Judging a Book by Its Cover? The Effect of Anthropomorphism on Product Attribute Processing and Consumer Preference

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The present research finds that anthropomorphism, or attributing human characteristics to nonhuman objects, increases consumers’ preference for products with superior appearance. This effect occurs because consumers apply the belief of “beautiful is good,” a pervasive stereotype in person perception, to the judgment of anthropomorphized products. Seven experiments test the propositions. The results show that product anthropomorphism (vs. nonanthropomorphism) leads consumers to spend more time and money searching for information about appearance attributes (experiments 1 and 2), to indicate greater preference for products with superior appearance (experiments 4, 6, and 7), and to purchase products with superior appearance (experiments 3 and 5). The experiments also show that the effect of anthropomorphism on consumer preference is mediated by consumers’ conviction of “beautiful is good” in person perception. This effect is alleviated when consumers’ beliefs about the association between the attractive physical appearance of a person and the positive personal traits of this person are challenged. These results are robust across a wide range of product categories and consumers. Theoretical contributions and marketing implications are discussed.

Keywords: anthropomorphism, appearance attribute, functional attribute, consumer preference

Consider the following scenario. Allen is shopping for a new laptop computer. At the entrance to the store, he notices an advertisement about a computer with the tagline “Hello! I’m Mr. Computer. I am at your service.” Allen cannot help thinking of the computer as if it were a human being. There are many different computers in the store, some with superior appearance and others with excellent function. Does seeing the computer as a person influence Allen’s consideration of these product attributes and consequently his preference for the computer? In this research we examine the effect of anthropomorphism—seeing human beings in nonhuman objects (Epley, Waytz, and Cacioppo 2007)—on how consumers consider a product’s appearance (Bloch 1995) as they make judgments and choices.

Prior research suggests that product choice is based on consumers’ assessment of information on multiple product attributes (Bettman, Luce, and Payne 1998; Payne, Bettman,
and Johnson 1993). Research on the typology of product attributes has mainly categorized attributes as appearance and function (Lefkoff-Hagius and Mason 1993; Myers and Shocker 1981). The literature in marketing has examined appearance (also known as “form”) and function as two different types of product attributes (Bloch 1995; Chitturi, Raghunathan, and Mahajan 2007; Townsend, Montoya, and Calantone 2011). A product’s appearance refers to a number of observable elements blended into a whole to achieve a particular sensory effect (e.g., the color and shape of a computer), and a product’s function refers to the utility expected to be derived from using the product (e.g., the memory capacity of a computer) (Bloch 1995; Hollins and Pugh 1990). Consumers often have to make tradeoffs with respect to appearance and function (Chitturi et al. 2007). Previous research suggests that individual differences (Bloch, Brunel, and Arnold 2003) and contextual factors (Okada 2005) can influence how consumers view the two types of attributes. In the current research, we take a new perspective to examine how communication about a product to consumers (i.e., as a nonhuman agent’s mental and physical characteristics) (Epley et al. 2008) can influence how communication about a product to consumers (i.e., as an object or as a human being) influences their tradeoffs between appearance and function in product judgment and choice. Specifically, drawing on research in anthropomorphism (Epley et al. 2007; Kim and McGill 2011) and person perception (Dion, Berscheid, and Walster 1972; Freeman and Ambady 2011; Langlois et al. 2000), this article uncovers novel effects that anthropomorphism systematically influences consumers’ consideration of the appearance attributes and their product preference.

Anthropomorphism is defined as “the attribution of human characteristics or behavior to a god, animal, or object” (Epley et al. 2007). It goes beyond simply attributing life to something nonliving, and involves representing a nonhuman agent’s mental and physical characteristics using human-like descriptors (Epley et al. 2008). Product anthropomorphism refers to imbuing products with human-like physical features, conscious awareness, intention, and emotion (Hur, Koo, and Hofmann 2015). It is a frequently used marketing communication strategy. For example, the M&M’s mascots are humanized candies, the cleaning product Mr. Muscle brings its product to life with the first-person language of “I’ve got just the solution,” and Mr. Juicy designs its bottle with human-like body features. Previous research has shown that the specific anthropomorphic design of a product can influence consumers’ product preference (Aggarwal and McGill 2007; Landwehr, McGill, and Herrmann 2011). For example, consumers like the anthropomorphized product more when the appearance resembles expected human physical features (e.g., the grille of a car resembles a person’s smile; Aggarwal and McGill 2007).

However, these findings about the role of product appearance are limited to the situation where product anthropomorphism focuses on the similarity between the product’s appearance and a human’s physical features. The current research takes a new perspective to posit that anthropomorphism can influence consumers’ consideration of the product appearance in general. Based on prior research that anthropomorphism induces individuals to apply knowledge from the social world to the inanimate world (Aggarwal and McGill 2012; Kim and McGill 2011; Puzakova, Kwak, and Rocereto 2013), we posit that consumers would apply the way in which they comprehend a person to understand an anthropomorphized product. Research in person perception shows that people use a target person’s appearance as an important input (Freeman and Ambady 2011) and that people activate the belief of “beautiful is good” to form general impressions of a person (Dion et al. 1972; Langlois et al. 2000). Bridging research on anthropomorphism and person perception, we propose that anthropomorphizing a product would prompt consumers to rely on the appearance attributes and to apply the beautiful-is-good belief in judging the product, which in turn leads to greater preference for products with attractive appearance. In the next section, we review key findings in the literature and elucidate how and why anthropomorphism affects consumer preference. Then we present seven experiments that test the proposed effects and then conclude our article with a discussion of our findings’ theoretical contributions and managerial implications.

THEORETICAL BACKGROUND

Product Attributes and Consumer Preference

Product attributes are central to product evaluation and preference formation (Lancaster 1971). For example, consumers may assess a digital camera based on an assortment of attributes. Attributes such as color and shape are readily observable (Hauser and Clausing 1988; Lefkoff-Hagius and Mason 1993). Other attributes, such as shutter speed and effective pixels, are utilitarian and less readily observed (Cohen 1979; Myers and Shocker 1981). A product’s appearance refers to a number of attributes, all of which are readily observable to consumers (shape, size, color, etc.), blended into a whole by the designer to achieve a particular sensory effect (Bloch 1995; Hollins and Pugh 1990). In the current research, we follow Rindova and Petkova (2007) to define appearance as the attributes that provide visual cues to influence cognition and decision making. The appearance is essentially the first thing about a product that connects with a consumer (Bloch et al. 2003). Marketing research shows that consumers’ judgments of products or impressions of brand can be influenced by appearance attributes such as the ratios of length versus width in rectangular shapes (Raghurib and Greenleaf 2006), packaging styles (Orth and Malkewitz 2008), and visual arts (Hagtvedt and Patrick 2008).

The second type of attribute described earlier is the functional attribute. We follow Bloch (1995) to define...
functional attributes as those that deliver the purpose of the product and the utility expected to be derived from the product. Compared with appearance attributes, functional attributes cannot be readily observed at first glance. Consumers usually deem a product’s functional attributes as very important (Bagozzi 1986; Lefkoff-Hagius and Mason 1993; Ratchford 1975). This is because consumers often look for a product’s instrumental benefits, and functional attributes largely determine the extent to which products perform the way they are supposed to and allow consumers to satisfy their specific utilitarian needs (Berkowitz 1987; Townsend et al. 2013). For example, when consumers consider buying a washing machine, they typically think about how well the machine will function in washing, rinsing, or draining.

As appearance and function are two critical aspects of a product, scholarly work has examined the roles they play in shaping consumer preference (Chitturi et al. 2007; Townsend et al. 2011; Townsend et al. 2013). Bloch et al. (2003) show that individuals’ consideration of appearance and function can be affected by their idiosyncratic views on the centrality of visual product aesthetics. Other studies document the influence of contextual factors (Gardner 1983; Miller and Ginter 1979; Okada 2005). For example, Chitturi et al. (2007) show that functional dimensions are the focal attributes in making choices, but aesthetic features are more important in willingness to pay. Okada (2005) finds that consumers prefer a product with superior functional attributes when the two alternatives are presented jointly, and that consumer preference for the product with superior nonfunctional attributes increases when the options are presented separately. Some contextual factors are related to marketing strategies. For example, Gardner (1983) demonstrates that an attribute is more likely to influence attitudes and preference when it is prominently highlighted in an advertisement than when it is not. Extending the line of growing research on product appearance and function, the present work takes a novel perspective to investigate how employing anthropomorphism in marketing communication alters consumers’ consideration of the two types of attributes and influences their preferences. Next, we review research on anthropomorphism and person perception to develop our hypotheses.

Anthropomorphism and Consumer Behavior

The literature on anthropomorphism has suggested that one main driver for anthropomorphism is the accessibility to human schema in the nonhuman object (Epley et al. 2007). Based on this notion, previous research in marketing finds that a specific product’s appearance design can influence consumers’ judgment when they anthropomorphize the product (Aggarwal and McGill 2007; Landwehr et al. 2011). For example, Aggarwal and McGill (2007) show that consumer attitude toward the anthropomorphized product is affected by the extent to which the appearance features of the product are congruent with the activated human schema. In their studies, participants evaluated an anthropomorphized car more favorably when the grille on the car’s front was designed to point up (vs. down) because this design fits participants’ expectation of a smiling person. In another investigation, Landwehr et al. (2011) examine the appearance design of the grille and headlights of a car from the perspective of human facial expressions. They find that the grille representing the mouth influences products’ perceived friendliness and that the headlights resembling the eyes affects products’ perceived aggressiveness. They further show that the combination of an upturned grille (mouth) with slanted headlights (eyes) for a car enhances the product evaluations.

However, anthropomorphizing a nonhuman object goes beyond the object’s resemblance to a human being (Epley et al. 2007; Kim and McGill 2011). Importantly, anthropomorphism is found to activate the mental processes involved in thinking about human beings to govern cognition regarding nonhuman objects (Castelli et al. 2000; Epley et al. 2007). For example, Castelli et al. (2000) provide neuroscientific evidence that the same neural systems involved in making judgments about humans are activated (i.e., increased activation in four main brain regions) when people make anthropomorphic judgments about nonhuman agents (i.e., animated abstract shapes).

Building on the notion that individuals perceive anthropomorphized entities using the same mental process as they use to perceive human beings (Castelli et al. 2000; Epley et al. 2007), research in psychology shows that anthropomorphizing nonhuman entities prompts people to treat these entities as moral agents worthy of respect and empathy (Waytz, Cacioppo, and Epley 2010). For example, Ahn, Kim, and Aggarwal (2014) show that anthropomorphizing social causes increases people’s willingness to comply with a prosocial message by increasing guilty feelings related to the social causes. Butterfield, Hill, and Lord (2012) find that anthropomorphizing dogs boosts people’s intentions to behave beneficently toward them. Tam, Lee, and Chao (2013) show that seeing nature as human promotes conservation behavior such as green consumption.

Recent research in consumer behavior draws on this notion to suggest that people apply social beliefs and knowledge in their interactions with anthropomorphized products (Aggarwal and McGill 2012; Kim and McGill 2011). For example, Kim and McGill (2011) show that consumers apply feelings of social power when they think about an anthropomorphized slot machine. Consumers who feel powerful transfer the feeling of mastery to the anthropomorphized machine and believe they can control the machine to reduce risk. In contrast, powerless consumers feel lower control over the anthropomorphized machine, which in turn leads to higher perceived risk in gaming with it. Aggarwal and McGill (2012) suggest that brand anthropomorphism can
trigger people’s goal of social interaction with the brand. As a consequence, consumer behavior can be influenced by the anthropomorphized brand’s image in an assimilative or contrastive way. When consumers see a brand as a favored partner, they tend to behave in ways implied by the brand image of the anthropomorphized product (e.g., they behave prudently when primed with a humanized Volvo, a prudent automobile brand that they favor). However, when consumers dislike the partner brand, they will behave in ways opposite to the brand image (e.g., they behave recklessly when primed with a humanized Volvo that they dislike). The opposite effect is found when consumers see the brand as a servant. More recently, Kim and Kramer (2015) document that materialistic consumers respond more favorably to an anthropomorphized servant brand than to a partner brand, because a master-servant relationship fits materialists’ value system in their interaction with anthropomorphized brands.

The current research extends this stream of work by uncovering a new social belief (i.e., the belief of “beautiful is good” in person perception) that consumers apply in judging humanized entities and showing this belief’s novel impact on consumers’ consideration of appearance attributes and their product preference. Our research goes beyond prior research’s focus on the influence of the similarity between product appearance and human-like features on consumer preference (Aggarwal and McGill 2007; Landwehr et al. 2011) and examines the role played by appearance in general in shaping consumer attitudes toward anthropomorphized products. In the following section we review research on person perception and the beautiful-is-good belief to understand judgment about human beings.

**Person Perception and the Belief of Beautiful Is Good**

A common observation in our daily life is that people often form impressions about others based on their appearance (Asch 1946). Scholarly work has also documented person judgments based on appearance in a wide range of contexts, such as strategic game playing (Tingley 2014), criminal sentencing (Porter, Brinke, and Gustaw 2010), political voting (Antonakis and Dalgas 2009; Todorov et al. 2005), and marketing (Gorn, Jiang, and Johar 2008; Leigh and Summers 2002). For example, Porter et al. (2010) find that defendants who have untrustworthy faces are more likely to receive guilty verdicts, even when little evidence supports their guilt. Leigh and Summers (2002) find that salespeople’s physical appearance significantly affects consumers’ impressions such as consumers assess a salesperson’s traits of tactfulness and empathy based on their observation of whether the salesperson has a steady gaze.

The person construal system proposed by Freeman and Ambady (2011) provides a theoretical framework to analyze the role played by appearance cues in person judgment. According to Freeman and Ambady (2011), the person construal system can be organized into four interactive levels of processing: the cue level, category level, stereotype level, and higher-order level. The cue level, which includes detectors for visual features such as facial and body features, serves as the starting point for processing information about a target person. Based on visual cues, people are able to categorize a target person along dimensions such as sex, race, and age and to combine inputs from stereotyped beliefs (e.g., certain facial features are associated with aggressiveness) and the higher-order level (e.g., goal of the processing task) to form a general impression of the target person. Freeman and Ambady’s (2011) research highlights two points in person judgment. First, appearance cues, such as facial and bodily features, are very important because they are often the first input that people access when they form impressions about other people. Second, people apply knowledge and beliefs associated with appearance information to make judgments about the target person.

Among the various beliefs that people hold about appearance, a widely observed and strong one in the interpersonal domain is “What is beautiful is good” (Dion et al. 1972; Eagly et al. 1991; Langlois et al. 2000). This belief refers to the stereotype that physically attractive people possess a wide variety of positive personal qualities. Dion et al.’s (1972) seminal study finds that people rate physically attractive strangers as possessing socially desirable traits to a greater extent than unattractive strangers. Numerous subsequent studies have examined this stereotype (Bazzini et al. 2010; Feingold 1992; Langlois et al. 2000), providing extensive evidence that people robustly believe the association between a person’s physical attractiveness and general goodness and apply the beautiful-is-good belief in judgment and decision making. For example, physically attractive people are rated higher than less attractive people on apparently unrelated positive traits of intelligence and social skills (Hamermesh and Biddle 1994; McArthur 1982), mental health (Feingold 1992), and job competence (Langlois et al. 2000). This effect occurs even when attention is not directed toward an individual’s looks and an explicit appraisal is not required (Van Leeuwen and Macrae 2004) and when the person judgment is by familiar perceivers (Langlois et al. 2000). This effect is robust for evaluations of both adults and children (Fisher and Ma 2014). The association between physical attractiveness and person goodness is also supported by research in neuroscience. O’Doherty et al. (2001) find that the brain regions dealing with judgments of beauty and morality overlap. Tsukiura and Cabeza (2011) identify the physiological basis of the beautiful-is-good belief by showing that both appearance attractiveness and goodness judgments increase brain activity in the medial orbitofrontal cortex region. Langlois et al. (2000)”s meta-analysis shows that the beautiful-is-good belief is strong and robust in the person judgment domain. We posit that this belief will be...
activated in judging anthropomorphized products and will influence consumer preference. We will articulate our hypotheses in the next section.

**HYPOTHESES AND STUDIES FOR THE PRESENT RESEARCH**

We summarize the aforementioned findings from the literature on anthropomorphism and person perception as follows: individuals perceive anthropomorphized objects in the same way as they perceive humans (Castelli et al. 2000; Epley et al. 2007; Kim and McGill 2011); people use the target person's physical appearance as the initial information input, applying the "what's beautiful is good" belief to form a judgment (Freeman and Ambady 2001; Langlois et al. 2000). Bridging these two lines of research, we propose that anthropomorphizing products will increase consumers' reliance on appearance attributes (vs. functional attributes) in product evaluation.

The information search paradigm provides the means to examine consumers' reliance on a particular attribute in decision making (Jacoby 1977). The information search task allows individuals to access different pieces of information. If individuals rely more on a particular type of information, they are more likely to use more resources to access that type of information (Bizer and Krosnick 2001). The amount of resources (e.g., money and time) that individuals allocate to accessing a type of information can serve as a measure of consumers' reliance on this information (Hauser, Urban, and Weinberg 1993; Moorthy, Ratchford, and Talukdar 1997; Punj and Staelin 1983). Therefore, if consumers rely more on appearance attributes in judging the anthropomorphized product, we expect them to allocate more resources to search for information about appearance attributes when a product is anthropomorphized than when it is not anthropomorphized. In this research, we examine consumers' allocation of money and time resources in information search as a function of product anthropomorphism. We focus on money and time because these are the principal resources in consumers' daily life (Aaker, Rudd, and Mogilner 2011; Mogilner 2010). Past research has commonly used money and time as resource constraints to examine consumer information search and decision making (Hauser et al. 1993; Morewedge, Holtzman, and Epley 2007; Suri and Monroe 2003). Formally, we hypothesize as follows:

H1: When a product is anthropomorphized (vs. nonanthropomorphized), consumers will allocate more money and time resources to search for information about the appearance attributes of the product.

We then propose that anthropomorphizing products will enhance consumers' preference for products with superior appearance attributes. As we have discussed, consumers tend to use appearance attributes as the basis of judgment. They activate and apply the beautiful-is-good belief from the human judgment domain when they form impressions of anthropomorphized products. That is, when consumers see the products as human beings, they attend to the appearance attributes and associate the attractiveness of the appearance to how good the product is. As a result, anthropomorphism is expected to increase consumers' preference for a product with superior appearance attributes. Formally, we propose the following hypotheses:

H2: In a decision context involving the tradeoffs between a product's appearance and function, anthropomorphizing (vs. nonanthropomorphizing) products will increase consumers' preference for products with superior appearance attributes (vs. products with superior functional attributes).

H3: The effect of anthropomorphism on product preference will be mediated by the activation of the beautiful-is-good belief from the person judgment domain.

If the proposed mechanism of the beautiful-is-good belief adopted from the human judgment domain is true, we would expect that changing consumers' beliefs about the association between a person's appearance and positive personal traits would moderate the effect of anthropomorphism on consumers' product preference. That is, if consumers are led to believe that the attractiveness of a person's physical appearance is not necessarily a reliable indicator of this person's positive personality traits, anthropomorphism should not increase consumers' preference for products with superior appearance attributes. We thus hypothesize as follows:

H4: The effect of anthropomorphism on consumers' increased preference for products with superior appearance attributes will be eliminated when consumers' belief about the association between physical appearance and a person's positive traits is challenged.

Experiments 1a, 1b, and 2 test how anthropomorphizing a product alters consumers' resource allocation in searching for information about product appearance attributes (hypothesis 1). Experiments 3 through 7 examine the influence of anthropomorphism on consumers' product preference (hypothesis 2). Experiments 5 through 7 also test the mechanism underlying the effect using both mediation (hypothesis 3) and moderation approaches (hypothesis 4).

**EXPERIMENT 1: INFORMATION SEARCH WITH ANTHROPOMORPHISM FRAMING**

Experiment 1 used an information search task to provide an initial test of our proposition that anthropomorphism enhances consumers' reliance on the appearance attributes of
a product (Jacoby 1977; Mandel and Johnson 2002). If anthropomorphism enhances reliance on appearance attributes, we expect consumers to allocate more resources to searching for information about appearance attributes when the product is anthropomorphized than when it is not anthropomorphized. Specifically, we examined the allocation of money resources in experiment 1a and time resources in experiment 1b. In this experiment, product anthropomorphism is manipulated with a framing approach adopted from past research (Aggarwal and McGill 2007).

Experiment 1a: Allocation of Money Resources in Information Search

Method and Procedure. Eighty-eight undergraduate students (32% male) from Hong Kong participated in this experiment for monetary compensation. They were randomly assigned to the anthropomorphism condition or the nonanthropomorphism condition.

The participants were introduced to a consumer study about a new dehumidifier to be launched to the market and were asked to provide responses about it. The participants first read an introduction of a dehumidifier in which anthropomorphism was manipulated with a framing method adopted from Aggarwal and McGill (2007). Specifically, in the anthropomorphism condition, the product was framed with human-like descriptions written in first-person language (e.g., “I am a new member of my dehumidifier family”), whereas in the nonanthropomorphism condition, the product was described in third-person language (e.g., “This is a new machine in the dehumidifier product line”; see appendix A). Then the participants completed a manipulation check on two questions adapted from Kim and McGill (2011): whether the dehumidifier felt like a person/ was thought of as a person (1 = not at all; 7 = very much).

Next, the participants proceeded to an information search task. They were told that they could obtain more information about the product from an online forum about household appliances to help them form opinions about the product because they might not be familiar with dehumidifiers. Moreover, the participants were instructed that the forum required the purchase of forum coins to view product information and that the product manufacturer would give each participant 10 forum coins as payment. Using this rule, we imposed a monetary constraint on the information search task. Specifically, the participants read the following instructions: “To know more about this dehumidifier, you will be redirected to an appliance forum, where you can read reliable information about the product. However, viewing information on this forum costs forum coins. To facilitate your information search, we are providing you with 10 forum coins. One coin will be deducted after you click on one piece of information.” Then the participants proceeded to a web page that provided two links—one leading to information about the dehumidifier’s appearance attributes and the other leading to information about its functional attributes. The position (order) of the two links was counterbalanced. Each type of product attribute had 10 pieces of information, and each piece of information was masked and indicated by a number (i.e., from 1 to 10) such that the participants could not see the specific information until they clicked the number. Information about the appearance attributes described the appearance of the dehumidifier and presented consumer comments on the dehumidifier’s appearance attributes (e.g., “It looks great! Simple and neat, just the design I like”). Information about functional attributes described the functions of the dehumidifier (e.g., two fan speeds for more flexibility) and presented consumer comments on the dehumidifier’s functional attributes (e.g., “storage building went from 90% humidity to 40% in less than 24 hours”) (see appendix B for a description of all the attributes that were used in the information search task). The participants then used the 10 forum coins to view information about either of the two types of product attributes. When the participants had used all 10 forum coins, the website automatically proceeded so that the participants could not view any more product information. The number of forum coins that the participants spent viewing information about the appearance attributes served as the dependent variable.

Manipulation Check. We first averaged responses to the two items to form an anthropomorphism manipulation check score ($r = .78$). A one-way ANOVA showed that participants in the anthropomorphism condition ($M = 3.95, SD = 1.87$) perceived the dehumidifier to be more humanized than did those in the nonanthropomorphism condition ($M = 2.39, SD = 1.39; F(1, 86) = 17.94, p < .001, \eta^2 = .17$).

Number of Forum Coins Spent on Appearance Attribute Information. We used a Poisson regression to analyze the result of experiment 1a because the dependent variable was count data. The dummy variable representing anthropomorphism (1 = anthropomorphism; 0 = nonanthropomorphism) was included as the independent variable. Consistent with our prediction, the effect of anthropomorphism on the number of coins that participants spent on information about appearance attributes was significant (Wald $\chi^2 (1) = 29.25$, $p < .001$; table 1). The participants spent 5.92 coins ($SD = 1.67$) to view information about appearance attributes when the dehumidifier was anthropomorphized, but only 3.29 coins ($SD = 1.58$) when it was not anthropomorphized. Experiment 1a provided initial evidence in support of our prediction that anthropomorphism increases consumers’ information search for appearance attributes. The participants allocated more money resources to acquire information about appearance attributes when the product was anthropomorphized than when it was nonanthropomorphized (hypothesis 1).

A limitation of experiment 1a is that we provided only the option of viewing information on either appearance
attributes or functional attributes and that the total number of coins for viewing the information was fixed. Therefore, an increase in the number of coins spent on appearance attributes meant a decrease in the number of coins spent on functional attributes and vice versa. Accordingly, the effect observed in experiment 1a might be driven by a decrease in information processing for functional attributes in the anthropomorphism condition. To test this possibility, in experiment 1b we added a third type of information in addition to information about appearance and functional attributes. Moreover, experiment 1b examined the allocation of time resources in information search for a different product to test the robustness of the effect.

Experiment 1b: Allocation of Time Resources in Information Search

Method and Procedure. One hundred fifty-five undergraduate students (44% male) from China participated in this experiment for monetary compensation. The participants were randomly assigned to either the anthropomorphism condition or the nonanthropomorphism condition. The experiment procedure was identical to that in experiment 1a except for the following changes. First, instead of using a dehumidifier as the target product as in experiment 1a, experiment 1b used a humidifier as the target product. Second, experiment 1b provided three options for information search: information about appearance attributes, functional attributes, and the product’s background (e.g., production date, the product’s model number). Hence, participants had the option of viewing background information other than information on appearance or function. Third, experiment 1b used a time constraint instead of a money constraint. The participants were told that they had a total of 1 minute to view the information. When the minute expired, the website automatically proceeded so that they could not view any more product information. The dependent variable was the amount of time participants spent viewing information about the humidifier’s appearance attributes.

Manipulation Check. We first averaged the responses to two manipulation check questions for anthropomorphism to form a total score ($\alpha = .86$). A one-way ANOVA showed that the participants in the anthropomorphism condition ($M = 4.59$, $SD = 1.66$) perceived the humidifier to be more humanized than did those in nonanthropomorphism condition ($M = 2.71$, $SD = 1.61$; $F(1, 153) = 51.50$, $p < .001$, $\eta^2_p = .25$).

Amount of Time Spent on Appearance Attribute Information. Because each participant viewed three types of information, we conducted a repeated measures ANOVA to examine the effect of anthropomorphism on the amount of time spent viewing the information about product appearance, function, and background (table 1). Anthropomorphism served as the between-subjects factor, and product information type served as the within-subjects factor. The results indicated a significant effect of product information type (Wilks’ Lambda = .37, $F(2, 152) = 130.33$, $p < .001$, $\eta^2_p = .63$) and a significant interaction effect between product information type and anthropomorphism (Wilks’ Lambda = .93, $F(2, 152) = 5.63$, $p < .01$, $\eta^2_p = .07$). Follow-up comparisons showed that participants in the anthropomorphism condition spent more time searching information about appearance attributes ($M = 21.92$ seconds, $SD = 16.48$) than did those in the

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Dependent variable</th>
<th>Anthropomorphism</th>
<th>Nonanthropomorphism</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Financial spending on searching for appearance attribute information</td>
<td>5.92 forum coins</td>
<td>3.29 forum coins</td>
<td>$p &lt; .001$</td>
</tr>
<tr>
<td>1b</td>
<td>Time spending on searching for appearance attribute information</td>
<td>21.92 seconds</td>
<td>15.26 seconds</td>
<td>$p &lt; .01$</td>
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<tr>
<td>2a</td>
<td>Financial spending on searching for appearance attribute information</td>
<td>6.21 forum coins</td>
<td>3.63 forum coins</td>
<td>$p &lt; .001$</td>
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<tr>
<td>3</td>
<td>Choice percentage of product with superior appearance attribute (real purchase)</td>
<td>59%</td>
<td>36%</td>
<td>$p &lt; .05$</td>
</tr>
<tr>
<td>4b</td>
<td>Choice percentage of product with superior appearance attribute</td>
<td>14%</td>
<td>2%</td>
<td>$p &lt; .05$</td>
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<tr>
<td>5</td>
<td>Choice percentage of product with superior appearance attribute (real purchase)</td>
<td>77% (baseline)</td>
<td>41% (baseline)</td>
<td>$p &lt; .001$</td>
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<tr>
<td>6</td>
<td>Product preference (larger number means greater preference for product with superior appearance attribute)</td>
<td>43% (discounting belief)</td>
<td>37% (discounting belief)</td>
<td>$p &lt; .01$</td>
</tr>
<tr>
<td>7</td>
<td>Choice percentage of product with superior appearance attribute</td>
<td>24%</td>
<td>4%</td>
<td>$p &lt; .01$</td>
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*In experiment 2, the number of forum coins spent on searching for appearance attribute information in the baseline condition is 4.12 and in the landscape condition is 4.04.

*In experiment 4, the choice percentage of product with superior appearance attribute in the baseline condition is 0%.
nonanthropomorphism condition ($M = 15.26$ seconds, $SD = 14.42, F(1, 153) = 7.15, p < .01$), which is consistent with our prediction (hypothesis 1). However, the amount of time participants spent viewing information about functional attributes did not differ between the anthropomorphism ($M = 16.09$ seconds, $SD = 15.33$) and nonanthropomorphism conditions ($M = 19.82$ seconds, $SD = 15.23, p > .10$). The participants spent little time checking on the product background. Nevertheless, participants in the anthropomorphism condition spent less time on product background information ($M = 2.11$ seconds, $SD = 5.73$) than did those in the nonanthropomorphism condition ($M = 5.45$ seconds, $SD = 9.55, F(1, 153) = 7.01, p < .01$). During the task, the participants switched between web pages. Because it took time for the web pages to load, the total amount of time spent viewing all the information was less than 60 seconds, but it did not differ between the anthropomorphism ($M = 40.21$ seconds) and nonanthropomorphism conditions ($M = 40.53$ seconds, $F < 1$).

The results of experiment 1b support our hypothesis that anthropomorphism increases the time resources consumers allocate to information search for appearance attributes (hypothesis 1). Moreover, increasing the amount of resources allocated to acquiring information about appearance attributes does not necessarily reduce the amount of resources consumers spend on acquiring information about functional attributes, suggesting that the shift in the importance of attributes caused by anthropomorphism is mainly driven by appearance attributes.

The first experiment provides the initial evidence for our proposition that anthropomorphism increases consumers’ reliance on appearance attributes. However, we recognize that it is still not clear whether the effects were driven by an increase in resources allocated to processing information about appearance attributes in the anthropomorphism condition or by a decrease in resources allocated to processing information about functional attributes in the nonanthropomorphism condition. We test this possibility in the next experiment.

**EXPERIMENT 2: INFORMATION SEARCH WITH ANTHROPOMORPHISM PRIMING**

The design of experiment 2 was guided by four major goals. First, we added a baseline condition in which anthropomorphism was not manipulated. The presence of the baseline condition allowed us to examine clearly the direction of the effect of anthropomorphism on participants’ processing of appearance attributes.

Second, we sought to examine the robustness of our findings by manipulating anthropomorphism with a different method. Instead of framing the product with a first-person description as used in experiment 1, experiment 2 manipulated product anthropomorphism with a priming method. That is, we primed participants to anthropomorphize the target product (i.e., dehumidifier) by showing them pictures of a series of products from the same category (e.g., washing machine, air purifier) with salient anthropomorphic features (e.g., human-like facial features on the products). Theoretically, perceived similarity between objects and human beings would increase the anthropomorphism tendency (Epley et al. 2007). In this study, we first showed pictures of several humanized household appliances. After seeing these pictures, participants were primed to perceive the similarity between appliances and human beings. Therefore, when they were told that there would be another household appliance to be evaluated in the next task, they were more likely to think about the target household appliance as a human being. Third, we examined whether mood can explain the effect. Seeing products as human beings may elevate consumers’ mood, and a positive mood has been found to promote heuristic judgment (Bodenhausen, Kramer, and Susser 1994), which may in turn drive the effect on information search of appearance attributes. We thus added a condition in which participants were presented with pictures of landscapes. This condition would promote positive mood but would not prime anthropomorphism. Moreover, we also measured participants’ mood and examined its role in the experimental effect.

**Method and Procedure**

One hundred sixteen undergraduate students (30% male) from Hong Kong participated in this experiment for monetary compensation. They were randomly assigned to one of four priming type conditions: anthropomorphized product, nonanthropomorphized product, landscape, or baseline.

The participants first completed a survey about print advertising of household appliances that primed product anthropomorphism. Specifically, participants in the anthropomorphism condition viewed five print-ad pictures of household appliances (i.e., air purifier, washing machine, dishwasher, refrigerator, and dryer) with human faces and very brief introductions in first-person language (e.g., “I am a washing machine”; see appendix C for an example of the print ads). Prior research has shown that putting a human-like face on nonhuman objects increases the tendency to anthropomorphize the objects (Ahn et al. 2014; Puzakova et al. 2013). We thus expected that repeatedly seeing anthropomorphic features on household appliances would prime participants to anthropomorphize the target household appliance in a subsequent task. An independent pretest ($n = 115$) confirmed that the participants who saw the five anthropomorphized household appliances perceived the (different) household appliance in a subsequent task (i.e., a dehumidifier) to be more humanized than did those in the other three conditions. The participants in the
nonanthropomorphism condition saw the same five print-ad pictures without human faces and with a short introduction in third-person language (e.g., “It is a washing machine”; see appendix C). In the landscape condition, the participants viewed five pictures of landscapes described as advertising pictures for scenic spots. The participants in the baseline condition did not take the print-ad survey. Upon completion of the print-ad survey, all the participants reported their mood on four items (1 = not at all; 7 = very much): feel good/bad (reverse-coded) and happy/sad (reverse-coded) (Kim and McGill 2011).

Next, the participants performed the same information search task that was used in experiment 1a. They were told to review information about a new dehumidifier. They had 10 forum coins to view the information. The number of coins that participants spent viewing information about the appearance attributes served as the dependent variable. After participants completed the information search task, we administered the same question that was used in experiment 1a to check the manipulation of anthropomorphizing the dehumidifier.

Results and Discussion

Manipulation Check. We averaged responses to the two items (r = .82) to form an anthropomorphism score. A one-way ANOVA on this score revealed a significant effect of anthropomorphism priming (F(3, 112) = 6.74, p < .001, η² = .15). Participants in the anthropomorphism condition perceived the dehumidifier to be more humanized (M = 3.77, SD = 1.24) than did those in the nonanthropomorphism condition (M = 2.30, SD = 1.40; F(1, 112) = 16.35, p < .001), the landscape condition (M = 2.78, SD = 1.37; F(1, 112) = 7.41, p < .01), and the baseline condition (M = 2.47, SD = 1.38; F(1, 112) = 14.28, p < .001). These results confirm the success of manipulating anthropomorphism using the priming approach.

Number of Coins Spent on Appearance Attribute Information. We again used a Poisson regression to analyze the result of experiment 2. We first created three dummy variables (i.e., anthropomorphism, nonanthropomorphism, and landscape) to code the four conditions. The three dummy variables served as the independent variable, and the coin spending on appearance information served as the dependent variable. Results of Poisson regression showed that only the effect of the anthropomorphism dummy variable was significant (Wald χ² (1) = 13.14, p < .001; table 1). Follow-up comparisons showed that participants in the anthropomorphism condition spent significantly more coins to view appearance attribute information (M = 6.21, SD = 1.50) than those in the nonanthropomorphism condition (M = 3.63, SD = 1.74; Wald χ² (1) = 18.75, p < .001), the landscape condition (M = 4.04, SD = 1.32; Wald χ² (1) = 12.76, p < .001), and the baseline condition (M = 4.12, SD = 2.11; Wald χ² (1) = 12.81, p < .001). Importantly, there was no difference between the nonanthropomorphism and the baseline conditions (p > .20), suggesting that the effect was driven by an increase in the resources participants allocated to appearance attributes in the anthropomorphism condition. Moreover, there was no difference between the nonanthropomorphism and the landscape conditions (p > .30), suggesting that the effect of anthropomorphism on participants’ information search for appearance attributes was unlikely due to a change in mood, assuming that seeing beautiful landscapes would increase positive mood, which is confirmed by our analysis of the mood effect presented next.

Mood. We formed a mood score by averaging the four mood items (α = .84). A one-way ANOVA on the mood score revealed a significant effect (F(3, 112) = 9.78, p < .001). Participants in the anthropomorphism condition reported a more positive mood (M = 5.33, SD = 1.15) than did those in the nonanthropomorphism condition (M = 4.64, SD = .75; p < .05). However, when we used the mood score as the covariate in a Poisson regression, the effect of anthropomorphism on the number of coins participants spent on processing information about appearance attributes remained significant (p < .001), but the effect of mood was not significant (p > .40). Moreover, participants in the landscape condition reported a more positive mood (Mlandscape = 6.08, SD = .67) than participants in the other three conditions (Manthropomorphism = 5.33, SD = 1.15; Mnonanthropomorphism = 4.64, SD = .75; Mbaseline = 4.96, SD = 1.35; p < .01). However, the landscape condition did not increase the number of coins that participants spent on searching information for appearance attributes. These results suggest that the effect of anthropomorphism on information search cannot be explained by mood.

Experiment 2 replicated the finding in experiment 1 by priming anthropomorphism. Participants who were primed to anthropomorphize the target product allocated more resources to search for information on appearance attributes than did participants in the nonanthropomorphism, landscape, and baseline conditions. Moreover, the results for the landscape and baseline conditions mirrored the results for the nonanthropomorphism condition. These results confirm that the effect was driven by the anthropomorphism condition rather than the nonanthropomorphism condition, and that the effect was unlikely to be driven by mood.

By showing that anthropomorphizing a product increases the resources that consumers allocate to searching for information on appearance attributes, experiments 1 and 2 support our proposition that anthropomorphism increases consumers’ reliance on the appearance attributes. In the next five studies, we examine the downstream effect on product preference.
EXPERIMENT 3: CHOICE BETWEEN BATTERY CHARGERS WITH SUPERIOR APPEARANCE VERSUS FUNCTION

Experiments 3 through 7 aimed to test the effect of anthropomorphism on product preference. We expect that if anthropomorphizing products activates the beautiful-is-good belief in the person judgment domain and triggers the application of this belief to perceiving products, anthropomorphism should increase consumers’ preference for products with attractive appearance attributes. We test this prediction in consumer choice contexts involving a trade-off between two product options—one with superior appearance attributes but inferior functional attributes, and the other with inferior appearance attributes but superior functional attributes.

Experiment 3 employs a choice task. Participants chose to purchase with their own money portable battery chargers either with superior appearance or with superior function. We predicted that the purchase percentage of products with superior appearance would be higher when the product was anthropomorphized than when it was not anthropomorphized.

Method and Procedure

One hundred sixty-four undergraduate students (48% male) in China participated in this experiment for monetary compensation. The participants were randomly assigned to either the anthropomorphism condition or the nonanthropomorphism condition.

The participants were first asked to complete a survey study. This survey consisted of approximately 70 questions that were all irrelevant to the key purpose of experiment 3. Then the participants were told that they would receive 30 Chinese RMB (approximately 5 US dollars) as payment from the survey. Importantly, they were told that they were offered a special discount on a portable battery charger. The participants could choose to receive the full experiment payment (i.e., 30 Chinese RMB) without purchasing anything or could choose to use part of the payment (i.e., 20 Chinese RMB) to purchase the discounted charger and receive the remaining payment (i.e., 10 Chinese RMB). Eighty-four participants (51% of the total participants) chose not to buy the promotional item and left the study setting after they received the full experiment payment. The remaining 49% of the participants chose to buy the portable charger. Consequently, 80 participants (48% male) actually took part in experiment 3.

The 80 participants who were interested in purchasing the portable charger were presented with brief descriptions and pictures of four portable chargers. We manipulated anthropomorphism by using either first-person or third-person language in the product description, as adapted from Aggarwal and McGill (2007). Participants in the anthropomorphism condition read the following description:

“...payment (i.e. 30 Chinese RMB) without purchasing anything or could choose to use part of the payment (i.e., 20 Chinese RMB) to purchase the discounted charger and receive the remaining payment (i.e., 10 Chinese RMB). Eighty-four participants (51% of the total participants) chose not to buy the promotional item and left the study setting after they received the full experiment payment. The remaining 49% of the participants chose to buy the portable charger. Consequently, 80 participants (48% male) actually took part in experiment 3.

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“...payment (i.e. 30 Chinese RMB) without purchasing anything or could choose to use part of the payment (i.e., 20 Chinese RMB) to purchase the discounted charger and receive the remaining payment (i.e., 10 Chinese RMB). Eighty-four participants (51% of the total participants) chose not to buy the promotional item and left the study setting after they received the full experiment payment. The remaining 49% of the participants chose to buy the portable charger. Consequently, 80 participants (48% male) actually took part in experiment 3.

The 80 participants who were interested in purchasing the portable charger were presented with brief descriptions and pictures of four portable chargers. We manipulated anthropomorphism by using either first-person or third-person language in the product description, as adapted from Aggarwal and McGill (2007). Participants in the anthropomorphism condition read the following description: 

“We are the Maxco Charger Family! We will be trusted partners on your journey. We have four members in this family. Bring your favorite one home now!” In contrast, participants in the nonanthropomorphism condition read the following description: “These are Maxco Chargers. They will be trusted chargers on your journey. There are four kinds of chargers in the product line. Bring your favorite charger home now!”

Pictures of the four portable chargers were presented along with the product introduction (see appendix D for the pictures). An independent pretest \( n = 85 \) confirmed that two of the chargers had superior appearance (i.e., better appearance but worse power capacity, 3,200 mAh) and that the other two were functionally superior (i.e., better power capacity, 4,200 mAh, but worse appearance) and ensured that the chargers did not differ in product evaluation. The participants picked one of the four options and paid 20 Chinese RMB. Choice of the chargers with superior appearance served as the dependent variable. Finally, the participants responded to the same manipulation check questions as those in experiment 1a and then collected their chargers and unspent money (10 RMB). In this experiment, we did not administer the manipulation check questions immediately after the manipulation and before measuring the dependent variable. Instead, we put them at the end of the experiment to confirm that it was the anthropomorphism manipulation itself, not the manipulation check questions, that influenced product preference.

Results and Discussion

Manipulation Check. We averaged the two items regarding the anthropomorphism of the charger \( r = .77 \) to form a manipulation check score. A one-way ANOVA on this score revealed that participants in the anthropomorphism condition perceived the charger to be more humanized \( M = 4.17, SD = 1.70 \) than did those in nonanthropomorphism condition \( M = 2.78, SD = 2.78; F(1, 78) = 14.53, p < .001, \eta^2 = .16 \), validating our manipulation of anthropomorphism.

Choice of Product with Superior Appearance. Regressing the product choice \( 1 = \text{chose the charger with superior appearance}; 0 = \text{chose the charger with superior function} \) on anthropomorphism in a logistic regression yielded a significant effect \( \text{Wald} \chi^2 (1) = 4.19, p < .05; \text{table 1} \). As expected, the choice share of charger with superior appearance was higher in the anthropomorphism condition (59%) than in the nonanthropomorphism condition (36%).

Experiment 3 demonstrated the downstream effect of anthropomorphism on consumer preference in a purchase context. The participants were more likely to use their money to purchase chargers with superior appearance when the chargers were anthropomorphized than when they were nonanthropomorphized. The results support our hypothesis.
(hypothesis 2) that anthropomorphism increases consumer preference for products with superior appearance.

**EXPERIMENT 4: CHOICE BETWEEN CEREALS WITH SUPERIOR APPEARANCE VERSUS FUNCTION**

Experiment 4 aimed to test the robustness of the effect of anthropomorphism on product preference by implementing three changes. First, this study used a nonstudent sample from North America. Second, experiment 4 tested the predictions in the product category of food rather than electronic appliances. Third, instead of describing a product’s built-in appearance attributes, this study described a product’s packaging design as the appearance attributes. This experiment also included a baseline condition and again examined the role of mood.

**Method and Procedure**

One hundred sixty-three respondents (41% male) recruited from the United States through Amazon’s Mechanical Turk participated in the experiment in exchange for a small amount of monetary compensation. The participants were randomly assigned to one of three conditions: anthropomorphism, nonanthropomorphism, or baseline.

The participants were asked to complete a consumer survey about cereal, a common breakfast food in the United States. Adopting the method from Aggarwal and McGill (2012), we manipulated anthropomorphism by asking participants to imagine a box of cereal that they would purchase and describe it as either a human being or a product. We did not show any pictures or descriptions about cereal. Participants in the anthropomorphism condition imagined that the packaged cereal would come to life as a person and described their thoughts about this person. In contrast, participants in the nonanthropomorphism condition thought about the type of packaged cereal and described their thoughts about the product. Afterward, the participants responded to the same manipulation check questions as those in experiment 1a. Participants in the baseline condition did not perform this task. Then the participants in all conditions reported their mood on two items: “I feel good/happy” (1 = not at all; 7 = very much).

Next, all participants were presented with information on two options of packaged cereal involving a tradeoff between appearance attributes and functional attributes. Consumers’ ratings on four attributes of the cereals were provided: package design, nutrition, package size, and taste. The ratings were in number of stars, with more stars indicating better ratings. Cereal A, the option with superior appearance, received a five-star rating for package design and five stars for nutrition. The two cereals both received a four-star rating for package size and taste. The participants read the following consumer comment for cereal A (the option with superior appearance): “The packaging is so nice that I liked it at first sight. I feel good every morning when I see it.” They read the following comment for cereal B (the option with superior function): “It provides good nutrition. I liked it after the first trial. Good to have it for breakfast every morning.” Then the participants indicated their choice between the two options. The share of choices for the cereal with superior appearance served as the dependent variable.

**Results and Discussion**

**Manipulation Check.** We averaged responses to the two items regarding the anthropomorphism of the packaged cereal ($r = .92$) to form an anthropomorphism manipulation check score. Because the participants in the baseline condition did not receive the manipulation of anthropomorphism, we compared participants’ responses only between the anthropomorphism and nonanthropomorphism conditions. A one-way ANOVA on this score revealed that the participants in the anthropomorphism condition perceived the packaged cereal to be more humanized ($M = 4.92$, $SD = 1.46$) than did those in the nonanthropomorphism condition ($M = 1.53$, $SD = .69$; $F(1, 107) = 247.94$, $p < .001$, $η^2 = .70$), confirming that our manipulation of anthropomorphism was successful.

**Product Choice.** We first created two dummy variables (i.e., anthropomorphism and nonanthropomorphism) to code the three conditions in this study (i.e., anthropomorphism, nonanthropomorphism, and baseline). Regressing the product choice ($1 =$ chose the cereal with superior appearance; $0 =$ chose the cereal with superior function) on two dummy variables revealed a significant effect of only the anthropomorphism dummy variable (Wald $χ^2 (1) = 11.11$, $p < .01$). Follow-up comparisons showed that the choice share of cereal with a superior package design in the anthropomorphism condition (14%) was significantly higher than that in the nonanthropomorphism condition (2%; $p < .05$; table 1) and the baseline condition (0%; $p < .01$). Importantly, the result in the baseline condition mirrored that in the nonanthropomorphism condition ($p > .20$), suggesting that the effect was driven by the anthropomorphism condition.

**Mood.** We averaged the two mood items ($r = .87$) to form a mood score. One-way ANOVAs revealed that the participants in the anthropomorphism condition ($M = 5.15$, $SD = 1.43$) did not differ in mood from those in the nonanthropomorphism condition ($M = 5.47$, $SD = 1.09$; $F(1, 160) = 1.54$, $p > .10$) and those in the baseline condition ($M = 4.90$, $SD = 1.49$; $F(1, 160) = .92$, $p > .30$), which suggests that mood cannot explain the effect in this study.
Experiment 4 replicated the effect of anthropomorphism on product choice (hypothesis 2) documented in experiment 3 by using a nonstudent sample in a different product category with a different type of appearance attribute (the package design). Anthropomorphizing the packaged cereal increased participants’ choice of the option with superior package design. Moreover, participants’ product choice in the baseline condition mirrored that in the nonanthropomorphism condition, suggesting that the anthropomorphism condition drove the observed effect. In addition, we ruled out mood as the alternative explanation. In the next three experiments, we tested the process underlying this effect using both mediation and moderation approaches.

**EXPERIMENT 5: REVEALING THE MECHANISM BY ALTERING THE ACTIVATION OF THE BEAUTIFUL-IS-GOOD BELIEF**

Experiment 5 aimed to reveal the underlying mechanism for the effect of anthropomorphism on consumer preference. If consumers activate their beautiful-is-good belief in person perception to judge anthropomorphized products, then discounting this belief will attenuate the effect of anthropomorphism on increasing consumer preference for products with superior appearance attributes. To examine this prediction, experiment 5 manipulated participants’ beautiful-is-good belief through a priming task. Moreover, we measured participants’ activation of beautiful-is-good belief after the priming task and examined whether this belief mediated the effect on product preference. Again, experiment 5 tested our predictions using consumers’ real product purchases.

**Method and Procedure**

Four hundred forty-eight undergraduate students (33% male) from China were randomly assigned to one of four conditions in a 2 (anthropomorphism: yes vs. no) × 2 (beautiful-is-good belief: discounting belief vs. baseline) between-subjects design.

First, participants completed either a reading and writing task (discounting belief condition) or a routine writing task (baseline condition). The reading and writing task was intended to prompt participants to discount the beautiful-is-good belief in the domain of person perception. Specifically, participants read a fictitious research report titled “Beauty Is Only Skin-Deep.” This report used approximately 300 words to describe a research study showing that physically attractive and unattractive people do not differ significantly in the goodness of their personality traits. The key message was that empirical evidence does not support a significant association between physical appearance and positive personal qualities. After reading the report, participants were instructed to summarize the main idea of the report and write about an experience that supported that idea. Participants in the baseline condition wrote about their routine activities in one typical school day without reading any reports. An independent pretest (n = 150) confirmed that participants who read the “beauty is only skin-deep” report, compared with those who wrote down their daily routine in the baseline condition, were less likely to believe the strong association between a person’s physical attractiveness and goodness.

Then all the participants reported their activation of the beautiful-is-good belief on two items, which served as the measures of the mediator: good-looking people possess more favorable personality traits; it is effective to infer the goodness of other people based on their appearance (1 = disagree, 7 = agree). Next, participants performed exactly the same product purchase task as used in experiment 3. Specifically, they completed a survey and then were told that they would receive 30 Chinese RMB (approximately 5 US dollars) as payment. Importantly, they had the option either to receive the full experiment payment (i.e., 30 Chinese RMB) without purchasing anything or to use part of the payment (i.e., 20 Chinese RMB) to purchase the discounted charger and receive the remaining payment (i.e., 10 Chinese RMB). Two hundred thirty-four participants (52% of the total participants) chose not to buy the charger and left the study setting. The percentage of participants who chose not to buy the charger did not differ between the belief discounting and baseline conditions (p > .90). The remaining 214 (34% male) participants chose to buy the charger and actually took part in experiment 5.

As in experiment 3, the participants were presented with brief introductions and pictures of four chargers. Two chargers were superior in appearance, whereas the other two were functionally superior. Again, we manipulated anthropomorphism by using either first-person or third-person language in the product introductions (Aggarwal and McGill 2007). Participants picked one of the four options and paid 20 Chinese RMB. The percentage of participants who purchased the chargers with superior appearance served as the dependent variable. Then participants responded to four manipulation check questions about anthropomorphism of the chargers (i.e., they feel like persons; I think about them as persons; they have their own personalities; they have their own intentions; 1 = strongly disagree; 7 = strongly agree). Finally, participants collected their chargers and unspent money (10 RMB).

**Results and Discussion**

**Manipulation Check of Anthropomorphism.** We averaged the four items regarding the anthropomorphism of the charger (α = .91) to form a manipulation check score. A 2 (anthropomorphism vs. nonanthropomorphism) × 2 (discounting belief vs. baseline) ANOVA on this score revealed
a significant main effect of anthropomorphism only. As the validation of our manipulation of anthropomorphism, the participants in the anthropomorphism condition perceived the chargers to be more humanized (Mean = 3.81, SD = 1.62) than did those in the nonanthropomorphism condition (Mean = 2.94, SD = 1.39; F(1, 210) = 17.58, p < .001, ηp^2 = .08).

**Choice of Product with Superior Appearance.** Regressing the product choice (1 = chose the charger with superior appearance; 0 = chose the charger with superior function) on anthropomorphism, belief manipulation, and their interaction in a logistic regression yielded a significant interaction effect (Wald χ^2 (1) = 5.26, p < .05) but no significant main effects (ps > .50). Pairwise comparisons revealed the nature of the interaction. In the baseline condition, more participants in the anthropomorphism condition (77%) than in the nonanthropomorphism condition (41%; p < .001) actually purchased the chargers with superior appearance, replicating the results we found in experiments 3 and 4. However, the effect was eliminated when participants were primed with the belief that beauty is only skin-deep, which discounted the beautiful-is-good belief, regardless of whether the product was anthropomorphized (43%) or nonanthropomorphized (37%; p > .50). Moreover, among participants who anthropomorphized the chargers, the choice share of product with superior appearance in the baseline condition (77%) was significantly higher than that in the discounting belief condition (43%; p < .001; table 1). However, discounting the beautiful-is-good belief did not influence participants’ choice when the chargers were nonanthropomorphized (F < 1).

**Mediator: Activation of the Beautiful-Is-Good Belief in Person Perception.** We first formed a mediation score by averaging participants’ responses to the two items that measured their activation of the beautiful-is-good belief (r = .75). We then conducted a mediation analysis following Hayes (2012, model 8; see figure 1) with anthropomorphism (anthropomorphism = 1; nonanthropomorphism = 0) as the independent variable, discounting belief (baseline = 1; discounting belief = 0) as the moderator, activation of the beautiful-is-good belief as the mediator, and consumer choice as the dependent variable. The first model (i.e., the mediator model) revealed a significant main effect of discounting belief on the activation of the beautiful-is-good belief (B = .79, SE = .25, t(210) = 3.18, p < .01). The second model (i.e., the dependent variable model) revealed a significant mediation effect of activation of the beautiful-is-good belief (B = .39, SE = .12, z = 3.19, p < .001). A 5,000 resamples bootstrap (Hayes 2012) confirmed that the indirect effect was significant when participants’ beautiful-is-good belief was not discounted (95% CI = .0132 to .5546). In contrast, when participants’ beautiful-is-good belief was discounted, the indirect effect was not significant (95% CI = -.2926 to .1456). The results suggested that “beautiful is good,” a pervasive belief in the person perception domain, plays a mediating role in consumer choice of anthropomorphized products.

Experiment 5 replicated the findings of experiments 3 and 4 that anthropomorphism increased consumers’ preference for anthropomorphized products with superior appearance in the baseline condition, but eliminated this effect when participants’ beautiful-is-good belief in person perception was challenged. Furthermore, participants’ activation of the beautiful-is-good belief in person perception mediated the effect. These moderation and mediation results support our proposed mechanism for the effect of anthropomorphism on consumer preference.

**EXPERIMENT 6: REVEALING THE MECHANISM BY EXAMINING INDIVIDUAL DIFFERENCES IN THE BEAUTIFUL-IS-GOOD BELIEF**

Experiment 6 aimed to test the mechanism of the beautiful-is-good belief again using a different moderator.
Instead of manipulating the activation of the beautiful-is-good belief in person perception, this study measured individual differences in this belief. If the beautiful-is-good belief in person perception indeed underlies the effect of anthropomorphism on product preference, the effect would be salient for participants with stronger beautiful-is-good belief but diminish for those with a weaker belief. Experiment 6 also tested the robustness of the effect using a different product (i.e., USB flash drive for data storage), showing the appearance in pictures rather than using ratings. Note that experiment 6 did not test the mediation role of the activation of the beautiful-is-good belief; this is because the measure of this mediator and the measure of the moderator of individual difference in this belief are conceptually very close to each other. Thus, in experiment 6 we focus on using the moderation to reveal the mechanism.

Method and Procedure

This experiment employed a two-factor (individual difference in beautiful-is-good belief, anthropomorphism) between-subjects design, with individual difference in the belief as a measured continuous variable and anthropomorphism manipulated (anthropomorphism vs. nonanthropomorphism). Seventy-five undergraduate students (32% male) from Hong Kong participated in this experiment for monetary compensation. They were randomly assigned to either the anthropomorphism condition or the nonanthropomorphism condition.

As in experiment 4, we first manipulated anthropomorphism by asking participants to think of and describe a USB product as either a human being (anthropomorphism condition) or a product (nonanthropomorphism condition) (Aggarwal and McGill 2012). Then the participants were presented with pictures of two real USB products (option A and option B; see Appendix E). An independent pretest (n = 21) confirmed that option B had a more attractive appearance (M = 4.90) than option A (M = 2.86, p < .01; seven-point scale). We also framed option A as having “basic design” and option B as having “premium design” to strengthen their difference in appearance attributes. In terms of functional attributes, however, option A was superior to B. Option A had 12 GB memory capacity, whereas option B had only 8 GB. Participants reviewed the product information and indicated their preference for the USB on an eight-point scale (1 = strongly prefer option A; 8 = strongly prefer option B). A larger number on this measure indicated a greater preference for the USB with superior appearance. We administered the same manipulation check questions of anthropomorphism as used in experiment 5, after measuring the dependent variable to avoid any contamination on the preference measure. Finally, the participants completed a survey about their beliefs. This survey included three questions adopted from Fisher and Ma (2014) that measured the individual difference in the beautiful-is-good belief in person judgment: good-looking people are popular; good-looking people are friendly; good-looking people make friends easily (1 = strongly disagree; 7 = strongly agree).

Results and Discussion

Manipulation Check. We averaged the four items regarding the anthropomorphism of the USB (α = .88) to form a manipulation check score. A one-way ANOVA on this score revealed that participants in the anthropomorphism condition perceived the USBs to be more humanized (M = 3.68, SD = 1.43) than did those in nonanthropomorphism condition (M = 2.90, SD = 1.41; F(1, 73) = 5.64, p < .05, η² = .07), validating our manipulation of anthropomorphism.

Product Preference. A one-way ANOVA on the preference score showed a significant effect of anthropomorphism (F(1, 73) = 12.46, p < .01, η² = .15). Participants in the anthropomorphism condition reported greater preference for the USB with superior appearance attributes (M = 5.08, SD = 2.06) than did those in the nonanthropomorphism condition (M = 3.41, SD = 2.05; table 1), which replicated our findings in experiments 3 through 5. To test the moderating role of individual difference in the belief, we formed a belief score by averaging the three measures (α = .67). A one-way ANOVA on this score revealed that individual difference in the belief was not affected by the anthropomorphism manipulation (p > .30). We then ran a regression of the preference score on (1) a dummy variable for anthropomorphism (1 = anthropomorphism, 0 = nonanthropomorphism); (2) individual difference in beautiful-is-good belief; and (3) their interaction. We found a significant anthropomorphism × belief interaction effect on product preference (β = 1.31, t(71) = 2.01, p < .05). No other effects were significant (ps > .10). Because the independent variable (i.e., anthropomorphism) is categorical, whereas the moderator (i.e., individual difference in the belief) is continuous, we analyzed this interaction using the Johnson-Neyman technique to identify the region of belief in which the effect of anthropomorphism on product preference is significant, an approach dubbed “floodlight analysis” (Spiller et al. 2013).

The analysis revealed that the effect of anthropomorphism on product preference was significant (p < .05) for participants whose measured belief was higher than 4.29 (βBN = 1.10, SE = .55). That is, participants with a stronger beautiful-is-good belief (above 4.29) indicated greater preference for a product with superior appearance when the product was anthropomorphized than when it was not. However, this effect was not significant for those with a weaker beautiful-is-good belief (below 4.29).

Experiment 6 replicated the findings of experiments 3 through 5 by showing that anthropomorphizing a USB increased participants’ preference for a USB with superior
appearance. Importantly, we revealed the process underlying the effect by showing the moderation effect of participants’ individual difference in the beautiful-is-good belief in the domain of person perception. That is, the increased preference for the anthropomorphized product with superior appearance attributes occurred only for participants who hold a stronger belief that people with attractive physical appearance have positive personal traits; it diminished for participants who hold a weaker beautiful-is-good belief. In the next experiment, we further analyze the underlying mechanism and generalize the effects in a choice context with three options.

EXPERIMENT 7: CHOICE AMONG THREE OPTIONS WITH VARIED LEVELS OF APPEARANCE AND FUNCTION

Experiment 7 had two primary goals. The first goal was to employ a different product (i.e., laptop computer) to generalize our effect in a choice context with three options. Specifically, we added a third option that was intermediate in terms of both appearance and function. We predicted that participants’ preference for the option with the best appearance would still be higher when they anthropomorphize the product. The second goal was to further reveal the mechanism by examining the extent to which participants apply the beautiful-is-good belief in judging the product. Prior research shows that when people apply the beautiful-is-good stereotype in person judgment, they often infer the goodness of the person from his or her attractive physical appearance, especially in terms of social competence (e.g., this person being popular, welcomed, and likable; Eagly et al. 1991; Fisher and Ma 2014; Langlois et al. 2000). We thus predict that if product anthropomorphism promotes consumers to activate the beautiful-is-good belief, consumers will be more likely to infer that the product with superior appearance is more popular, welcomed, and appealing (i.e., a good product) when they anthropomorphize the product. The second goal was to further reveal the mechanism by examining the extent to which participants apply the beautiful-is-good belief in judging the product. Prior research shows that when people apply the beautiful-is-good stereotype in person judgment, they often infer the goodness of the person from his or her attractive physical appearance, especially in terms of social competence (e.g., this person being popular, welcomed, and likable; Eagly et al. 1991; Fisher and Ma 2014; Langlois et al. 2000). We thus predict that if product anthropomorphism promotes consumers to activate the beautiful-is-good belief, consumers will be more likely to infer that the product with superior appearance is more popular, welcomed, and appealing (i.e., a good product) when they anthropomorphize the product than when they do not, which consequently leads consumers to prefer the product with superior appearance attributes. We therefore measured participants’ inferences about the goodness of the target product and tested this mediating role in experiment 7.

Method and Procedure

Ninety-seven respondents (43% male) recruited from the United States through Amazon’s Mechanical Turk participated in the experiment in exchange for a small amount of monetary compensation. They were randomly assigned to either the anthropomorphism condition or the nonanthropomorphism condition.

As in experiment 4, we first manipulated anthropomorphism by asking participants to think of a laptop computer that they would purchase and to describe it as either a human being (anthropomorphism condition) or a product (nonanthropomorphism condition) (Aggarwal and McGill 2012). Next, participants were presented with consumers’ ratings (in the form of number of stars) of three laptop computers on four attributes: appearance design, battery life, color, and screen resolution. The three laptops received the same total number of stars for the four attributes but differed in the distribution of stars across attributes. Laptop A was the option with the superior appearance but inferior function. It received a five-star rating for appearance design and a three-star rating for battery life. Laptops B and C, compared with A, had inferior appearance but superior function. Specifically, B received a four-star rating for both appearance design and battery life, and C received a three-star rating for appearance and a five-star rating for battery life. The three laptops shared the same ratings (i.e., three stars) for the remaining two attributes. Then the participants indicated choice among the three options. The choice share of laptop A (i.e., the one with the superior appearance) served as the dependent variable.

Next, participants reported their inferences about the goodness of the product with the superior appearance attribute (i.e., laptop A) on three items adapted from prior research (Eagly et al. 1991; Fisher and Ma 2014; Langlois et al. 2000): Laptop A is popular/welcomed/appealing (1 = strongly disagree; 7 = strongly agree). These questions assessed the extent to which participants applied the beautiful-is-good belief in their product choice. Finally, participants responded to the same manipulation check questions of anthropomorphism as those in experiment 5.

Results and Discussion

Manipulation Check. We averaged the four items regarding the anthropomorphism of the laptop (α = .95) to form a manipulation check score. A one-way ANOVA on this score revealed that participants in the anthropomorphism condition perceived the laptop to be more humanized ($M = 5.40, SD = 1.18$) than did those in nonanthropomorphism condition ($M = 2.55, SD = 1.56$; $F(1, 95) = 100.25, p < .001, \eta^2 = .51$), validating our manipulation of anthropomorphism.

Product Choice. Regressing the product choice (1 = chose laptop A, the laptop with the superior appearance; 0 = chose laptop B or C, the laptops with inferior appearance) on anthropomorphism revealed a significant effect ($\chi^2(1) = 6.82, p < .01$). Pairwise comparisons further revealed that 24% of the participants in the anthropomorphism condition chose the laptop with the superior appearance, whereas only 4% of the participants in the nonanthropomorphism condition did so ($z = 2.86, p < .01$; see table 1). These results suggest that anthropomorphizing the laptops increased participants’ choice of the option.
Mediator: Inference of the Goodness of the Product. We averaged the three items (laptop A is popular/welcomed/appealing) to form a score of inferred goodness of the product with the superior appearance attribute ($\alpha = .81$). We then conducted a mediation analysis following Hayes (2012, model 4) with anthropomorphism (anthropomorphism = 1; nonanthropomorphism = 0) as the independent variable, the goodness inference score as the mediator, and consumer choice as the dependent variable. The first model (i.e., the mediator model) revealed that anthropomorphism positively predicted the goodness inference score ($B = .50$, SE = .20, $t(96) = 2.51$, $p < .05$). The second model (i.e., the dependent variable model) showed that the goodness inference score positively predicted product choice ($B = 2.49$, SE = .67, $z = 3.73$, $p < .001$), whereas the effect of anthropomorphism was only marginally significant ($B = 1.73$, SE = .97, $z = 1.78$, $p = .08$). A bootstrapping procedure that generated a sample size of 5,000 revealed that the indirect effect was significant ($B = 1.24$, 95% CI = .0763 to 3.3491), suggesting that the effect of anthropomorphism on product preference was mediated by participants’ inference about the goodness of the product with superior appearance.

Experiment 7 replicated the findings of experiments 3 through 6 using a new product with three types of choice options. Anthropomorphizing a laptop computer increased participants’ preference for the laptop with the best appearance attribute. Importantly, anthropomorphism led participants to infer the goodness of the product, which in turn mediated its effect on product choice. This mediation result further supports our predicted mechanism that participants activated the beautiful-is-good belief in judging an anthropomorphized product.

GENERAL DISCUSSION

The present research proposes that anthropomorphism increases consumer preference for products with superior appearance. This effect occurs because seeing a product as a person leads consumers to apply the belief of beautiful is good from the person domain to the product domain, thereby causing consumers to increase reliance on appearance attributes. Seven experiments provided convergent evidence for our proposed effects and revealed the underlying mechanism. Participants who were induced to see products as human beings (vs. objects) allocated more monetary and time resources to search for information about the appearance attributes of the products, whether anthropomorphism was framed (experiments 1a and 1b) or primed (experiment 2). When participants anthropomorphized (vs. did not anthropomorphize) the products, they preferred more products with better appearance (experiment 6), were more likely to choose products with more attractive packaging (experiment 4) and products with more appealing appearance design (experiment 7), and actually purchased more products with superior appearance (experiments 3 and 5). This effect was robust across a variety of consumer products (humidifier, dehumidifier, battery charger, USB flash drive, computer, food) among both student and nonstudent participants from both Asia and North America. In addition, the effect cannot be explained by mood (experiments 2 and 4). Results from both moderation studies (experiments 5 and 6) and mediation analyses (experiments 5 and 7) revealed that the effect occurred through the mechanism of applying the beautiful-is-good belief from the person perception domain to the judgment of anthropomorphized products.

Theoretical Contributions

The present research mainly contributes to the literature on anthropomorphism in two respects. First, we document a novel effect of anthropomorphism on consumers’ information processing and product preference. Recent research shows that the specific product appearance design can influence the effectiveness of anthropomorphism in marketing (Aggarwal and McGill 2007; Landwehr et al. 2011). For example, Landwehr et al. (2011) find that consumer attitudes toward an anthropomorphized car are influenced by the appearance design of the grille (mouth) and headlights (eyes). These studies are based on the mechanism that anthropomorphism is triggered by the accessibility of a product’s appearance resembling human beings’ physical appearance (e.g., the headlights of a car resemble the eyes of an aggressive person). Our current research goes beyond a focus on the similarity between the product’s appearance and human physical features to document an overall elevation of consumers’ preference for anthropomorphized products with superior appearance. Here, the product’s appearance attributes are not particularly concerned with the resemblance to human-like physical features, but refer to the observable elements used to achieve a particular sensory effect (Bloch 1995; Hollins and Pugh 1990), including the general aspects of shape, size, proportion, and color (e.g., the appearance design of a battery charger, the packaging design of cereal).

Second, our studies extend prior research showing that anthropomorphizing a nonhuman object prompts consumers to apply social knowledge, expectations, and beliefs they would not normally apply to a nonhuman entity (Aggarwal and McGill 2012; Kim and Kramer 2015; Kim and McGill 2011). The current research extends this stream of work by documenting a novel social belief of beautiful is good that consumers apply in judging humanized products. Importantly, we demonstrate that the application of this belief substantially impacts consumption decisions by...
shifting consumers’ preferences toward products with attractive appearance.

Our research also contributes to the literature on product design and consumer preference (Bloch et al. 2003; Chitturi et al. 2007) by uncovering a novel factor that influences the tradeoff between product appearance and product function. Consumers often need to assess a combination of appearance attributes and functional attributes in evaluating products. Prior research shows that although consumers look for the instrumental benefits of products and thus focus on the functional attributes (Bagozzi 1986; Lefkoff-Hagius and Mason 1993), their consideration of the two types of product attributes can be affected by individual difference and contextual factors, such as the date and time of consuming the product (Miller and Ginter 1979), whether the product alternatives are presented jointly or separately (Okada 2007), and whether or not the product attributes are highlighted in the advertising (Gardner 1983). The present work identifies a novel antecedent related to marketing communication tactics (i.e., product anthropomorphism) that can alter consumers’ perception about the two types of attributes, particularly the appearance attributes. We show that employing anthropomorphism in marketing significantly increases consumers’ resource allocation to search information about product appearance and enhances their preference for products with a superior look.

Relatedly, this research enriches the literature on product packaging. Prior work in this area has examined how a specific element of packaging (e.g., shape, size, image location) influences consumers’ evaluation of products. For example, Raghubir and Krishna (1999) find that package shape affects consumers’ estimation of product volume and consequently their product preference. Deng and Kahn (2009) show that the location of the product image on a package facade affects consumers’ perception of the product’s heaviness and thus their evaluation of the product. Instead of focusing on the specific elements of packaging, the present research identifies anthropomorphism as an important factor that influences consumers’ reliance on the overall packaging design in forming preferences and making choices.

Finally, our research also contributes to the literature on person perception by strengthening the evidence for the pervasive stereotype of “beautiful is good” beyond the scope of human judgment (Dion et al. 1972; Eagly et al. 1991; Langlois et al. 2000). The literature has documented that people use the attractiveness of a person’s physical appearance as an indicator of positive personality traits. This stereotype is found to be robust in evaluations of both strangers and familiar persons, and both adults and children (Fisher and Ma 2014; Langlois et al. 2000). The current research demonstrates that this belief can be applied beyond the domain of interpersonal judgment. It also occurs in the context of product anthropomorphism.

**Practical Implications**

First, our findings alert marketing managers that they should ensure that the appearance attributes of their products (e.g., appearance design, package design) are fairly attractive when they employ anthropomorphism in marketing communications. Inducing consumers to humanize a product with poor appearance attributes may backfire, as anthropomorphism can increase consumers’ reliance on appearance attributes and can thus highlight the weakness of the product.

Second, our findings suggest that using anthropomorphism in product communications may be an effective way for marketing managers to increase sales for products with superior appearance attributes. For example, when the market for electronic products is dominated by brands that offer products with excellent functions, other brands may consider improving the attractiveness of their product or product packaging and then promoting the product in an anthropomorphic manner. Take the example of Beats Pill, a highly popular portable wireless Bluetooth speaker brand. This brand has an anthropomorphic campaign featuring the Beats Pill Gang. While competing with other speaker brands on functional attributes (e.g., sound quality), this brand constantly emphasizes the appearance design in its marketing communication (e.g., “With its sophisticated design, Beats Pill+ looks as good as it sounds”) and is viewed as among the best portable speakers in appearance design. Despite criticism of its sound quality by experts, Beats Pill has achieved great success in the consumer market. Moreover, products’ humanized features, such as a car’s smiling grille (Aggarwal and McGill 2007), might influence consumer attitudes in two ways: by triggering anthropomorphism and at the same time increasing consumer preference due to their visual attractiveness.

Third, our work also has implications for promoting healthy eating. We observe that the efforts to market healthy food very often emphasize the functional aspects of the product, such as the nutritional value and the benefit of preventing illness (e.g., “the top 10 foods that can prevent cancer”). Findings from this research suggest that they might be using the wrong tactics in view of what the unhealthy snack brands are doing. Some of the food brands selling unhealthy snacks are supported by large advertising budgets and feature anthropomorphic mascots in their advertising. As a result, consumers may be more likely to anthropomorphize the unhealthy food brand, which may lead them to base their choices between unhealthy food and healthier options on the appearance aspect rather than the utilitarian aspect. To promote healthy eating, the brands for healthy food should invest more effort in enhancing and promoting the attractive appearance of their food options.
Limitations and Future Research

First, product appearance is defined as the observable elements of the product that lead to a particular sensory effect (Bloch 1995; Hollins and Pugh 1990). Research on sensory marketing suggests that consumers can be influenced by input from multiple senses, including vision, audition, olfaction, taste, and haptics (Krishna 2012). The appearance attribute examined in the current research focuses on vision, which is the sense most responsive to the environment and thus the sense most used for marketing (Hultén 2011). Future research can investigate how product anthropomorphism might influence consumer responses to product features related to sound, smell, taste, or touch, which can offer great potential for sensory marketing as well.

Second, the current research shows that product anthropomorphism activates the beautiful-is-good belief from the domain of person perception. This finding is consistent with prior research suggesting that anthropomorphism will trigger the goal of social interaction with the product (Aggarwal and McGill 2012). A further question is whether product anthropomorphism will change consumers’ processing style. For example, consumers might apply a broader perspective and bring more emotions and feelings to their social interaction with other human beings than their interaction with nonhuman objects. Future research can investigate the impact of product anthropomorphism from these additional perspectives.

DATA COLLECTION INFORMATION

The first and second authors supervised the data collection by research assistants at the University of Hong Kong for experiment 1a (fall 2013), experiment 2 (spring 2014), experiment 6 (spring 2015), and experiment 7 (fall 2015). The third author collected data for experiment 1b (fall 2013), experiment 3 (spring 2014), and experiment 5 (spring 2015) at Fudan University. The data for experiment 4 were collected in spring 2014 using an Amazon Mechanical Turk online participants panel. The data were analyzed jointly by all three authors.

Appendix A

MANIPULATION OF ANTHROPOMORPHISM IN EXPERIMENT 1A

Anthropomorphism Condition

Hello! I am Mr. YZ! Born in 2013, I am a new member of my dehumidifier family. I am a very quiet guy and never disturb your life. My stomach is huge so I can drink up to 38L water per day. But I only consume two units of electricity to work for a whole day. Count on me for any humid problems! I will make your place more comfortable!

Nonanthropomorphism Condition

The YZ dehumidifier was launched in 2013. It is a new machine of the dehumidifier product line. It is a very quiet machine and never creates noise in your life. The tank is huge and the capacity is up to 38L water per day. But this machine only needs two units of electricity to work for a whole day. Count on it for any humid problems! It will make your place more comfortable!

APPENDIX B

SCREENSHOTS OF THE INFORMATION SEARCH TASK IN EXPERIMENT 1A

Instructions for the task

There are 10 pieces of information under each category (masked using pages 1–10).
Under the physical attribute category, there are six product pictures and four user comments about physical appearance, whereas under the functional attribute category, there are six sentences and four user comments describing the product's functions.

<table>
<thead>
<tr>
<th>Physical attributes</th>
<th>Functional attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>It looks great. Simple and neat, just the design I like.</td>
<td>Effortless full tank alert system with auto shut-off.</td>
</tr>
<tr>
<td>I put it at the corner and it just fits. It's a cute one, though looks a bit boring.</td>
<td>2 fan speeds for more flexibility.</td>
</tr>
<tr>
<td>It doesn’t look as nice as the pictures, but generally not bad.</td>
<td>Pull-out tank with handle and splash guard.</td>
</tr>
<tr>
<td>The appearance is nice and my wife loves it.</td>
<td>Effortless humidity control allows you to control the exact percentage of humidity in your room.</td>
</tr>
</tbody>
</table>

APPENDIX C: EXAMPLES OF STIMULI IN EXPERIMENT 2

Anthropomorphism Condition

Nonanthropomorphism Condition
Landscape Condition

APPENDIX D: FOUR PORTABLE CHARGERS IN EXPERIMENTS 3 AND 5

Physically superior chargers (power capacity 3,200 mAh)
Functionally superior chargers (power capacity 4,200 mAh)

APPENDIX E: TWO USB FLASH DRIVES IN EXPERIMENT 6

<table>
<thead>
<tr>
<th>Option A</th>
<th>Option B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Design</td>
<td>Premium Design</td>
</tr>
<tr>
<td>Memory Capacity: 12 GB</td>
<td>Memory Capacity: 8 GB</td>
</tr>
</tbody>
</table>
REFERENCES


