MESSAGE IN A BOTTLE: WHAT ANTHROPOMORPHIZED PACKAGE DESIGNS TELL CONSUMERS ABOUT THEMSELVES

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Message in a Bottle: What Anthropomorphized Package Designs Tell Consumers About Themselves

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Product packaging plays a critical role in consumers’ purchase decisions. The present research examines how one element of packaging—shape— influences consumers’ self-perceptions, enjoyment of the usage experience, and evaluations of the product. Specifically, in four studies, I examine anthropomorphized products (e.g., a curvy bottle resembling a woman) and show that when a package’s shape resembles a human form that is associated with specific traits, consumers who use, or imagine using, the package incorporate the associated traits into their identities. As a result, the anthropomorphized package design influences consumers’ enjoyment of using the package, as well as consumers’ attitudes toward the package. Furthermore, I provide some support for the notion that consumers prefer anthropomorphized packages when the packages are associated with traits that can be instrumental in goal achievement.

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To my grandparents…
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TABLE OF CONTENTS

INTRODUCTION................................................................................................................................. 1
PRODUCTS AS REFLECTIONS OF THE SELF ..................................................................................... 3
ANTHROPOMORPHIZED PRODUCT AND PACKAGE SHAPES......................................................... 5
THE INFLUENCE OF ANTHROPOMORPHIZED PRODUCTS ON THE CONSUMER .................. 7
CONSUMER GOALS AND ANTHROPOMORPHIZED PRODUCTS ................................................... 8
SHAPES AND TRAITS ....................................................................................................................... 9
CONCEPTUAL DEVELOPMENT ....................................................................................................... 11
STUDY 1A .......................................................................................................................................... 18
   METHOD ......................................................................................................................................... 19
   DEPENDENT MEASURES ............................................................................................................... 19
   RESULTS ....................................................................................................................................... 20
   DISCUSSION ................................................................................................................................. 24
STUDY 1B (POST-TEST) ...................................................................................................................... 25
   METHOD ......................................................................................................................................... 25
   DEPENDENT MEASURE ............................................................................................................... 26
   RESULTS ....................................................................................................................................... 26
   DISCUSSION ................................................................................................................................. 28
STUDY 2 ............................................................................................................................................ 29
   METHOD ......................................................................................................................................... 29
   DEPENDENT MEASURES ............................................................................................................... 31
   RESULTS ....................................................................................................................................... 31
   DISCUSSION ................................................................................................................................. 34
STUDY 3 ............................................................................................................................................ 35
   METHOD ......................................................................................................................................... 36
   DEPENDENT MEASURES ............................................................................................................... 39
   RESULTS ....................................................................................................................................... 44
   DISCUSSION ................................................................................................................................. 56
GENERAL DISCUSSION .................................................................................................................. 57
REFERENCES ..................................................................................................................................... 62
LIST OF FIGURES

Figure 1. Theoretical Model and Hypotheses ................................................................. 17
Figure 2. The effect of can shape and gender on consumers’ package preference ratings ......... 21
Figure 3. The effect of can shape and gender on user-warmth perceptions ........................ 22
Figure 4. The effect of can shape and gender on user-competence perceptions .................. 23
Figure 5. Dual Mediated Moderation Model .................................................................... 24
Figure 6. The effect of can shape and product category on men’s and women’s respective tendencies to anthropomorphize .......................................................... 28
Figure 7. The effect of product shape and gender on experience enjoyment ......................... 33
Figure 8. The effect of product shape and gender on self-warmth perceptions ..................... 34
Figure 9. The effect of bottle shape and goal on men’s and women’s respective predicted goal success ........................................................................................................... 48
Figure 10. The effect of bottle shape and goal on self-warmth perceptions ......................... 50
INTRODUCTION

Product packaging plays an important role in consumers’ purchase decisions (Deng and Kahn 2009; Hoegg, Alba, and Dahl 2010; Orth and Malkewitz 2008), and manufacturers use innovative package shapes to differentiate their products and create more functional designs. For example, there has recently been a proliferation of beverage container shapes (bottles and cans) that subtly resemble the human form in that they have a “skinny” physique, broad, angular “shoulders,” or a curved “waist.” Such bottles and cans may be used to differentiate the products, cut costs by reducing volume, and make it easier for consumers to hold the bottle or can in their hands. However, what manufacturers and academics alike have overlooked are the psychological consequences of such designs. In the marketing literature, the studies that have examined product shape have focused almost exclusively on consumers’ judgments of product volume and the consequences of those judgments (Folkes and Matta 2004; Krishna 2006; Raghubir and Krishna 1999; Wansink and Van Ittersum 2003; Yang and Raghubir 2005). With the exception of Raghubir and Greenleaf (2006), little research has examined how shape influences consumers’ attitudes toward the product, and no research has investigated how shape influences consumers’ perceptions of themselves or enjoyment of using the product. Thus, the present research is the first to investigate the influence of anthropomorphized package shapes on consumers’ perceptions of the package, themselves, and the usage experience.

The relationship between a product and a consumer is complex. According to Belk’s (1988) extended-self theory, possessions are considered to be reflections of the self. In the case of anthropomorphized packages, extended-self theory would suggest that the human-like characteristics of the package may be incorporated into the consumer’s identity. Thus, if
consumers desire to possess certain characteristics, perhaps because those characteristics could aid in goal attainment, consumers should prefer packages with shapes associated with the desired characteristics.

My dissertation contains four completed studies examining consumers’ reactions toward anthropomorphized package designs. In my first study, I show that consumers make trait inferences about the typical user of a package based on the package’s shape and that these trait inferences, in turn, influence consumers’ attitudes toward the package. In my second study, I explore product category as a boundary condition. In my third study, I demonstrate the effect of package shape on trait inferences about the self versus others. Finally, in my fourth study, I examine the process by which these effects occur.

The contributions of my dissertation are four-fold. First, despite the important influence of package design on consumers’ purchase decisions, and despite the proliferation of innovative package shapes in the marketplace, little research has investigated the psychological consequences of these package designs. A major contribution of my dissertation is to fill this gap in the literature by exploring how package shape influences consumers’ self-perceptions, attitudes toward the package, and enjoyment of the usage experience. Second, my research specifically investigates anthropomorphized package shapes. Whereas much of the extant research on anthropomorphism has focused on the antecedents and consequences of consumers’ tendency to anthropomorphize, mine is the first research to explore the influence of anthropomorphized packages on those who use them. In doing so, my research also contributes to the literature on meaning transfer by introducing a previous step in the meaning transfer process. That is, before consumers transfer meaning from the package to the self, they must first infer the package’s meaning based on the package’s shape. Finally, whereas most of the research
in the anthropomorphism literature related to goals explores how goals influence consumers’ tendencies to anthropomorphize, my research investigates how goals influence consumers’ responses to anthropomorphized products. These contributions are intended to help further our understanding of consumers’ reactions to the anthropomorphized package designs that are increasingly prevalent in the marketplace.

PRODUCTS AS REFLECTIONS OF THE SELF

There exists a complex relationship between consumers and their products. Consumers tend to view their possessions as representations, or extensions, of themselves and incorporate their possessions into their self-concepts (Belk 1988; McCracken 1987; Rochberg-Halton 1984). Consumers may also imbue products with their own identities, for example, through such means as customization, and then use the products to signal aspects of themselves (Herd 2011).

Consumers often use products strategically to signal characteristics to the self or to others when those characteristics can garner benefits for the consumers (Aaker 1997; Akerlof and Kranton 2000; Berger and Heath 2007; Escalas and Bettman 2005; Herd 2011; Prelec and Bodner 2003; Richins 1994; Sirgy 1982). For example, consumers may use mass-produced products with shared, public meaning to express their uniqueness (Berger and Heath 2007) or affiliations (Escalas and Bettman 2005). Consumers may also select highly aesthetic products as a way to affirm the self (Townsend and Sood 2012), and they may select products that can bolster their self-view if a once confidently held self-view is shaken (e.g., consumers who no longer view themselves as exciting may choose products manufactured by brands with exciting brand personalities; Gao, Wheeler, and Shiv 2009). In these situations, however, the product’s
meaning is already established and publicly understood, and the meaning may be due to some aspect of the product such as brand image that is not inherent to the product’s design.

Meaning Inference and Transfer

Previous research supports a single-step meaning transfer model whereby meaning is transferred from the product to the consumer (McCracken 1989); my research contributes to this prior work by examining an earlier step in the meaning transfer process. Before meaning is transferred from the product to the consumer, the consumer must first infer the product’s (or package’s) meaning. Specifically, I show how meaning can be inferred due to some design element of the package such as shape. Drawing on the anthropomorphism literature, my research establishes a two-step meaning transfer model whereby consumers first give the package meaning by anthropomorphizing it and imbuing it with human-like characteristics and then transfer those human characteristics onto the consumer.

Using Inferred Meaning to Signal Information About the Self

Because consumers often use products to signal their values and characteristics to the self and others (Richins 1994), if consumers want to exhibit certain characteristics, they may be more likely to prefer and choose products with packages that have physical shapes that are associated with their desired characteristics (Gao et al. 2009; Zhang et al. 2006). Through self-signaling (as opposed to other-signaling; Berger and Heath 2007), these desired characteristics then become incorporated into consumers’ self-images (Escalas and Bettman 2005; Herd 2011; Prelec and
Bodner 2003; Richins 1994; Sirgy 1982). One specific category of shape that is particularly self-relevant is the anthropomorphized shape.

**ANTHROPOMORPHIZED PRODUCT AND PACKAGE SHAPES**

Amid the proliferation of innovative product shapes are those that quite obviously resemble the human form and those for which the resemblance is more subtle. Within consumer packaged goods, some design elements that make products appear more human-like include, but are not limited to, “broad shoulders” and the presence of a “waist.” Though standard bottle and can shapes vary widely across categories (e.g., dish soap, water, ketchup, soda, juice, wine, beer, milk), prototypical containers have straight side walls with shoulders that gently taper to a neck. Bottles that deviate from the prototype by bulging outward near the base of the neck (resembling shoulders) or by curving inward near the middle (resembling a waist; e.g., a Coke bottle) look more human-like (Aggarwal and McGill 2007).

Even when products are not typically designed with curves (e.g., soda cans), marketers still create innovative designs with these types of products by elongating or shortening the cylinder and changing its diameter. The resulting shapes are not as obviously human as those with waists; yet consumers are still able to anthropomorphize these products based on their shapes. In the present studies, I examine anthropomorphized containers both with and without “waists” and examine how, regardless of specific shape, when anthropomorphized packages are associated with specific human characteristics, those packages influence consumers’ preferences and self-perceptions.

Anthropomorphism is the attribution of human characteristics, feelings, and intentions to nonhuman objects (Aggarwal and McGill 2007, 2012; Epley, Waytz, and Cacioppo 2007).
Despite its widespread use in marketing, consumer research on anthropomorphism is “extremely limited” (Aggarwal and McGill 2012, 309), and research focusing on the product (as opposed to the brand) is rare (Kim and McGill 2011). The studies that have been done have focused largely on the antecedents and consequences of consumers’ tendencies to anthropomorphize products (Aggarwal and McGill 2007, 2012; Kim and McGill 2011; Landwehr, McGill, and Herrmann 2011). For example, research has shown that consumers show a greater tendency to anthropomorphize when a product’s characteristics are congruent with a human schema (Aggarwal and McGill 2007), when a product’s design contains elements resembling a human face (Kim and McGill 2011; Landwehr et al. 2011), and when consumers are primed to think of a product as human (Aggarwal and McGill 2012). This anthropomorphism, in turn, influences consumers’ inferences about and preferences for the product (Aggarwal and McGill 2007; Kim and McGill 2011; Landwehr et al. 2011).

What the extant research has overlooked is the way in which the anthropomorphized product influences those who own or use it. According to Belk (1988), objects in our possession can “symbolically extend self, as when a uniform or trophy allows us to convince ourselves (and perhaps others) that we can be a different person than we would be without them” (Belk 1988, 145). Similarly, the possession or use of anthropomorphized products may also symbolically extend the consumer’s sense of self, with the product’s human-like traits influencing one’s self-perceptions. Consumers may infer human-like traits that are either mental (e.g., a product’s social power; Kim and McGill 2011) or physical (e.g., a product’s shape; Aggarwal and McGill 2007). While both the mental and physical traits of anthropomorphized products may influence their users’ self-perceptions, the present research focuses only on a product’s human-like physical traits in order to narrow the scope of the work.
THE INFLUENCE OF ANTHROPOMORPHIZED PRODUCTS ON THE CONSUMER

Judgments of anthropomorphized products can differ fundamentally from judgments of their non-anthropomorphized counterparts because, in the case of anthropomorphized products, consumers’ social knowledge, beliefs, and expectations about humans become activated and relevant (Chandler and Schwarz 2009; Kim and McGill 2011). Thus, the anthropomorphized product is less likely to be evaluated on and judged solely by its instrumental properties (Chandler and Schwarz 2009). Rather, consumers are more likely to assess the product by using a social schema, often using themselves as a frame of reference (Aggarwal 2004; Fong and Markus 1982). Kim and McGill (2011), for example, found that consumers’ own senses of power influenced their judgments of the risk associated with playing an anthropomorphized, but not a non-anthropomorphized, slot machine. As the self becomes more central in judgments of anthropomorphized products, it may also become more susceptible to the potential influence of those products. Thus, there may be two ways in which humans and possessions relate. Just as the human schema can be projected onto objects, one’s possessions can play an important role in constructing one’s identity by signaling the owner’s values and characteristics (Belk 1988; Richins 1994). Research on anthropomorphized products has yet to examine this reverse relationship.

To understand how these anthropomorphized shapes might influence consumers’ self-perceptions, it is important to first clarify the forms of anthropomorphism that might operate in this context. Fournier (1998) and Kim and McGill (2011) distinguish between limited and extensive forms of anthropomorphism. In its more limited form, individuals use a human schema to understand and interpret the appearance or behavior of an inanimate object (Kim and McGill 2011). For example, consumers may evaluate products with faces (e.g., cars, clocks, dressers)
based, in part, upon the expressions worn by those products (Aggarwal and McGill 2007; Landwehr et al. 2011). In its more extensive form, individuals may also behave as though that the object is capable of both thinking and feeling (Chandler and Schwarz 2009; Fournier 1998; Kim and McGill 2011) and may change the way in which they interact with the product. Chandler and Schwarz (2009), for example, found that people were less willing to replace an anthropomorphized product as compared with a non-anthropomorphized counterpart.

Human-shaped containers could potentially encourage either form of anthropomorphism; however, because the current research is focused on consumers’ reactions to the appearance of packages that resemble the human form and not on consumers’ attributions of thoughts and feelings to such packages, I examine only the limited form of anthropomorphism and its influence on consumers’ senses-of-self. Specifically, I propose that the package’s shape and the characteristics associated with its shape are considered reflections of the individual’s own characteristics. Much in the same way that consumers choose high design products to enhance their sense of self (Townsend and Sood 2012) or strategically select products to bolster a shaken self-view (Gao et al. 2008), consumers may gravitate toward products whose physical shape is, in their culture, associated with characteristics that reflect their own ideals. Thus, through the limited form of anthropomorphism, the package’s shape can affirm or enhance the consumer’s perceptions of his or her own characteristics.

**CONSUMER GOALS AND ANTHROPOMORPHIZED PRODUCTS**

Consumers should be especially likely to prefer products with characteristics that can be instrumental in achieving a currently active goal. People tend to evaluate objects based on the extent to which the good is instrumental in goal achievement (Campbell 1974; Cosmides and
Tooby 1992; Durante et al. 2011; Lewin 1935; Neuberg et al. 2005). If the product is capable of aiding in goal achievement, it will be valued to a greater degree; if it hinders goal attainment, or if it is unrelated to the active goal, it will be devalued (Brendl, Markman, and Messner 2003; Lewin 1935). Thus, not only should an anthropomorphized bottle be valued by those with activated instrumental goals (e.g., to quench thirst) but also, it should be valued on a more symbolic level by consumers with activated goals (e.g., to demonstrate feminine characteristics) that are associated with the package’s shape (e.g., a curvy female form).

While researchers have examined the relationship between individuals’ goals and anthropomorphized products, their studies have focused almost exclusively on the goals that motivate people to anthropomorphize. Specifically, researchers have shown that people anthropomorphize to alleviate loneliness (Epley et al. 2008a; Epley et al. 2008b), to make sense of unpredictable environments (Waytz et al. 2010), and to see the world as more human-like (Guthrie 1993). The primary measure of interest to researchers in this stream is the degree to which the non-human entity is anthropomorphized. Assuming that the package is already anthropomorphized, however, I propose that activated goals influence consumers’ self-perceptions, preferences for those package designs, and enjoyment of the usage experience.

**SHAPES AND TRAITS**

One reason why active goals may influence consumers’ reactions to anthropomorphized package designs is because different human body shapes are associated with different traits, and consumers may desire to endow themselves with traits that can be instrumental in their goal achievement. Prior research on shape-trait associations in Western White culture, for example, has established that angular shapes are more associated with masculinity, and rounded shapes are
more associated with femininity (Berlyne 1960; Gal and Wilkie 2010). In turn, males and females are associated with different sets of specific traits and social behaviors (Abele 2003). Whereas more “masculine” traits consist of agentic-instrumental traits (e.g., active, decisive), more “feminine” traits consist of communal-expressive traits (e.g., caring, emotional; Abele 2003). Indeed, some research has even gone so far as to show that angular and rounded shapes are associated with traits such as independence and strength versus interdependence and friendliness, respectively (Zhang, Feick, and Price 2006); however, no research has yet looked at the traits that are associated with anthropomorphized products or packages.

Traits Associated with Anthropomorphized Packages

Although prior research has established associations between basic shapes (e.g., angular or curvy) and broad traits (e.g., masculinity or femininity), because people associate the more complex human body shape with specific traits (e.g., competence or warmth), it is possible that consumers will draw more complex trait inferences about anthropomorphized package shapes compared with the inferences made about more simple angular or curvy package designs. Thus, it is important to understand the different trait associations that consumers make with the human body and to understand how those trait associations might influence consumers’ judgments about and preferences for anthropomorphized packages.

Traits Associated With Different Body Shapes
In modern American culture, broad shoulders on a man are thought to signal physical fitness and dominance (Dijkstra and Buunk 2001). Similarly, the ideal female form (in Western White culture) is characterized by a 0.7 waist-to-hip ratio (Hassebrauk 1998; Saad 2004; Saad and Gill 2000; Singh 1993), so hourglass forms should elicit trait inferences associated with attractive women such as social dominance (Dijkstra and Buunk 2001). In addition, prior research has found that in Western White culture, thin women are thought to be more competent and self-centered while heavier women are thought to be less competent but more warm (Bell et al. 1986; Fries and Croyle 1993). Therefore, it is possible that products that resemble a male or a thin or curvy female, will lead consumers to attribute traits to the product that are associated with men or thin or curvy women, respectively. Thus, my research goes beyond simply angular versus rounded shapes and explores specific traits associated with specific body types.

**CONCEPTUAL DEVELOPMENT**

Drawing on the previous discussion, my dissertation seeks to test a series of hypotheses. First, because different human body shapes are associated with different traits, through the process of anthropomorphism, consumers are likely to project the human-like traits associated with different body shapes onto packages that resemble those specific human body forms. For example, while consumers may be more likely to associate packages that resemble a man with masculine agentic traits, consumers may be more likely to associate packages that resemble a woman with feminine communal traits (Abele 2003). More specifically, because prior research has found that thin women are thought to be more competent and self-centered, whereas heavier women are thought to be less competent but more warm (Bell et al. 1986; Fries and Croyle 1993), packages that are tall and skinny, such as some soft drink cans, may be associated with
competence, whereas packages that are wider, such as the more prevalent soft drink cans, may be associated with warmth. A set of skinny and wider soft drink cans was chosen as stimuli to examine competence and warmth, respectively, in study 1. Studies 2 and 3 instead use a curvy bottle of water in order to examine associations with stereotypically feminine communal traits, and study 3 additionally uses a bottle of water with “broad-shoulders” to examine associations with stereotypically masculine agentic traits.

Furthermore, because consumers consider their possessions to be an extension of the self and incorporate their possessions into their self-concepts (Belk 1988; McCracken 1987; Rochberg-Halton 1984), not only should consumers associate the anthropomorphized packages with human-like traits, but also consumers should incorporate those human-like traits into their own identities. For example, if consumers are using a package that resembles a woman (e.g., a curvy bottle of water), they should take on the characteristics associated with the package shape and actually feel as though they possess a greater degree of feminine communal traits.

However, there is one caveat in that not all consumers should incorporate the traits associated with package shapes into their own identities to the same extent. Those products that are considered to be an extension of the self are those that are more self-relevant (Belk 1987). Because different body shapes are relevant to men versus women, and because men and women are associated with different sets of traits and social behaviors (Abele 2003), the degree to which men and women may incorporate the traits associated with package shapes into their own identities may depend on whether the package shape and associated traits are self-relevant.

In the context of the present research, I predict that individuals using packages with certain shapes will incorporate the traits associated with the packages into their own identities rather than use the package shapes as a standards against which to compare themselves because
participants in studies 2 and 3 will actually use the packages, and research has shown that touch increases perceptions of ownership (Chark and Muthukrishnan 2013; Peck and Shu 2009). In turn, consumers view products that they own as extensions of themselves (Belk 1988).

Taken together, these premises lead to the following hypothesis:

H1: Using anthropomorphized package shapes will influence consumers’ self-perceptions in that consumers will incorporate the human-like traits associated with the package shapes into their own identities. However, the degree to which consumers will incorporate the traits into their own identities will depend on whether the package shapes and associated traits are self-relevant as determined by the consumers’ genders. Those consumers for whom the package shapes and traits are gender-relevant will be more likely to incorporate the traits into their own identities; those consumers for whom the shapes and traits are less gender-relevant will be less likely to do so.

In addition to influencing consumers’ self-perceptions, package shape may influence consumers’ attitudes toward the package itself. Prior research has argued that consumers’ attitudes toward a package design depends on the meaning that the design communicates (Bloch 1995; McCracken 1986). Therefore, the meanings that package designs communicate about consumers’ selves, as well as the gender-related meanings associated with the packages (Gal and Wilkie 2010), should influence consumers’ attitudes toward the packages. Formally, I propose the following hypotheses:
H2a: The types of humans that anthropomorphized packages resemble will influence consumers’ attitudes toward the packages; however consumers’ attitudes toward the packages will also depend on gender such that gender-relevant packages will elicit more favorable attitudes.

H2b: The influence of package shape on consumers’ attitudes will be mediated by consumers’ self-perceptions.

Yet the influence of anthropomorphized package designs on consumers goes beyond affecting perceptions of the self and attitudes toward the package. Prior research has argued that because products signal information to the self, products’ designs can influence the quality of the usage experience (Bloch 1995; Herd 2011). Therefore, I propose the following hypotheses:

H3a: The types of humans that anthropomorphized packages resemble will influence consumers’ enjoyment of the usage experience. However, the degree to which consumers enjoy the usage experience because of the package shapes will depend on whether the package shapes and the human-like traits associated with those shapes are self-relevant as determined by the consumers’ genders.

H3b: The influence of package shapes on consumers’ enjoyment of the usage experience will be mediated by consumers’ self-perceptions.
Of course, the meanings that package designs communicate about the consumer do not influence the consumer in the same way in every situation. Rather, consumers’ responses to package designs depend on the setting in which the package is encountered (Bloch 1995). Drawing on research showing that products are valued to the extent to which they are instrumental in goal achievement (Brendl et al. 2003), I expect that package shapes will be preferred to the extent to which the traits that are associated with the package shapes are perceived to be instrumental in achieving goals.

For example, individuals consuming in a public context likely have an active goal to socialize and a sub-goal to demonstrate sociability or interpersonal warmth. Another desired trait, or characteristic, may be social status or social dominance. Because a waist-to-hip ratio of 0.7 is considered to be the ideal female form among the population participating in the present research (Hassebrauk 1998; Saad 2004; Saad and Gill 2000; Singh 1993), and because attractive individuals have been associated with social dominance (Dijkstra and Buunk 2001), women using a bottle that resembles the ideal female form (i.e., an hourglass shape) should incorporate the social prowess associated with attractive women into their own identities, perceive themselves to be more likely to achieve their goals, and enjoy the task of meeting others to a greater extent.

More broadly, by considering the package to be an extension of the self, consumers will incorporate the traits associated with the package shapes into their own identities and perceive themselves to be more or less likely to achieve their goals (e.g., the goal to socialize). In addition, because consumers are more likely to consider self-relevant products to be extensions of the self, consumers’ tendencies to incorporate the traits associated with the package shapes into their own self-images should depend on whether the consumers’ active goals make the
package shape and its associated traits more self-relevant. Specifically, I propose the following hypotheses:

H4a: The extent to which consumers will incorporate the traits associated with package shapes into their own identities will depend not only on gender but also on the degree to which consumers’ active goals make the package shapes and the associated traits self-relevant; the more self-relevant the package shapes and traits are, the more likely consumers will be to incorporate the traits into their own identities.

H4b: Consumers will have more favorable attitudes toward and enjoy using package shapes to a greater degree if those shapes are associated with traits that consumers believe would be instrumental in goal attainment. This effect will depend on what the consumers’ active goals are and the gender-relevance of the traits.

H4c: The effect of the traits associated with the package shapes on consumers’ attitudes toward the packages and enjoyment of the usage experiences will be mediated by the degree to which consumers perceive that the traits will aid in goal-attainment.

The figure on the following page depicts my theoretical model and the hypotheses that I will be testing in the studies that follow (see figure 1).
Figure 1. Theoretical Model and Hypotheses
The goal of study 1a is to test hypotheses 1, 2a, and 2b. Study 1 also starts with a conservative test of my hypotheses by using shapes that subtly resemble the human form.

A recent example highlights the importance of examining consumers’ tendency to associate packages that resemble specific human forms with specific human traits. Pepsi made headlines when it launched a new “skinny” Diet Pepsi can in honor of New York’s Fashion Week. Despite its sleek design, the skinny can was met with much criticism, as brand experts and The National Eating Disorders Association alike feared that the “taller, sassier” can was sending the wrong message to women (Skidmore 2/11/11). Although Pepsi maintained that its innovative design was made to celebrate “beautiful, confident women,” many remained skeptical.

The strong, negative reactions to the product were not a direct result of the can’s shape per se. Rather, the reactions were a by-product of the can’s resemblance to the human form (a skinny woman). The chief concern was that the anthropomorphized can would only serve to reinforce the stereotype that “skinny is better” by emphasizing an extreme ideal. The implication was that the product’s anthropomorphized shape may not only influence consumers’ preferences for the product, it may also influence how consumers feel about themselves. Specifically, critics feared that women would compare themselves with the “ideal” body shape represented in the skinny can. In contrast, my theory would argue that when women use the skinny can, they would incorporate the traits of a skinny woman into their own identity. Because previous research has found that skinny women are associated with greater competence but less warmth (Bell et al.
1986; Fries and Croyle 1993), the aim of study 1 is to show that consumers will associate users of the skinny can with these characteristics.

Method

*Design and Procedure.* Participants were 421 individuals from an online panel who participated in exchange for a small monetary reward. The study was a 2 (shape: skinny vs. regular) x 2 (gender: male vs. female) between-subjects design. Participants first viewed a picture of either the new skinny Diet Pepsi can or the original regular Diet Pepsi can and responded to the set of dependent measures.

Dependent Measures

*Package Attitudes.* Participants rated on five 7-pt. Likert scales the degree to which they found the can to be attractive, appealing, likeable, well-designed, and stylish. The five items loaded on a single dimension and were averaged to create an index of can favorability (\(M = 4.4; \text{range} = 1.0-7.0; \alpha = .96\)). Although these items load onto a single factor, a one-factor model is not sufficient (\(\chi^2(5) = 34.27, p < .01\)). Therefore, the inter-item correlations and item-total correlations were examined, and the item “stylish” was deleted, resulting in an index that fits a one-factor model (\(\chi^2(2) = 3.26, p = .19; M = 4.3; \text{range} = 1.0-7.0; \alpha = .95\)).

*Perceptions of User-Warmth.* Participants rated on three 9-pt. Likert scales the degree to which they believed the typical user of the can to be affectionate, sympathetic, and
compassionate. Because the scale only includes three items, it must load onto a single dimension. Thus, I averaged the items to create an index of user-warmth (\(M = 5.2;\) range = 1.0-1.9; \(\alpha = .78\)).

**Perceptions of User-Competence.** Participants rated on four 9-pt. Likert scales the degree to which they believed the typical user of the can to be insecure, passive, weak, and yielding. The four items loaded onto a single dimension and were averaged and reverse-scored to create an index of user-competence (\(M = 4.3;\) range = 1.0-9.0; \(\alpha = .77\)). Although these items load onto a single factor, a one-factor model is not sufficient (\(\chi^2(2) = 15.02, p < .01\)). Therefore, the inter-item correlations and item-total correlations were examined, and the item “yielding” was deleted, resulting in a three-item index that must load onto a single dimension (\(M = 5.4;\) range = 1.0-9.0; \(\alpha = .78\)).

Results

**Manipulation Check.** A manipulation check confirmed that the skinny can was perceived to resemble a woman significantly more than the regular can (\(M_{\text{skinny}} = 3.5\) vs. \(M_{\text{regular}} = 2.5\); \(F(1,406) = 22.18, p < .0001; \omega^2 = .049\)).

**Package Attitudes.** A two-way between subjects ANOVA with the package attitudes index as the dependent variable revealed a significant interaction between can shape and gender on attitudes toward the package (\(F(1,406) = 4.17, p = .04\)) such that women have more favorable attitudes toward the skinny can versus the regular can (\(M_{\text{skinny}} = 4.8\) vs. \(M_{\text{regular}} = 4.3\); \(F(1,406) = 4.81, p = .03\)), and men show no difference in their attitudes toward the cans (\(F(1,406) = .44, p = \text{n.s.}\)).
Perceptions of User-Warmth. A two-way between subjects ANOVA revealed a significant interaction between can shape and gender on perceptions of user-warmth ($F(1,406) = 9.18, p = .02$) such that women perceive the user of the skinny can to be significantly less warm than the user of the regular can ($M_{\text{skinny}} = 5.0$ vs. $M_{\text{regular}} = 5.4$; $F(1,406) = 4.86, p = .03$), and men show no difference ($F(1,406) = 1.34, p = \text{n.s.}$).
**Figure 3.** The effect of can shape and gender on user-warmth perceptions

*Perceptions of User-Competence.* A two-way between subjects ANOVA with the user-competence index as the dependent variable revealed a significant interaction between can shape and gender on perceptions of user-competence ($F(1,406) = 4.32, p = .04$) such that women perceive the user of the skinny can to be significantly more competent than the user of the regular can ($M_{\text{skinny}} = 5.9$ vs. $M_{\text{regular}} = 5.4$; $F(1,406) = 3.96, p = .04$), and men show no difference ($F(1,406) = .86, p = \text{n.s.}$).
Figure 4. The effect of can shape and gender on user-competence perceptions.

Dual Mediated Moderation. Results of a bootstrapping analysis using the package perceptions, user-competence, and user-warmth indices revealed that both competence (LLCI = .0041, ULCI = .2338) and warmth (LLCI = -.3758, ULCI = -.0262) mediate the Gender x Shape interaction on package preference.
Discussion

Results from study 1a demonstrate that women perceive users of the skinny can to be less warm and more competent than users of the regular can. Moreover, perceptions of warmth and competence mediate women’s tendencies to have more favorable attitudes toward the skinny can. Interestingly, men show no effect on any of the dependent variables, perhaps because shapes that resemble a woman are not self-relevant. Future studies will have to test package shapes that resemble men with male participants. Another concern of study 1a may be that it tests the example of Diet Pepsi, and in real consumer contexts such as this, product category may be naturally confounded with package shape. Soft drink cans bear only a slight resemblance to the human form, so it could be the association between a diet beverage and a skinny woman that is causing individuals to associate the skinny can with a skinny woman and to anthropomorphize the package (subsequently leading to individuals’ inferring of traits). After all, Pepsi intentionally drew the comparison between a skinny super model and the skinny can in its marketing campaign for the new Diet Pepsi can, suggesting that associating the product with a
skinny woman may have been necessary to cause consumers to anthropomorphize the can that otherwise hardly resembles a human. Therefore, the goal of study 1b is to determine whether there is an interaction between product category and package shape on consumers’ tendency to anthropomorphize the package shapes used as stimuli in study 1a.

**STUDY 1B (POST-TEST)**

Although the aim of my dissertation is to examine the consequences of using anthropomorphized packages rather than to investigate the antecedents of anthropomorphism, it is important to understand whether product category interacts with package shape in determining consumers’ tendency to anthropomorphize the package. Such an interaction would highlight when consumers are more likely to anthropomorphize package designs and subsequently make trait inferences about the typical user. The aim of the post-test, therefore, is to examine the relationship between package shape and product category on consumers’ tendency to anthropomorphize package shapes that more subtly resemble the human form. Specifically, I predict that because diet soft drinks activate the concept of a skinny person, specifically a skinny woman, female consumers for whom the package shape and product category are relevant will be more likely to anthropomorphize a skinny versus regular can when the can contains a diet (versus regular calorie or high calorie energy) beverage.

Method

*Design and Procedure.* Participants were 234 individuals from an online panel who participated in exchange for a small monetary reward. The study was a 2 (shape: skinny vs. regular) x 2 (gender: male vs. female) x 3 (product: diet soda, regular soda, sports energy drink)
between-subjects design. Participants were presented with a picture of either a skinny or regular aluminum can without any brand labels or information. Participants simply read that the can contained a diet soda, a regular soda, or a sports energy drink. They then rated the degree to which they thought the can resembled a person and was humanlike.

Dependent Measure

*Resemble Human.* Two items, Humanlike and Resemble Person, were averaged to create an index of the extent to which the can was anthropomorphized \( M = 1.98, \text{ range } = 1.0-8.0, r = .84 \).

Results

*Resemble Human.* The regular soda and sports energy drink categories were used as high-calorie replicates to compare with the low-calorie diet soda category. Planned contrasts revealed that there was no significant difference between the regular soda and sports energy drink conditions in terms of the degree to which they were perceived to resemble a human. Thus, I collapsed across those two conditions for my subsequent analyses. Overall, an omnibus ANOVA revealed a significant 3-way interaction between Gender, Shape, and Product Category on consumers’ tendency to anthropomorphize \( F(2,222) = 3.26, p = .04 \). Specifically, when women (but not men) believed that the cans contained a diet beverage, they perceived the skinny can as resembling a human to a significantly greater degree than they did the regular can \( F(1,222) = 5.14, p = .02 \).
However, I also ran the analyses without collapsing across the regular and sports energy beverage categories, instead testing two 1-df 3-way interactions: one 3-way interaction where Product Category was contrast coded to compare the mean of the diet condition with the average of the means of the regular and the sports energy conditions and one 3-way interaction where Product Category was contrast coded to compare the mean of the regular condition with the mean of the sports energy condition. Such contrast coding (specifically the first set of codes) would allow me to test whether women, versus men, have a greater tendency to anthropomorphize the skinny, versus the regular, can when it contains a diet, versus a regular or a sports energy, beverage. Results from this series of ANOVAs, testing the three-way interaction between Gender, Shape, and Product Category revealed that when Product Category is coded to compare the mean of the diet condition with the average of the mean of the regular condition and the mean of the sports energy drink conditions, there is not a significant 3-way interaction ($F(1,222) = .28, p = \text{n.s.}$); however, when Product Category is coded to compare the mean of the regular condition with the mean of the sports energy condition, the 3-way interaction is significant ($F(1,222) = 4.80, p = .03$).
Figure 6. The effect of can shape and product category on men’s and women’s respective tendencies to anthropomorphize

Discussion

Results from the post-test suggest that, indeed, there is an interaction between product category and package shape on women’s tendency to anthropomorphize. Interestingly, as with study 1a, men did not differentially react to the package shapes. One explanation may be that
women (the population to whom Diet Pepsi is marketed) are subject to a cultural ideal to be skinny, making a can that resembles a skinny women more self-relevant to women than to men.

**STUDY 2**

Although I have proposed that anthropomorphized products can affect the way that consumers feel about themselves, study 1 used a projective technique by asking participants to rate the “typical” product-user. While I believe that projection is an effective way to understand how package shapes might influence consumers’ self-perceptions, there is a chance that consumers really are assessing the typical user and not themselves. Thus, one aim of study 2 is to determine how actually using a package with a given shape influences consumers’ self-perceptions. Study 2 also aims to further test hypotheses 1, 2a, and 2b and to additionally test hypotheses 3a and 3b.

**Method**

*Design and Procedure.* Participants were 115 undergraduates from the University of Colorado at Boulder who participated in this 3 (bottle shape: straight-tall vs. curvy vs. straight-stout) x 2 (gender: female vs. male) between-subjects study for partial course credit. As a cover story, participants were told that the study was about memory for social situations. Participants came to the lab in mixed gender groups averaging 16 people, where each gender comprised roughly 50% of the group.

Upon entering the laboratory, participants were told to read the instructions, which included the cover story that researchers are interested in how memory works in social situations such as speed dating experiences, cocktail parties, bars, and fraternity and sorority parties. While
participants read the instructions, the researcher randomly distributed one of the three bottled waters to each participant. The water was ostensibly used to help imitate drinking beverages in social situations. The three bottle shapes were straight-tall, curvy, and straight-stout (see appendix A). These bottle shapes were pretested in order to ensure that the curvy bottle was anthropomorphized to a greater degree than the other two bottles. Specifically, 39 undergraduates from the University of Colorado at Boulder, who participated in exchange for partial course credit, rated the degree to which each of the three bottles resembled a woman. Results from the pretest confirmed that the curvy bottle was perceived as resembling a woman significantly more so than the straight bottles ($M_{curvy} = 6.74$ vs. $M_{straight-tall} = 3.92$ vs. $M_{straight-stout} = 3.30$, $t(38) = 7.93$, $p < .0001$). All of the labels were removed from the bottles prior to the experiment so that branding did not have an effect. Participants were told that the bottles of water were theirs to open, drink, and keep. I had the participants hold and use the water bottles in order to increase perceptions of ownership (Peck and Shu 2009). Participants were then instructed to go into an adjacent laboratory room.

Participants were told that they would have 10 minutes to talk with and learn about the other participants in the session. They were told to remember as much information about each person as they could and to not bring anything with them into the adjoining room other than their bottle of water. The room was set up to resemble a lounge atmosphere. The regular lights were turned off, and only two dim designer lights were left on. In addition, the tables were covered in battery-powered tea light candles, half of which were in red candleholders, giving the room more realistic lounge atmospherics. After socializing for 10 minutes, participants were brought back to the original laboratory room to complete the packet of dependent measures.
Dependent Measures

*Experience Enjoyment.* Upon returning to the original laboratory room, participants rated their experience in terms of how embarrassing, intimidating, and difficult it was. Because experience enjoyment was measured with only three items, the items must load onto a single dimension. Thus, the items were reverse-scored and averaged to create an index of experience enjoyment ($M = 2.5; \text{range} = 1.0-7.0; \alpha = .89$).

*Package Attitudes.* Participants reported the degree to which they found the bottle to be attractive, appealing, well-designed, and stylish. The four items loaded on a single dimension and were averaged to create an index of bottle attractiveness ($M = 3.8; \text{range} = 1.0-7.0; \alpha = .86$). A Chi-Square test revealed that a one-factor model is sufficient ($X^2(2) = 5.13, p = \text{n.s.}$).

*Perceptions of Self-Warmth.* Participants rated their self-warmth on three 7-point scales, indicating how warm, sociable, and affectionate participants rated themselves. Because ratings of self-warmth were measured with only three items, the items must load onto a single dimension. Thus, the items were averaged to create an index of self-warmth ($M = 5.2; \text{range} = 2.7-7.0; \alpha = .67$).

Results

Because knowing other participants in the session could increase participants’ enjoyment of the usage experience (people would feel more comfortable and enjoy socializing with their
friends) but perhaps weaken the desire to signal traits (because the other participants would already know the target participant), I included knowing others as a covariate in all analyses. Knowing others was measured by asking participants to report the exact number of people in the session whom they already knew.

It should also be noted that not every subject answered every question, resulting in missing data. As a result, the degrees of freedom are not identical in every analysis, as individuals missing responses for the relevant DVs were excluded from the respective analyses.

*Experience Enjoyment.* A two-way between-participants ANOVA was used to test the effect of bottle shape on men’s and women’s enjoyment of the consumption experience. The ANOVA revealed a significant interaction between gender and bottle shape on experience enjoyment \(F(2, 107) = 7.27, p < .001\). Examining men only, a planned comparison of the mean of the curvy bottle condition with the means of the straight-tall and straight-stout bottle conditions combined revealed that men felt significantly less comfortable when using the curvy bottle than when using either the straight-tall bottle or the straight-stout bottle \(M_{\text{curvy}} = 3.31\) vs. \(M_{\text{straight-tall}} = 2.40\) vs. \(M_{\text{straight-stout}} = 1.74; F(1, 107) = 10.98, p < .001\). Conversely, examining women only, a planned comparison of the mean of the curvy bottle condition with the means of the straight-tall and straight-stout bottle conditions combined revealed that women felt significantly more comfortable when using the curvy bottle versus either the straight-tall bottle or the straight-stout bottle \(M_{\text{curvy}} = 2.02\) vs. \(M_{\text{straight-tall}} = 2.70\) vs. \(M_{\text{straight-stout}} = 2.73; F(1, 107) = 3.79, p = .05\).
Figure 7. The effect of product shape and gender on experience enjoyment

**Package Attitudes.** A two-way between-subjects ANOVA was used to test the effect of bottle shape on men’s and women’s attitudes toward the bottles. The ANOVA revealed a significant main effect of bottle shape such that participants had more favorable attitudes toward the curvy bottle versus either the straight-tall bottle or the straight-stout bottle ($M_{curvy} = 4.54$ vs. $M_{straight-tall} = 3.62$ vs. $M_{straight-stout} = 3.25$; $F(2, 107) = 9.46, p < .001$). There was no shape by gender interaction ($F(2, 107) = 1.67, p = \text{n.s.}$).

**Perceptions of Self-Warmth.** A two-way between-subjects ANOVA was used to test the effect of bottle shape on men’s and women’s perceptions of self-warmth. The ANOVA revealed a significant interaction between gender and bottle shape on perceptions of self-warmth ($F(2, 106) = 4.64, p = .01$). Women reported feeling significantly more warm after using the curvy bottle as compared to either the straight-tall bottle or the straight-stout bottle ($M_{curvy} = 5.83$ vs.}
\( M_{\text{straight-tall}} = 5.05 \text{ vs. } M_{\text{straight-stout}} = 5.18; F(1, 106) = 8.17, p < .01 \). There was no difference in perceptions of self-warmth for those women who used the straight-tall bottle and the straight-stout bottle \( (F(1, 106) = .18, p = \text{n.s.}) \). Bottle shape did not significantly influence men’s perceptions of self-warmth.

![Figure 8. The effect of product shape and gender on self-warmth perceptions](image)

Discussion

Results from study 2 show that women (but not men) perceive themselves to be more sociable, warm, and affectionate when using the curvy bottle rather than one of the other two bottles. Women also enjoy the social experience significantly more when using the curvy bottle, whereas men using the curvy bottle enjoy the experience significantly less. I would argue that women enjoy the social experience more when using the curvy bottle because the curvy bottle
resembles an attractive hourglass-shaped woman, and attractive women are associated with having greater social prowess. Thus, women using the curvy bottle may incorporate the trait of social prowess into their own identities and enjoy social experiences to a greater degree than those women not using the curvy bottle. However, study 2 does not include the process measures to distinguish between self and other signaling. To better elucidate the underlying process, study 3 will determine the role of active goals, and specifically, whether it is the extent to which a package shape is associated with traits that can be instrumental in goal achievement that causes consumers to enjoy using that package shape to a greater degree.

Another limitation of study 2, which is also a limitation of study 1a, is that the anthropomorphized stimuli only included a feminine and not a masculine shape. Therefore, the package design was not self-relevant for men, which may explain why men did not make inferences about the self. Study 3 will address this limitation and investigate both masculine and feminine product designs with male and female consumers to try to elicit trait inferences from men.

**STUDY 3**

The aim of study 3 is to address all of the limitations of the previous studies, and particularly those of study 2. Specifically, the main goal of study 3 is to explicitly examine the process underlying the effects found in study 2 by testing hypotheses 4a, 4b, and 4c. In particular, I am interested in the goals to demonstrate warmth (a stereotypically feminine trait) and competence (a stereotypically masculine trait; Abele 2003). Because prior research has found that agentic traits influence career success and communal traits influence family roles (Abele 2003), study 3 takes place in the context of a career networking event and a mixed-gender
party where the goals to demonstrate agentic and communal traits, respectively, are active. In order to demonstrate that these goals were active, I conducted a pretest about which I will report in the method section.

Method

*Design and Procedure.* Participants were 248 undergraduates from the University of Colorado at Boulder who participated in exchange for partial course credit. The study was a 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) x 39 (session) between-subjects design where session may be analyzed as a random effect.

Participants entered the first laboratory room (University of Colorado, Koelbel room 360) in groups of eight. Koelbel 360 was chosen as the initial laboratory room because it has cubicles with dividers so participants were not able to see the bottles that the other participants were using, and participants had privacy while completing the non-interactive parts of the study. Participants were randomly assigned to bottle shape and goal conditions, ensuring that there was one participant per bottle-goal-gender combination. After all participants were seated at their cubicles, they were told that they would be participating in two ostensibly unrelated studies: one that was on imagery and experiences and one that was a water taste test that I was running for one of my colleagues in marketing. Participants were told that in order to have enough time to

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1 Because participants did not interact before completing the key DVs, and because I used the lab with the dividers for the tests, participants probably did not even realize how many people of each gender were present or what other bottles people were using, and it is unlikely that it is necessary to analyze session as a random effect. However, I designed the study so that I have the opportunity to analyze session as a random variable in the future.
drink the water before answering the taste test questions, they had to drink their water throughout the session while they completed the imagery and experience study. Such directions were intended to make sure that participants held and drank from the bottle while completing tasks for which they would want to demonstrate either warmth or competence. Furthermore, participants were told that they would complete the imagery part of the study in the first laboratory room and the experience part of the study in the other laboratory room, and, in order to enhance feelings of ownership, they were casually told that the water was theirs to keep.

Independent Factors

After hearing all of the study instructions, participants began by answering a few short questions that were ostensibly part of the taste test. They then completed the goal manipulation for which they read a short prompt and then wrote about an imagined experience. Specifically, participants in the warmth [competence] condition read the following prompt:

In this study, we are interested in how well you can imagine and visualize different scenarios. Please carefully read the following prompt and then write in as much detail and as vividly as possible what you would imagine such a scenario to be like.

Imagine that it is Friday night [afternoon], and you are getting ready to go to a party [career networking event]. You have been waiting with great anticipation for this party [networking event] all week, and the time has finally come. You know that a lot of people [company employers] whom you would really like to meet will be there, and you want to make a good impression. Maybe you will even get some phone numbers [job leads]. You have picked out what you want to wear, and after you are changed and looking your best, you take a deep breath and walk out your door. Before long, you arrive at the party [networking event]. You walk through the door and see tons of people [employers] you’d love to meet. What do you do?

In the space below, please write in as much detail and as vividly as possible what you would do to make this a really good experience for yourself. Make sure to talk about the specific goals that you have for the party [networking event].
This manipulation was pretested, and a two-way between subjects ANOVA revealed a significant main effect of goal prime such that participants in the warmth [competence] goal condition expressed a greater desire to demonstrate traits associated with warmth [competence] \((F(1, 89) = 22.67, p < .0001)\).

Following the imagery manipulation, participants completed the first set of dependent measures. After participants completed the first set of dependent measures, they went to the other laboratory room (KOBL 370, which had a large, open space) to interact for 5 minutes. Participants were given a vague prompt for interacting, but the expectation was that participants in the demonstrate warmth condition would be primed to think of the interaction period as a party, whereas participants in the demonstrate competence condition would be primed to think of the interaction period as a networking event. Participants were told to only bring their water with them during the interaction part of the study. Following the interaction period, participants completed the remainder of the dependent variables.

It is important to note that I measured two different categories of variables. One category, which I refer to as the focal variables, consists of those measures that I hypothesized to be significantly influenced by the independent factors. The other category, which I refer to as the non-focal variables, consists of those measures that should not be significant for one of two reasons: either to ensure that there is not a generalized effect of package shape on consumers’ self-ratings but rather that the effect is specific to the human-like aspects of the package shape; or to show that the bottles do not differ in ways that might affect self- and bottle-ratings. The following presentation of the dependent variables is organized according to category, however I collected responses to the measures in the order that I believed would present the least bias².

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² The actual order in which participants saw the dependent measures was: Perceptions of Self-Attractiveness, Perceptions of Self-Innovativeness, Perceptions of Self-Competence, Perceptions of Self-Warmth, Imagery
Dependent Measures

*Manipulation Check (Anthropomorphism).* Participants rated on seven 7-pt. Likert scales the degree to which they believed each bottle: is masculine, is feminine, is human-like, resembles a person, resembles a man, resembles a woman, and has a personality.

Control Measures

*Involvement.* Next, participants completed two involvement measures, which asked them to indicate on 7-pt. Likert scales how involved they were in the tasks and how relevant the task seemed to their everyday life.

*Gender Identification.* Next, participants completed a gender-identification scale adapted from Luhtanen and Crocker (1992). Items included “Overall, being a [male/female] has very little to do with how I feel about myself,” “Being a [male/female] is an important reflection of who I am,” “Being a [male/female] is unimportant to my sense of what kind of a person I am,” and “In general, being a [male/female] is an important part of my self-image.”

*Perceptions of Self-Introversion/Extraversion.* Because I am interested in how package shapes influence the enjoyment of interaction experiences, and because participants’ level of
introversion or extraversion could also influence interaction experience enjoyment and swamp the effect of bottle shape, it was necessary to measure introversion/extraversion as a potential covariate. Thus, participants completed an introversion/extraversion scale on which they rated themselves on 14 semantic differential items, assessing introversion/extraversion. Specifically, they indicated the degree to which they believe they are: retiring:sociable, sober:fun-loving, reserved:affectionate, aloof:friendly, inhibited:spontaneous, quiet:talkative, passive:active, loner:joiner, unfeeling:passionate, cold:warm, lonely:not lonely, task-oriented:person-oriented, submissive:dominant, timid:bold.

Demographics. Participants then completed a demographics section, which included gender, age, ethnicity, and relationship status. Participants were also asked which brands of bottled water they normally drink and which brand of bottled water they thought they used for the task, as well as how often they drink bottled water, how often they attend social parties, and how often they attend career networking events (participants completed all demographic questions regardless of condition).

Focal Measures

Predicted Goal Success (percentile). In order to determine how successful participants believed that they would be at achieving their goals to demonstrate warmth or competence during their interactions, participants indicated the percentile in which they believed that their interaction performance would fall.
Perceptions of Self-Competence. Participants completed a self-rating form on which they rated themselves on 10 7-pt. Likert scales assessing the degree to which they believe they are: secure, assertive, confident, dominant, strong, competitive, intelligent, task-oriented, a leader, and ambitious.

Perceptions of Self-Warmth. Participants completed a self-rating form on which they rated themselves on 13 7-pt. Likert scales assessing the degree to which they believe they are: honest, helpful, sociable, warm, popular, affectionate, sympathetic, compassionate, outgoing, person-oriented, friendly, caring, and understanding. The trait items for the warmth and competence indices were adapted from Fiske, Cuddy, and Glick’s (2007) reproduction of Rosenberg’s (1968) two-dimensional configuration of traits that characterize individuals as being warm or competent. The traits also map onto Bem’s (1974) Sex-Role inventory of stereotypically masculine and feminine traits and Abele’s (2003) classification of agentic-instrumental and communal-expressive traits, and they are associated with different body shapes (Singh 1995).

Imagery Experience Enjoyment. Participants then completed a questionnaire assessing their enjoyment of the imagery experience. Participants rated how enjoyable, comfortable, embarrassing, intimidating, difficult, fun and interesting the imagery experience was on seven 7-pt. Likert scales. Participants then rated, on a 5-item semantic differential scale, the degree to which the imagery experience made them feel insecure:confident, passive:dominant, weak:strong, unattractive:attractive, and non-competitive:competitive. Next, participants indicated, on a single-item 7-pt. Likert scale, whether they would participate in the experiment again if given the chance. The participation question was intended to additionally assess experience enjoyment, as the more participants enjoy the experience, the more they should want
to participate in the experiment again in the future. The participation measure was intended to be included in the index of experience enjoyment.

Interaction Experience Enjoyment. Participants completed a questionnaire that assessed interaction experience enjoyment. This questionnaire was nearly identical to the questionnaire assessing imagery experience enjoyment with the exception that it included some additional items. Specifically, participants indicated the total number of different people with whom they spoke during the interaction part of the session, the total number of conversations they initiated, the number of conversations they had with members of the opposite sex, the number of conversations they initiated with members of the opposite sex, and the number of people in the session whom they already knew. They also indicated, on a single-item 7-pt. Likert scale, how dominant they were compared with other members of the same sex.

Package Attitudes. Next, participants completed a bottle rating form on which they rated each bottle on ten 7-pt. Likert scales, assessing the degree to which they believed the bottle was: attractive, appealing, well-designed, stylish, and likeable.

Package Usage Enjoyment. Participants then indicated on three 7-pt. Likert scales the degree to which they would enjoy using each bottle or did enjoy using their assigned bottle, the degree to which they would or did feel comfortable using their assigned bottle, and the degree to which they would be likely to purchase each bottle.
Package Choice. They also indicated which bottle they would have chosen to use had they been given the choice.

Non-Focal Measures

Perceptions of Self-Attractiveness. Participants rated themselves on a single 7-pt. Likert scale, assessing the degree to which they believe they are attractive.

Perceptions of Self-Innovativeness. Participants completed a self-rating form on which they rated themselves on two 7-pt. Likert scales assessing the degree to which they believe they are creative and unique. These two traits were measured in order to determine whether any characteristic of the bottle—such as innovativeness, which is related to the human traits of creativity and uniqueness—transfer to the consumer or whether only traits related to the anthropomorphized aspect of the shape transfer.

Package Innovativeness. Participants also rated each bottle on three 7-pt. Likert scales, assessing the degree to which they believed the bottle was inventive, original, innovative.

Package Functionality. Participants also rated each bottle on two 7-pt. Likert scales, assessing the degree to which they believed the bottle was durable and easy to hold.

Package Volume. In order to be able to control for the functional aspects of the bottle, participants then indicated how much they thought that each bottle held.
Partner Rating Form. Next, participants completed an interaction partner rating form, on which they rated, on a 7-pt. Likert scale, how good each of their interaction partners was at interacting. The partner rating form was intended to help disguise the purpose of the study and was not meant for analysis.

Guess Study Purpose. Finally, participants were asked what they thought was the purpose of the studies.

Results

A number of participants failed to complete the manipulations and/or some of the dependent measures. Please refer to table 1 in appendix B to see which participants were excluded from certain analyses. Differing degrees of freedom across analyses are explained by missing data.

Manipulation Check

Anthropomorphism. The human-like and resemble person items were significantly correlated (r = .61, p < .0001) and were, thus, averaged to create a single general anthropomorphism dependent variable. The anthropomorphism items were measured after the interaction period, so the following analyses control for session. A series of one-way between subjects ANOVAs revealed a significant main effect of bottle shape on the degree to which
participants anthropomorphized the bottles such that the curvy bottle was perceived to be more human-like and resemble a person more than did the broad-shouldered bottle ($M_{\text{curvy}} = 4.14$ vs. $M_{\text{broad-shouldered}} = 2.69$; $F(1,238) = 67.74$, $p < .0001$). Specifically, as intended, the broad-shouldered bottle was perceived as resembling a man significantly more so than the curvy bottle ($M_{\text{broad-shouldered}} = 3.14$ vs. $M_{\text{curvy}} = 2.18$; $F(1,238) = 25.35$, $p < .0001$), and the curvy bottle was perceived as resembling a woman significantly more so than the broad-shouldered bottle ($M_{\text{curvy}} = 4.64$ vs. $M_{\text{broad-shouldered}} = 1.94$; $F(1,238) = 221.78$, $p < .0001$).

Control Measures

**Involvement.** An independent samples t-test revealed that the demonstrate warmth and demonstrate competence goal tasks were equally involving ($M_{\text{warmth}} = 4.40$ vs. $M_{\text{competence}} = 4.45$; $t(239) = -.47$, $p = .64$). Similarly, the number of lines that participants wrote as part of the imagery task did not differ depending on whether participants were in the demonstrate warmth or demonstrate competence goal condition ($M_{\text{warmth}} = 9.23$ vs. $M_{\text{competence}} = 9.24$; $t(239) = -.01$, $p = .99$).

**Package Functionality.** Package functionality will be discussed in the section involving the bottle predictions.

Hypothesis Testing
It is important to note that the indices used as dependent variables in the following analyses were created according to the predictions stated in my dissertation proposal regarding which items would load together. A series of factor analyses, tests of one-factor models, and examinations of the inter-item and item-total correlations revealed that the items that loaded together empirically did not always match what was predicted to result theoretically. The empirical factor structures can be found in appendix C.

It is also important to note that my analyses are organized with respect to the two different categories of variables: the focal variables and the non-focal variables. Again, the focal variables are those that I hypothesized to be significantly influenced by the independent factors. The non-focal variables are those that should not be significant either to ensure that there is not a generalized effect of package shape on consumers’ self-ratings but rather that the effect is specific to the human-like aspects of the package shape; or to show that the bottles do not differ in ways that might affect self- and bottle-ratings.

The following analyses also differ depending on whether the measures were taken before or after the interaction period, as the analyses involving measures taken after the interaction period control for session³.

Focal Variables

*Predicted Goal Success (percentile).* As predicted by hypothesis 4b, in the context of the current study, individuals using a bottle that resembles a woman [man] should expect to perform

³ The following variables were measured following the interaction experience, so any analyses involving them control for session: interaction experience enjoyment, package attitudes, package innovativeness, package functionality, package usage enjoyment, package volume, package choice, the manipulation check of anthropomorphism, and perceptions of self-introversion/extraversion.
better at tasks that require warmth [competence] (a stereotypically feminine [masculine] trait). This should be especially pronounced for men [women], as women [men] may already feel that they are characterized by the feminine [masculine] trait.

To test this prediction, I conducted a 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) ANOVA with predicted interaction performance as the dependent variable. The analysis revealed a marginal 3-way interaction ($F(1,232) = 3.28, p = .07$). Contrary to predictions, follow-up planned contrasts revealed that women with the goal to demonstrate competence believed that they would perform better during the interaction period, relative to their peers, if they were using the curvy rather than the broad-shouldered bottle ($M_{\text{curvy-percentile}} = 63.10$ vs. $M_{\text{bs-percentile}} = 53.46$; $F(1,232) = 4.70, p = .03$). Men did not believe that they would perform differently during the interaction period depending on their goal or bottle shape, and women with the goal to demonstrate warmth did not believe that they would perform differently during the interaction period depending on their bottle shape ($F$’s $< 1.27, p$’s $> .26$).
Perceptions of Self-Competence. The following items were intended to measure participants’ perceptions of their own competence and, thus, were averaged to create an index of self-competence: secure, assertive, confident, dominant, strong, competitive, intelligent, task-oriented, a leader, ambitious ($M = 5.37; SD = .77; \alpha = .85$).

As predicted by hypothesis 4a, in the context of the current study, I expected that individuals using the bottle that resembles a man would rate themselves as being more competent (a stereotypically masculine trait). I expected this finding to be more pronounced among men, as it is a more self-relevant trait, and I expected the finding to be stronger in contexts where competence is relevant (e.g., a career fair setting vs. a social party). In order to test this prediction, I conducted a 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) ANOVA with self-competence as the dependent variable. This analysis did not yield the predicted 3-way
interaction \( F(1,233) = .96, p = .33 \). However, there was a significant main effect of gender such that men rated themselves as being more competent than did women \( (M_{\text{men}} = 5.57 \text{ vs. } M_{\text{women}} = 5.25; F(1,233) = 5.47, p = .02) \), and there was a marginal main effect of bottle shape such that participants using the curvy bottle rated themselves as being marginally more competent than did participants using the broad-shouldered bottle \( (M_{\text{curvy}} = 5.46 \text{ vs. } M_{\text{broad-shouldered}} = 5.27; F(1,233) = 3.21, p = .07) \).

**Perceptions of Self-Warmth.** The following items were intended to measure participants’ perceptions of their own warmth and, thus, were averaged to create an index of self-warmth: honest, helpful, sociable, warm, popular, affectionate, sympathetic, compassionate, outgoing, person-oriented, friendly, caring, understanding \( (M = 5.52; SD = .80; \text{range} = 2.6 – 7.0; \alpha = .90) \).

As predicted by hypothesis 4a, in the context of the current study, I expected that individuals using the bottle that resembles a woman will rate themselves as being more interpersonally warm (a stereotypically feminine trait). I expected this finding to be more pronounced among women, as it is a more self-relevant trait, and I expected the finding to be stronger in contexts where warmth is relevant (e.g., a social party vs. a career fair setting). In order to test this prediction, I ran a 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) ANOVA with self-warmth as the dependent variable. This analysis did not yield the predicted 3-way interaction \( F(1,233) = .01, p = .92 \). There was, however, a significant bottle shape-by-goal interaction \( F(1,233) = 6.83, p = .009 \). Follow-up contrasts showed that those participants with a goal to demonstrate competence rated themselves as being significantly more warm when holding the curvy bottle than when holding the broad-shouldered bottle \( (M_{\text{curvy}} = 5.75 \text{ vs. } M_{\text{broad-shouldered}}) \).
shouldered = 5.33; $F(1,233) = 9.03, p = .003$). Those with the goal to demonstrate warmth did not rate themselves as being differentially warm depending on bottle shape ($F(1,233) = .46, p = .50$). Additionally, there was a significant main effect of gender such that women rated themselves as being significantly more warm than did men ($M_{\text{women}} = 5.76 \text{ vs. } M_{\text{men}} = 5.32; F(1,233) = 19.39, p < .0001$).

![Perceptions of Self-Warmth](image)

Figure 10. The effect of bottle shape and goal on self-warmth perceptions

*Imagery Experience Enjoyment.* The following items were intended to measure participants’ enjoyment of the imagery manipulation experience: enjoyable, comfortable, embarrassing, intimidating, difficult, fun, interesting, and desire to repeat participation. Three items (embarrassing, intimidating, and difficult) were reverse-coded, and all items were averaged to create an index of imagery experience enjoyment ($M = 4.49; SD = .90; \text{range} = 2.25 – 6.75; \alpha = .76$). Given hypothesis 4b, in the present study, I expected that consumers with the goal to demonstrate warmth would prefer using the bottle that resembles a woman, whereas consumers
with the goal to demonstrate competence would prefer using the bottle that resembles a man. In addition, given prior research showing that men publicly reveal preferences for angular shapes while women publicly reveal preferences for curvy shapes (Gal and Wilkie 2010), I further expected this finding to depend on consumer gender. In order to test this prediction, I conducted a 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) ANOVA with imagery experience enjoyment as the dependent variable. This analysis did not yield the predicted 3-way interaction ($F(1,232) = .18, p = .67$).

**Interaction Experience Enjoyment.** The following items were intended to measure participants’ enjoyment of the interaction experience: enjoyable, comfortable, embarrassing, intimidating, difficult, fun, interesting, and desire to repeat participation. Three items (embarrassing, intimidating, and difficult) were reverse-coded, and all items were averaged to create an index of interaction experience enjoyment ($M = 4.93; SD = 1.01; range = 1.25 – 7.00; \alpha = .84$). For the same theoretical reasons and to further test hypothesis 4b, I expected a similar pattern of results for interaction experience enjoyment as I did for imagery experience enjoyment (though I expected the results to be stronger for the interaction experience than for the imagery experience because interacting is a stronger manipulation than imagining). In addition, because it was predicted that knowing other people in the session might affect experience enjoyment (participants are likely more apt to enjoy the experience if they know others in the session), the current analysis also controlled for the number of other people in the session whom participants knew.
A 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) ANOVA with interaction experience enjoyment did not yield the predicted 3-way interaction ($F(1,230) = 1.07, p = .30$). Controlling for the functional aspects of the bottle (perceived durability, ease of holding, and perceived volume) did not make the interaction significant ($F(1,192) = 1.32, p = .25$).

*Package Attitudes.* The following items were intended to measure participants’ attitudes toward the bottles and, thus, were averaged for each bottle to create indices of bottle attitudes: attractive, appealing, well-designed, stylish, and likeable (curvy: $M = 4.44; SD = 1.51$; range = 1.0 – 7.0; $\alpha = .96$; broad-shouldered: $M = 3.74; SD = 1.43$; range = 1.0 – 7.0; $\alpha = .95$). In order to further test hypothesis 4b, I conducted a 2 (bottle rated: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) mixed ANOVA with bottle rated as the repeated measure. This analysis did not yield the predicted 3-way interaction controlling for bottle used ($F(1,222) = .64, p = .42$). Controlling for the functional aspects of the bottle (perceived durability, ease of holding, and perceived volume) did not make the interaction significant ($F(1,196) = .13, p = .72$).

*Package Usage Enjoyment.* Participants rated their enjoyment of the bottles (“How much would you—or did you—enjoy using this bottle of water,” “How comfortable would you be—or were you—using this bottle of water,” and “How likely would you be to purchase this bottle of water”; 1 = not at all; 7 = very much). These items were intended to measure bottle usage enjoyment and, thus, were averaged for each bottle to create indices (curvy: $M = 4.16; SD =$
1.22; range = 1.0 – 7.0; \( \alpha = .83 \); broad-shouldered: \( M = 4.22; SD = 1.25; \) range = 1.0 – 7.0; \( \alpha = .84 \).

In order to further test hypothesis 4b, I conducted a 2 (bottle rated: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) mixed ANOVA with bottle rated as the repeated measure. This analysis did not yield the predicted 3-way interaction controlling for bottle used (\( F(1,215) = 0.00, p = .96 \)). Controlling for the functional aspects of the bottle (perceived durability, ease of holding, and perceived volume) did not make the interaction significant (\( F(1,195) = .98, p = .32 \)).

**Package Choice.** Finally, in order to provide another test of hypothesis 4b, I conducted a 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) logistic regression with bottle choice as the dependent variable. This analysis did not yield the predicted 3-way interaction (\( \chi^2(1) = .007, p = .93 \)). Controlling for the functional aspects of the bottle did not make the interaction significant (\( \chi^2(1) = .54, p = .46 \)).

Non-Focal Variables

**Perceptions of Self-Attractiveness.** In order to ensure that there is not a generalized effect of package shape on consumers’ self-ratings, I had participants rate themselves on traits that are related to the non-human attributes of the bottle shape. One such trait was attractiveness. A 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) ANOVA with self-attractiveness as the
dependent variable revealed a marginal main effect of bottle shape on perceptions of self-attractiveness \( (F(1, 231) = 3.15, p = .07) \). Specifically, those participants using the curvy bottle found themselves to be marginally more attractive than those using the broad-shouldered bottle \( (M_{\text{curvy}} = 5.22 \text{ vs. } M_{\text{broad-shouldered}} = 4.99) \).

*Perceptions of Self-Innovativeness.* The other non-humanlike package attribute for which I expected to find no significant effect was innovativeness. Participants rated how creative and unique they found themselves (1 = does not at all describe me; 7 = describes me a lot). These two items were significantly correlated \( (r = .45, p < .0001) \) and were, thus, averaged to create an index of self-innovativeness \( (M = 5.25; SD = 1.06; \text{range} = 1.5 - 7.0) \). Contrary to predictions, a 2 (bottle shape: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) ANOVA with self-innovativeness as the dependent variable revealed a significant 3-way interaction \( (F(1, 233) = 4.03, p = .04) \). Follow-up planned contrasts revealed that men with the goal to demonstrate warmth found themselves to be significantly more innovative when using the broad-shouldered bottle rather than the curvy bottle \( (M_{\text{broad-shouldered}} = 5.70 \text{ vs. } M_{\text{curvy}} = 5.04; F(1, 233) = 6.68, p = .01) \). Women did not find themselves to be differentially innovative regardless of their goal or bottle shape, and men with the goal to demonstrate competence did not find themselves to be differentially innovative regardless of their bottle shape \( (F^*s < 2.21, p^*'s > .14) \).

There were also a number of aspects of the bottle that I did not want to differ across bottle shape conditions.
**Package Functionality.** Perceptions of bottle durability and easiness to hold were significantly correlated for both the curvy ($r = .30, p = .001$) and the broad-shouldered bottles ($r = .54, p < .0001$) and, thus, were averaged to create indices of bottle functionality. As predicted, a paired samples t-test revealed no significant effect of bottle shape on the index of bottle functionality ($t(228) = -.33, p = .74$). However, contrary to predictions, a paired samples t-test revealed a significant effect of bottle shape on perceived durability such that the broad-shouldered bottle was perceived to be significantly more durable than the curvy bottle ($M_{broad-shouldered} = 4.54$ vs. $M_{curvy} = 4.08; t(226) = -3.98, p < .0001$). A paired samples t-test revealed a significant effect of bottle shape on ease of holding such that the curvy bottle was rated as being easier to hold than the broad-shouldered bottle ($M_{curvy} = 4.81$ vs. $M_{broad-shouldered} = 4.40; t(224) = 2.68, p = .008$). A paired samples t-test revealed no significant difference between bottle shapes in terms of perceived volume ($t(204) = -.68, p = .50$).

**Package Innovativeness.** The following items were intended to measure bottle-innovativeness and, thus, were averaged for each bottle to create indices: inventive, original, and innovative (curvy: $M = 4.56; SD = 1.45; range = 1.0 - 7.0; \alpha = .86$; broad-shouldered: $M = 2.90; SD = 1.27; range = 1.0 - 7.0; \alpha = .93$). As predicted, a 2 (bottle rated: resembles man vs. resembles woman) x 2 (goal: demonstrate warmth vs. demonstrate competence) x 2 (gender: male vs. female) mixed ANOVA with bottle rated as the repeated measure revealed no significant 3-way interaction controlling for bottle used ($F(1,222) = .08, p = .78$). Controlling for the functional aspects of the bottle (perceived durability, ease of holding, and perceived volume) did not make the interaction significant ($F(1,196) = 0.00, p = .98$).
Discussion

Results from study 3 proved inconclusive. Certainly, there is some evidence for the role of active goals in the process underlying the effect of package shape on consumers’ self-perceptions, as goals significantly influenced consumers’ self-ratings of warmth and self-ratings of innovativeness, as well as consumers’ predicted interaction performance. However, the direction of these effects ran counter to predictions. Whereas I expected both men and women (though women to a greater degree) to feel more warm while holding the bottle that resembled a woman (especially in contexts where the goal to demonstrate warmth is active), only those consumers with the goal to demonstrate competence felt more warm using the bottle that resembled a woman. In addition, I did not expect any significant effect of bottle shape, goal, or gender on self-innovativeness. It is not clear why men with the goal to demonstrate warmth would feel more innovative when using the bottle that resembles a man versus the bottle that resembles a woman. Of course, this result could simply be random, but it at least warrants further investigation. Finally, it ran counter to predictions that women with the goal to demonstrate competence believed that they would perform better during the interaction experience if using the bottle that resembles a woman versus the bottle that resembles a man.

One interesting finding is that there was an unexpected, but marginal effect of bottle shape on perceptions of self-attractiveness such that users of the bottle that resembles a woman felt more attractive than users of the bottle that resembles a man. It is possible that consumers who felt more attractive experienced a halo effect and considered themselves to be higher on other positive traits, as well, thereby wiping out any effect of the anthropomorphized aspect of package shape on self-perceptions. This conjecture needs to be considered for future research.
It was surprising that no other predicted results were significant. Because the degree to which consumers consider products or packages to be part of their extended selves depends on the degree to which the products or packages are considered to be self-relevant, and because gender was a key factor by which I determined self-relevance, I also measured the degree to which participants considered their genders to be important aspects of their identities, as gender-relevance can differ even within genders. However, controlling for gender-identification did not yield any additional significant results. One possible reason for the null effects, in general, could be a lack of participant involvement. Table 2 in appendix D shows the analyses controlling for involvement. At least predicted interaction performance goes from being marginal to reaching significance.

**GENERAL DISCUSSION**

In the present research, I show how one element of a product’s design—shape—has significant implications for how the user (self), the product’s aesthetic value, and the usage experience are perceived. This is important, as product packaging plays a critical role in consumers’ purchase decisions (Deng and Kahn 2009; Hoegg, Alba, and Dahl 2010; Orth and Malkewitz 2008), and the design of products is a crucial factor in marketplace success (Bloch 1995; Raghubir and Greenleaf 2006). Specifically, packaging attracts consumers to the product, and it influences the consumption experience well beyond the point of purchase (Deng and Kahn 2009). The results from the current research provide the first evidence that a product’s shape not only influences consumers’ preferences but also, influences self-perceptions when consumers use it. Importantly, consumers’ evaluations of the product and self-perceptions when using it
may depend on how the package’s shape relates to active goals. Specifically, in study 2, I show some evidence that when consumers have an implied goal (e.g., the goal to socialize), they prefer packages with shapes that are associated with traits that can be instrumental in goal achievement (e.g., interpersonal warmth). Moreover, when goal-active consumers actually use the packages, they enjoy the experience more and rate themselves as possessing the traits that can aid in goal achievement. Although study 2 provided preliminary evidence for the role of goals, study 3, which was intended to directly test the role of active goals, proved inconclusive. Therefore, further research is warranted to determine whether the null effect of goals was specific to the present study or whether the theoretical model should be revised.

Theoretical Implications

This work contributes to research on package design, anthropomorphism, goals, and identity signaling. Although some prior literature has looked at package shape in relation to volume (Raghubir and Krishna 1999; Yang and Raghubir 2005), little research has examined consumers’ judgments about and preferences for package shapes. Moreover, although consumers appear to prefer package shapes with certain ratios, such as the golden ratio, in specific contexts (Raghubir and Greenleaf 2006), it is unclear why these preferences exist. I test and find some support for the notion that consumers’ goals may influence their evaluations of a package’s design. Specifically, I show some evidence that evaluations of anthropomorphized packages depend on whether consumers have an active goal (are consuming in a context) that makes the form of the human body and its associated traits more relevant. This finding further contributes to research examining the relationship between goals and anthropomorphism by showing how goals not only influence the degree to which an object is anthropomorphized, but also can
influence evaluations of the anthropomorphized product. Moreover, the current work is the first research to show that, just as consumers’ self-schemas can be projected onto the products that they own (Weiss and Johar, forthcoming), so too can characteristics signaled by the owned product’s shape be projected back onto the consumer. In turn, this has important implications for consumers’ self-evaluations when using the product.

Marketing Implications

Recently, there has been a proliferation of non-standard packaging shapes in the marketplace (Skidmore 2011; Polis 2013). Although these shapes are quite innovative, they may have unintended influences (both positive and negative) on the consumer, and ultimately, on the success of the product. For example, whereas consumers and advocacy groups were concerned about the message that the skinny Pepsi can would send to women about the ideal female form, the current research suggests that product shape is only relevant under certain situations (e.g., when other aspects of the product activate the human schema), and instead of diminishing women’s self-esteem, owning the package can actually be empowering and enhance women’s self-perceptions of competence. In addition, because the current research examines how consumers’ reactions to package shapes may depend on active goals, it has implications for how the product is marketed. For example, a recent print advertisement for a popular vegetable beverage features a tape measure around the curvy “waist” of the package, serving as a strong cue to anthropomorphism and highlighting the health goals that are congruent with the package shape. The present research would suggest that such advertisements should be successful because they reinforce the ability for the product to be instrumental in consumers’ goal achievement, which is already implied by the package design.
Limitations

In addition to a lack of participant involvement and the inconclusive findings from study 3, another limitation of the current research is that I randomly assigned package shapes to participants in studies 2 and 3 rather than allowed participants to choose which packages they wanted to use. I did ask participants to indicate which bottles they would have chosen had they been given a choice, however, participants appeared to exhibit an endowment effect, preferring the bottle to which they were assigned rather than making a choice free from other influences. Because purchase decision is an important consumer variable, it will be necessary for future research to explore actual consumer choice.

Possibilities for Future Work

Because the present research is the first to show how a package’s shape influences consumers’ self-perceptions, it sets the foundation for future work. For example, it would be interesting to explore how the image projected by the shape interacts with the brand’s image. Although the paper examined the example of Diet Pepsi (a product marketed to women; Green 2013), Budweiser (a product marketed to men) has also introduced a curvy (“bow tie”; Polis 2013) shaped can. It is important for managers to understand how the gender stereotypes associated with their brand interact with the image that the shape of the packaging portrays. From a theoretical perspective, it would be interesting to explore individual differences that influence the degree to which individuals make trait inferences about themselves or the typical user based on the package’s shape. A fourth study detailed in appendix E begins to explore
individual differences by examining the influence of the centrality of visual product aesthetics on consumers’ tendency to make trait inferences. Finally, because results from study 3 were inconclusive, more work on the role of active goals is warranted.

Conclusion

Overall, the findings in the current research have important implications for how a package’s shape influences evaluations of the self, the package, and the usage experience. Given the proliferation of innovative packaging designs (particularly those that are anthropomorphized and resemble the curves of a woman’s body), it is important for firms to understand how the package’s designs will influence consumers’ reactions, and ultimately, the firm’s bottom line.
REFERENCES


Deng, Xiaoyan and Barbara E. Kahn (2009), "Is Your Product on the Right Side? The "Location


Polis, Carey (2013), "Budweiser Bow Tie Can to Debut on May 6,"


## Appendix B

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<tr>
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<tr>
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<tr>
<td>09</td>
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<tr>
<td>10</td>
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</tr>
<tr>
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<tr>
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<tr>
<td>15</td>
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<td>17</td>
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<td>Cloudy</td>
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<tr>
<td>18</td>
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<td>Clear</td>
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<tr>
<td>19</td>
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<td>21</td>
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<tr>
<td>22</td>
<td>2023-10-10</td>
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<td>Hiking</td>
<td>Clear</td>
<td>13°C</td>
<td>None</td>
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<tr>
<td>23</td>
<td>2023-11-11</td>
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<td>Hiking</td>
<td>Cloudy</td>
<td>14°C</td>
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</tr>
<tr>
<td>24</td>
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<td>Clear</td>
<td>18°C</td>
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</table>

**Note:** This is a sample table listing locations, activities, and weather conditions for various dates in 2022 and 2023.
Appendix C

Self-Competence
Rotated Factor Pattern

<table>
<thead>
<tr>
<th>Factor</th>
<th>Factor1</th>
<th>Factor2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure</td>
<td>0.7042</td>
<td>0.13238</td>
</tr>
<tr>
<td>Assertive</td>
<td>0.77719</td>
<td>0.14958</td>
</tr>
<tr>
<td>Confident</td>
<td>0.81287</td>
<td>0.16879</td>
</tr>
<tr>
<td>Dominant</td>
<td>0.8051</td>
<td>0.21369</td>
</tr>
<tr>
<td>Strong</td>
<td>0.73035</td>
<td>0.06559</td>
</tr>
<tr>
<td>Competitive</td>
<td>0.49751</td>
<td>0.2977</td>
</tr>
<tr>
<td>Intelligent</td>
<td>0.08444</td>
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<tr>
<td>TaskOriented</td>
<td>0.0606</td>
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</tr>
<tr>
<td>Leader</td>
<td>0.50036</td>
<td>0.48711</td>
</tr>
<tr>
<td>Ambitious</td>
<td>0.35841</td>
<td>0.68302</td>
</tr>
<tr>
<td>Variance Explained by Each Factor</td>
<td>3.57942</td>
<td>2.12226</td>
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Self-Warmth
Rotated Factor Pattern

<table>
<thead>
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<th>Factor</th>
<th>Factor1</th>
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<th>Factor3</th>
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<tr>
<td>Honest</td>
<td>-0.00158</td>
<td>0.09424</td>
<td>0.9017</td>
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<tr>
<td>Helpful</td>
<td>0.10563</td>
<td>0.44964</td>
<td>0.65625</td>
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<td>Sociable</td>
<td>0.867</td>
<td>0.13848</td>
<td>0.08998</td>
</tr>
<tr>
<td>Warm</td>
<td>0.61273</td>
<td>0.32702</td>
<td>0.3899</td>
</tr>
<tr>
<td>Popular</td>
<td>0.79518</td>
<td>0.10413</td>
<td>-0.01475</td>
</tr>
<tr>
<td>Affectionate</td>
<td>0.382</td>
<td>0.67446</td>
<td>0.09112</td>
</tr>
<tr>
<td>Sympathetic</td>
<td>0.14327</td>
<td>0.87036</td>
<td>0.10069</td>
</tr>
<tr>
<td>Compassionate</td>
<td>0.1944</td>
<td>0.83164</td>
<td>0.14359</td>
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<tr>
<td>Outgoing</td>
<td>0.88933</td>
<td>0.16104</td>
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<tr>
<td>PersonOriented</td>
<td>0.8132</td>
<td>0.31304</td>
<td>0.02476</td>
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<tr>
<td>Friendly</td>
<td>0.64597</td>
<td>0.45632</td>
<td>0.1812</td>
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<tr>
<td>Caring</td>
<td>0.351</td>
<td>0.76127</td>
<td>0.15588</td>
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<td>Understanding</td>
<td>0.10314</td>
<td>0.73879</td>
<td>0.21465</td>
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<tr>
<td>Variance Explained by Each Factor</td>
<td>3.978166</td>
<td>3.709566</td>
<td>1.548555</td>
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### Imagery Experience Enjoyment
Rotated Factor Pattern

<table>
<thead>
<tr>
<th>Imagery Experience</th>
<th>Factor1</th>
<th>Factor2</th>
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<tr>
<td>ImEnjoyable</td>
<td>0.83697</td>
<td>0.00812</td>
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<tr>
<td>ImComfortable</td>
<td>0.60078</td>
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</tr>
<tr>
<td>ImEmbarrassingRC</td>
<td>-0.01244</td>
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</tr>
<tr>
<td>ImIntimidatingRC</td>
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<td>ImDifficultRC</td>
<td>0.1217</td>
<td>0.84666</td>
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<tr>
<td>ImFun</td>
<td>0.83813</td>
<td>-0.07856</td>
</tr>
<tr>
<td>ImInteresting</td>
<td>0.83939</td>
<td>-0.13157</td>
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<tr>
<td>ImPartAgain</td>
<td>0.69367</td>
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Variance Explained by Each Factor

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<tr>
<th></th>
<th>Factor1</th>
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<tr>
<td>ImEnjoyable</td>
<td>2.964686</td>
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### Interaction Experience Enjoyment
Rotated Factor Pattern

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<th>Interaction Experience</th>
<th>Factor1</th>
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<tr>
<td>ExEnjoyable</td>
<td>0.88402</td>
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<td>ExComfortable</td>
<td>0.72999</td>
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Variance Explained by Each Factor

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<th>Factor2</th>
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</thead>
<tbody>
<tr>
<td>ExEnjoyable</td>
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### Curvy Attitude
Factor Pattern

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</thead>
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<tr>
<td>Cattractive</td>
<td>0.94942</td>
</tr>
<tr>
<td>Cappealing</td>
<td>0.9432</td>
</tr>
<tr>
<td>CWellDes</td>
<td>0.88066</td>
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<tr>
<td>Cstylish</td>
<td>0.92998</td>
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<tr>
<td>Clikeable</td>
<td>0.90736</td>
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Variance Explained by Each Factor

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</thead>
<tbody>
<tr>
<td>Curvy Attitude</td>
<td>4.25476</td>
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</table>
### Broad-Shouldered Attitude

**Factor Pattern**

| BSattractive  | 0.93526 |
| BAppealing   | 0.95875 |
| BWellDes     | 0.89803 |
| BStylish     | 0.91321 |
| BSlikeable   | 0.89005 |

**Variance Explained by Each Factor**

| Factor   | 4.2265116 |


## Appendix D

### Comparing 3-Way Interaction (Bottle Shape-by-Goal-by-Gender) Results

*With and Without Involvement as a Covariate (* = p < .05)*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Without Involvement</th>
<th>With Involvement</th>
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<tbody>
<tr>
<td>Percentile</td>
<td>$F(1,232) = 3.28, p = .07$</td>
<td><em>$F(1,231) = 4.45, p = .03$</em></td>
</tr>
<tr>
<td></td>
<td>Contrast: Women-competent, curvy vs broad-shouldered</td>
<td>Contrast: Women-competent, curvy vs broad-shouldered</td>
</tr>
<tr>
<td></td>
<td>*$F(1,232) = 4.70, p = .03$</td>
<td><em>$F(1,231) = 5.15, p = .02$</em></td>
</tr>
<tr>
<td>Self-Competent</td>
<td>$F(1,233) = .96, p = .33$</td>
<td>$F(1,232) = 1.51, p = .22$</td>
</tr>
<tr>
<td></td>
<td>$F(1,233) = .01, p = .92$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bottle Shape x Goal:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*$F(1,233) = 6.83, p = .01$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contrast: Competence, curvy vs broad-shouldered</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*$F(1,233) = 9.03, p = .003$</td>
<td></td>
</tr>
<tr>
<td>Self-Warm</td>
<td>$F(1,233) = 6.68, p = .01$</td>
<td>*$F(1,232) = 9.19, p = .003$</td>
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<td>Bottle Shape x Goal:</td>
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</tr>
<tr>
<td></td>
<td>*$F(1,232) = 7.05, p = .008$</td>
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<tr>
<td></td>
<td>Contrast: Competence, curvy vs broad-shouldered</td>
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</tr>
<tr>
<td></td>
<td>*$F(1,232) = 9.03, p = .003$</td>
<td></td>
</tr>
<tr>
<td>Self-Attractive</td>
<td>$F(1,231) = 0.0, p = .99$</td>
<td>$F(1,230) = .04, p = .84$</td>
</tr>
<tr>
<td>Self-Innovative</td>
<td>*$F(1,233) = 4.03, p = .04$</td>
<td>*$F(1,232) = 3.73, p = .05$</td>
</tr>
<tr>
<td></td>
<td>Contrast: Men-warmth, curvy vs broad-shouldered</td>
<td>Contrast: Men-warmth, curvy vs broad-shouldered</td>
</tr>
<tr>
<td></td>
<td>*$F(1,233) = 6.68, p = .01$</td>
<td>*$F(1,232) = 6.39, p = .01$</td>
</tr>
<tr>
<td>Imagery Experience</td>
<td>$F(1,232) = .18, p = .67$</td>
<td>$F(1,231) = .22, p = .64$</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>$F(1,230) = 1.07, p = .30$</td>
<td>$F(1,229) = .34, p = .56$</td>
</tr>
<tr>
<td>Interaction Experience</td>
<td>$F(1,222) = .64, p = .42$</td>
<td>$F(1,221) = .62, p = .43$</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>$F(1,215) = 0.0, p = .96$</td>
<td>$F(1,214) = .01, p = .91$</td>
</tr>
<tr>
<td>Bottle Attitude</td>
<td>$F(1,222) = .08, p = .78$</td>
<td>$F(1,221) = .07, p = .77$</td>
</tr>
<tr>
<td>Bottle Enjoy Use</td>
<td>$F(1,201) = .39, p = .53$</td>
<td>$F(1,200) = .32, p = .57$</td>
</tr>
<tr>
<td>Bottle Choice</td>
<td>$X^2(1) = .007, p = .93$</td>
<td>$X^2(1) = .08, p = .77$</td>
</tr>
<tr>
<td>Bottle Innovative</td>
<td>$F(1,223) = 1.60, p = .21$</td>
<td>$F(1,222) = 1.46, p = .23$</td>
</tr>
<tr>
<td>Bottle Volume</td>
<td>$F(1,222) = .16, p = .69$</td>
<td>$F(1,220) = .16, p = .69$</td>
</tr>
<tr>
<td>Bottle Durable</td>
<td>$F(1,222) = .08, p = .78$</td>
<td>$F(1,221) = .07, p = .77$</td>
</tr>
<tr>
<td>Bottle Easy to Hold</td>
<td>$F(1,222) = .16, p = .69$</td>
<td>$F(1,220) = .16, p = .69$</td>
</tr>
</tbody>
</table>
Appendix E

STUDY 4

The goal of study 4 is to establish the role of aesthetics in consumers’ tendency to make trait inferences about the user of a package. Although previous research has examined the way in which consumers use products to signal something about the self, the meaning attached to the products in this previous work was due to the product’s brand image (Gao et al. 2009) or to customization (Herd 2011). Instead, the present research investigates how meaning is transferred from the product to the consumer when the meaning arises due to the product’s aesthetic qualities, specifically shape. Therefore, if the effect of package design on perceptions of the self, the package, and the usage experience are truly due to shape and consumers’ ability to pick up on subtle resemblances to the human form, the effect should only hold among those consumers for whom visual aesthetics of products are important. Specifically, I propose the following hypothesis:

H5: Individuals for whom visual aesthetics of products are important will be more likely than those for whom visual aesthetics are not important to make trait inferences about product users based on package shape.

Method

Design and Procedures. Participants were 89 women from an online panel who participated in exchange for a small monetary reward. The study was a 2 (shape: angular vs. curvy) x Continuous CVPA (Centrality of Visual Product Aesthetics) between-subjects design.
Participants first viewed either an angular package that resembled a man or a curvy package that resembled a woman. The packages did not have any labels or brand information, and participants were told that the packages contained a household cleanser. Participants were asked to imagine the typical woman using the household cleanser and to rate her on a number of stereotypically masculine or feminine personality trait items (Bem 1974; Deaux and Lewis 1983, 1984). Because people often use their own subjective beliefs to estimate those of others (Irmak, Vallen, and Sen 2010; Krueger 2000), this approach enables consumers to project their own attitudes onto others without editing for social appropriateness (Morrison 2002). Participants then completed the Centrality of Visual Product Aesthetics (CVPA) measure (e.g., “I enjoy seeing displays of products that have superior designs” “Being able to see subtle differences in product designs is one skill that I have developed over time” “When I see a product that has a really great design, I feel a strong urge to buy it”; Bloch, Brunel, and Arnold 2003).

Dependent Measures

*Masculinity.* Participants rated on five 9-pt. Likert scales the degree to which they believed the typical user of the household cleanser to be dominant, a leader, aggressive, dominating, and hotheaded. The five items loaded onto a single dimension and were averaged to create an index of user-masculinity ($M = 4.1$; range = 1.0-9.0; $\alpha = .87$).

*Femininity.* Participants rated on three 9-pt. Likert scales the degree to which they believed the typical user of the household cleanser to be affectionate, sympathetic, and compassionate. The three items must load onto a single dimension and, thus, were averaged to create an index of user-femininity ($M = 5.4$; range = 1.0-9.0; $\alpha = .95$).
Results

*Manipulation Check.* A series of independent samples t-tests revealed that the curvy package ($M_{curvy} = 5.56$) was perceived as resembling a woman significantly more than the angular package ($M_{angular} = 2.34; t(87) = -7.13, p < .0001; \omega^2 = .36$) and that the angular package ($M_{angular} = 2.25$) was perceived as resembling a man marginally more than the curvy package ($M_{curvy} = 1.73, t(87) = 1.77, p = .08; \omega^2 = .02$).

*User-Masculinity.* A linear regression revealed a significant interaction between package shape and score on the CVPA scale on perceptions of user-masculinity ($t(85) = -2.95, p = .004$). To decompose this interaction, I used the Johnson-Neyman technique to identify the range(s) of scores on the CVPA for which the simple effect of package shape was significant. This analysis revealed that there was a significant positive effect of package shape on perceptions of user-masculinity for any CVPA score less than -1.22 ($B_{IN} = .46, SE = .23, p = .05$) and a significant negative effect of package shape on perceptions of user-masculinity for any CVPA score greater than .52 ($B_{IN} = -.31, SE = .16, p = .05$) but no significant effect for CVPA scores in between.

*User-Femininity.* A linear regression revealed a significant interaction between package shape and score on the CVPA scale on perceptions of user-femininity ($t(85) = -2.33, p = .02$). To decompose this interaction, I used the Johnson-Neyman technique to identify the range(s) of scores on the CVPA for which the simple effect of package shape was significant. This analysis revealed that there was a significant positive effect of package shape on perceptions of user-
femininity for any CVPA score less than \(-.40\) \((B_{IN} = .31, SE = .16, p = .05)\) but not for any CVPA score greater than \(-.40\).

Discussion

Results from study 4 are somewhat mixed in terms of showing that only consumers for whom product visual aesthetics are important make trait inferences about package users based on package shape. However, this study lays the foundation for future work on the influence of individual differences on consumers’ tendency to make trait inferences based on a package’s shape.