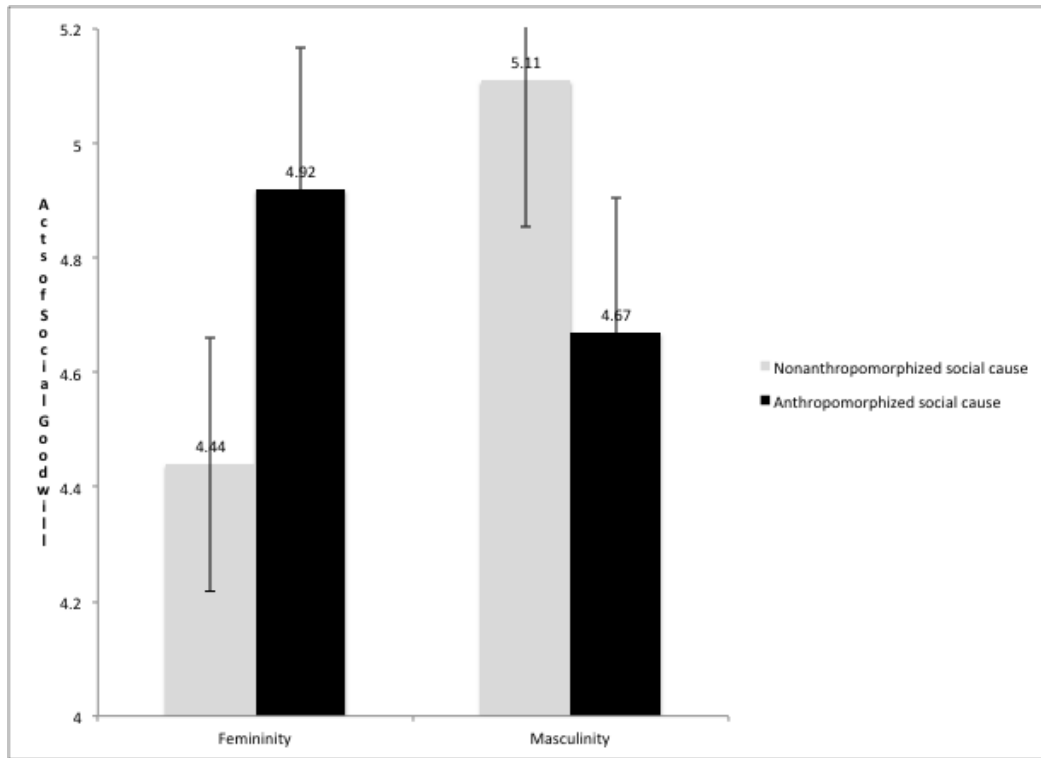
The manipulation check showed that participants had higher recall of human-like features in the anthropomorphic social-cause condition ($M = 4.51, SD = 1.25$) as compared to the non-anthropomorphic condition ($M = 3.98, SD = 1.23$); $F(182) = 8.19, p < .01$ ⁵. Therefore, our manipulation for anthropomorphism was successful.

We conducted a 2×2 factorial ANOVA of cultural orientation and anthropomorphism on acts of social goodwill. Neither the main effect of anthropomorphism ($F(1, 182) = 0.05, p = .946$) nor the main effect for cultural orientation $F(1, 183) = 0.85, p = .358$ was significant. However, the interaction effect between cultural orientation and anthropomorphism was significant ($F(1,182) = 3.85, p = .05$), supporting **H3**.

Figure 3 below shows the interaction. The simple effects indicate that when a femininity mindset is primed, anthropomorphized social appeals are significantly more persuasive ($M_{Anthropomorphized} = 4.92, M_{Non-Anthropomorphized} = 4.44$; $F(1, 320) = 12.28, p < .01$). However, when a masculinity mindset is primed, the effect of anthropomorphism backfires, and the non-anthropomorphic social appeal exerts greater impact on acts of social goodwill ($M_{Anthropomorphized} = 4.67, M_{Non-Anthropomorphized} = 5.11$; $F(1, 320) = .038, p = .84$).

⁵ There was no significant difference between the effects of Kenmore and Black + Decker on anthropomorphism so the data is collapsed across the two brands.

FIGURE 3
Interaction Effect of Cultural Orientation and Anthropomorphism on Acts of Social Goodwill



Moderated Mediation: Having demonstrated that cultural orientation moderated the effect of anthropomorphism on acts of social goodwill, we then examined whether affective thinking mediated this effect. We tested a moderated mediation model using bootstrapping procedures (Hayes, 2013); PROCESS model 7; 5,000 bootstrapping samples). Consistent with our expectation, the effect of anthropomorphism on consumers' acts of social goodwill was moderated by cultural orientation and mediated by affective thinking (95% CI: .02 to .67). Specifically, the indirect effect of affective thinking was significant only in the masculinity condition ($b = -.18$, 95% CI [-.46 to -.02]), but not in the femininity condition ($b = .05$, 95% CI [-.07 to .31]). These results provide support for **H₂**.

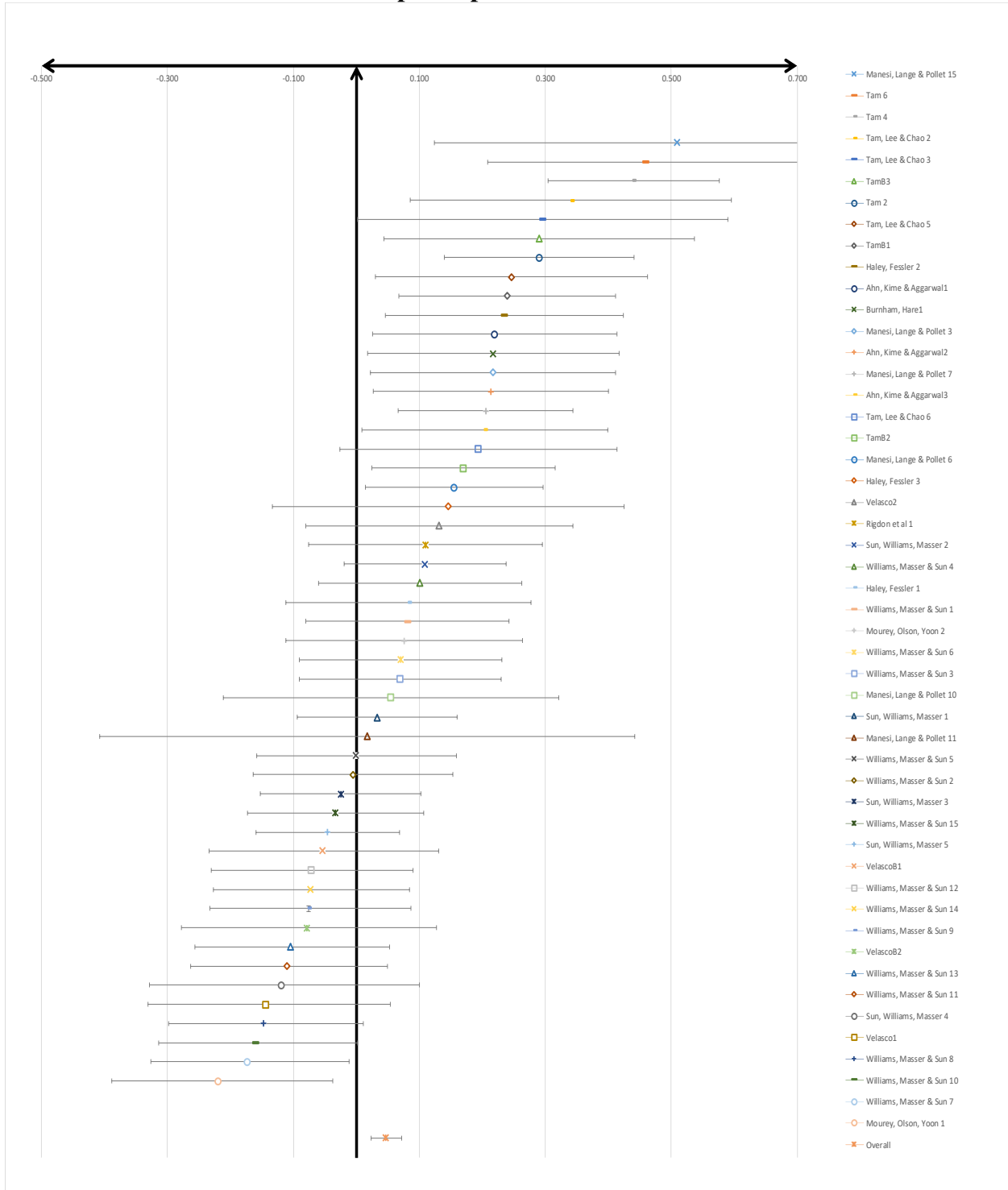
CONCLUSIONS

Employing anthropomorphism cues in marketing social causes appear to be beneficial and effective. By activating the human schema of target audience members, marketers prompt consumers to engage in affective thinking, and encourage compliance with the appeals call to action. This essay examines this phenomenon in a systematic way, by summarizing findings of several studies investigating anthropomorphism effect on consumers' acts of social goodwill (i.e., consumers pro-environmental behaviors, pro-social behaviors, and green consumption). Specifically, 17 papers examining the impact of anthropomorphism were included in our synthesis. These studies produced mixed findings regarding the effect of anthropomorphism on acts of social goodwill.

In two studies, we demonstrate that anthropomorphism positively and significantly influences acts of social goodwill. The key mechanism underlying the effect of anthropomorphism is affective thinking. Consistent with the affective thinking account, a context with a feminine mindset, the use of a positive frame in the ad (vs. negative frame, and a reference to direct (vs. indirect) experience with the social cause being advertised enhance the impact of anthropomorphism on acts of social goodwill.

APPENDIX A

Forrest Plot of the Anthropomorphism Studies Included in the Database



APPENDIX B

Factors Included in the Meta-Analysis and Coding Scheme

Moderator Variable	Coding Scheme
Culture <i>Feminine vs. Masculine</i>	Hofstede's country score
Contextual factors <i>Positive Frame vs. Negative</i> <i>Experiential vs. Indirect experience</i>	1= Positive; 0= Negative 1=Direct experience; 0=Indirect
Anthropomorphism Representations <i>Visual cues</i> <i>Anthropomorphism thinking</i>	1= Face; 0=No face 1= Prime; 0=Visual manipulation
Gender	% Females in the sample
Methodological variables <i>Type of DV</i> <i>Student sample</i> <i>Publication status</i> <i>Journal type</i> <i>Research design</i>	1= Behavioral; 0= Attitudinal 1= Students; 0=non Students 1= Published; 0= Unpublished 1= Marketing; 0= non Marketing 1=Between-subjects 0=within

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CHAPTER 4

GENERAL DISCUSSION

In overall, findings from this dissertation shows that anthropomorphism works effectively in creating positive responses from consumers (i.e., when they deal with brand evaluations and when deciding to engage in acts of social goodwill). Essay 1 reports a positive and significant main effect of anthropomorphism on brand evaluations, $r = .127$, while Essay 2 reports also a positive and significant main effect of anthropomorphism on acts of social goodwill, $r = .068$. This correlation captures the strength of the relationship of anthropomorphism and consumer responses. Moreover, this research presents evidence for the psychological mechanism that explains the positive effects of anthropomorphism in consumers' responses, a sense of self-connection with the brand. This, is also evident anthropomorphism produces affective thinking, so consumers can increase their perceptions of efficacy when the make judgments.

The meta-analytical approach used in both essays allowed to identify several factors that enhance or diminished the anthropomorphism effect. In general, when an anthropomorphized product includes cues to signal a sense of familiarity to consumers (e.g., familiar brand, experiential marketing techniques, and positive affect), the effect of anthropomorphism is stronger. This research also provides evidence that anthropomorphism is useful as a tool to market experience and symbolic type of products. Since anthropomorphism satisfies social and effectance needs (Epley et.al., 2007).

In the next sections, I present the theoretical contributions, managerial implications, limitations, and future directions.

Theoretical Contributions

This dissertation makes significant contributions to both marketing theory and practice. From a theoretical perspective, this dissertation adds to the literature in three important ways. First, it reconciles the mixed findings regarding the effects of anthropomorphism on consumers' responses. As discussed earlier, prior research presents equivocal findings on anthropomorphism effects on both, brand evaluations and consumers' acts of social goodwill. Our research represents the first effort to synthesize relevant studies that differ in study context, stimulus products, and individual characteristics of participants. Our results show that the effect of anthropomorphism is much more complicated than what one would think and is influenced by product characteristics, advertisement frames, and situational factors that make self-brand connection and affective thinking more salient.

Second, this research is among the first to demonstrate that the key mechanism underlying the impact of anthropomorphism on brand evaluations is self-brand connection. Self-brand connection drives consumers to perceive possessions as an extended self (Escalas & Bettman, 2005). When a brand becomes relevant to the self and to the development of one's social identity, it is likely to favorably influence brand evaluations (Reed, 2004).

Finally, applying the self-brand connection account, we show that individual characteristics (e.g., brand familiarity) and products type (e.g., search vs. experience) that are associated with the strength of self-brand connection impose boundaries to the effect of anthropomorphism on brand evaluations. Then, applying the affective thinking account, we show that culture (e.g., femininity mindset), and the frame of the social cause advertisements (e.g., positive frame, direct experience with the social cause) that are associated with affective

responses impose boundaries to the effect of anthropomorphism on consumers' acts of social goodwill. I believe this explains why mixed findings in this stream of research have occurred.

Managerial Implications

From a managerial perspective, our findings offer important guidance to marketing practitioners. A question that we address in this research is: Is anthropomorphic representation better for familiar brands or for unfamiliar brands? The first essay answers these questions providing evidence that anthropomorphism is suitable for familiar brands. The answer to this question helps marketers choose when to employ anthropomorphic branding—early in the brand building stage or later in the brand sustaining stage. Academic researchers too could benefit from knowing the answer to this question, since it is likely to guide their selection of stimulus products in related experiments.

While a few papers have recognized that using familiar brands might influence the effect of anthropomorphism on brand attitudes (e.g., Puzakova et al., 2013), for the most part, decisions on which brand to use—familiar brand or otherwise—seems to have been made arbitrarily. For example, of the 38 papers included in our the meta-analytic database, approximately one third of studies featured existing real brands in their experiments [e.g., iPhones by (Jin & Bolebruch, 2009); Krispy Kreme by (Hur, Koo, & Hofmann, 2015), one third used fictitious brands (Ahn & Bailenson, 2011; Garretson & Burton, 2005)] and one third provided no brand name for their stimulus products (Aggarwal & McGill, 2007; Nenkov & Scott, 2014). Since our findings suggest that the effect of anthropomorphism is more exaggerated for familiar brands; the actual implication for marketers is that anthropomorphism might be a better strategy for more

established brands, in the brand sustaining stage. For academic researchers, using fictitious brands might be a more conservative test of anthropomorphism effects than using real brands.

Another important question that we address in this dissertation is: Which product categories benefit the most from anthropomorphic branding? For example, should Unilever use anthropomorphism in their detergents or in their shampoos? Extant research has largely ignored the effect of product type when exploring anthropomorphism effects, all the papers published up to now, utilize a range of product categories [e.g., beverages (Aggarwal & McGill, 2007; Ahn & Bailenson, 2011; Nan, Anghelcev, Myers, Sar, & Faber, 2006) or snacks (De Droog, Valkenburg, & Buijzen, 2011; Neeley & Schumann, 2004) or cellphones (Feng, 2016) or laptops (Hudson et al., 2016)]. Individual papers, however, have typically restrict their focus to mostly one or two product categories. Even when researchers have examined multiple product categories, it has been to demonstrate the generalizability of the anthropomorphism effect not to examine differences across product types. Our research suggests that taking into account the symbolic nature will enable marketers to maximize the persuasive impact of anthropomorphism branding strategies.

Finally, this dissertation addresses the question on, how anthropomorphism can work effectively when using this tool in marketing social causes? For example, which elements in the advertisements that promote pro-environmental behavior or pro-social behavior combined with anthropomorphism evoke affective thinking and positive reactions from consumers to comply with the cause? This is particularly important because marketers need to create a specific context that persuade consumers to engage in acts of social goodwill. The results from Essay 2 provides several insights to answer this question. For example, an advertisement that present the social cause with a positive frame facilitates affective thinking and a stronger likelihood that consumers

will engage in acts of social goodwill. Similar to this, when the poster of an environmental cause or a charity includes elements in the ad that directly associates the cause with consumers' context, the ad will be more persuasive.

Future Research Directions and Limitations

The results of our two meta-analysis have several implications for future research. First, our findings suggest that participants from femininity societies have stronger attitudes toward anthropomorphized brands or social causes. Since previous studies proposed different directions on culture influences on the tendency to anthropomorphize (Kwak, Puzakova, & Rocereto, 2017; MacInnis & Folkes, 2017; Hudson, Huang, Roth, & Madden, 2016) future research might try to resolve this puzzle and present evidence on which cultural variables moderate the effect of anthropomorphism.

Second, more research attention should examine the difference in persuasiveness from different anthropomorphic cues that may be employed to humanize a brand or a social cause (e.g., embedding a human face, voice response devices, human-name brands, archetypical brand narratives, and human brand characters). As the discussion about artificial intelligence ramps up and new automated products continue to emerge in the marketplace, it is important that marketing researchers monitor the relative effects of various anthropomorphic cues produces on brand evaluations.

Third, similar to most meta-analysis, several of the studies in our meta-analytic database that did not report the necessary statistics to estimate an effect size, were excluded from our analysis. Although we contacted the authors in such cases to request the necessary information

and asked for unpublished studies, we did not receive responses. However, as can be seen, the number of observations produced statistically robust results.