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ANTHROPOMORPHISM APPEALS: INFLUENCING CONSUMER ATTITUDES  
AND MEMORY THROUGH HUMANLIKE PRESENTATION

by

Phillip Michael Hart

A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

Major: Business Administration

University of Memphis

May 2013

## **Dedication**

This work is dedicated to my family whose love fills my sails and to my colleagues without whose guidance I would still be lost at sea.

## Acknowledgements

I owe many thanks to those whose support made my dissertation possible. Through each stage of my professional development I have been fortunate to have knowledgeable and patient mentors. These mentors and still others have freely given of their time to help me reach my goals.

First and foremost, I must thank Dr. Stafford. When we began working together, I was but a ball of clay. Through your guidance, I have come to shape my identity as a researcher, understand true academic rigor, and finally complete my dissertation. Thank you for each and every lesson and for those yet to come.

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Though we have not had a working relationship for years, I owe Dr. Nichols tremendous thanks. Dr. Nichols, you are a gentleman and a scholar! I had come to think of you as family during the program. You thoughtfully gave me a variety of work to develop me professionally while connecting personally with my trials and successes. You also took time to discuss the many important aspects of academia that are not part of any course.

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## Abstract

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Anthropomorphism Appeals: Influencing Consumer Attitudes and Memory through  
Humanlike Presentation. Major Professor: Dr. Marla Stafford.

Advertisements in which a good or service is portrayed as humanlike in one or more ways (i.e., anthropomorphism appeals) are commonplace, yet scarcely investigated. In this state, managers using anthropomorphism appeals are left to wager promotional budgets without knowledge of the impact these appeals have on viewers or the factors most frequently influencing these appeals. The present study addresses this limitation by evaluating the advertising effectiveness of anthropomorphism appeals and the roles of contextual (product type and product category) and individual (loneliness and product knowledge) factors. Using an online panel service, three experiments evaluated the effectiveness of anthropomorphism appeals at enhancing consumer attitudes, intentions, and recall. MANOVA results suggest that the principal benefit of anthropomorphism appeals relates to enhancing recall of advertising information ( $\eta p^2 = .055, p < .001$ ). Spotlight analysis of the study's moderators revealed this effect on recall was substantially enhanced when subjects were relatively lonely ( $\beta = .706, p = .001$ ) or had relatively low self-assessed product knowledge ( $\beta = .690, p = .001$ ). When the product being advertised was hedonic, anthropomorphism appeals had an additional influence on attitude toward the advertisement ( $\eta p^2 = .013, p = .002$ ). When visual elements were included in the advertisement, the anthropomorphism condition was associated directly

with increased attitude toward the brand ( $\eta\rho^2 = .022, p = .047$ ), directly with attitude toward the advertisement ( $\eta\rho^2 = .059, p = .001$ ) and indirectly with purchase intentions. Critically, the positive attitudinal influence of anthropomorphism appeals on consumer attitudes were reversed when subjects reported relatively high product knowledge. In total, the present study offers a broad, early evaluation of anthropomorphism appeals. Relevant to theorists is evidence of a bridge between psychology and marketing models of anthropomorphism. Of value to marketing practitioners is the early guidance these studies offer in managing anthropomorphism appeals with consideration for design elements, contextual factors, and individual psychographic variables.

## Table of Contents

Chapter	Page
List of Tables	ix
List of Figures	x
1 Introduction	1
Statement of the Problem	5
Research Questions	8
Overall Design	8
Significance of the Study	10
2 Literature Review	12
The Prevalence of Anthropomorphism and Origin of the Concept	12
Perspectives on Anthropomorphism	14
Perceptual and Neurological Transformation	16
Anthropomorphism's Relevance to Marketing	17
Attitude toward the Brand	18
Attitude toward the Advertisement	19
Purchase Intentions	20
Recall	21
Moderation of Anthropomorphism Appeals	23
Product Category	23
Product Type	25
Product Knowledge	26
Loneliness	27
Summary	28
3 Experiment 1	30
Method	30
Pretests	30
Procedure	36
Subjects	36
Measures	37
Analysis	43
Results	44
Discussion	51
4 Experiment 2	54



Method	54
Procedure	54
Pretest	55
Subjects	55
Measures	56
Results	58
Discussion	61
5 Experiment 3	64
Method	64
Procedure	64
Pretest	65
Subjects	66
Measures	66
Results	68
Discussion	73
6 General Discussion	74
Theoretical Implications	75
Managerial Implications	78
Segmentation Strategies	79
Limitations and Future Directions	82
Contribution and Conclusion	84
References	85
Appendices	
A. Approval Letter	95
B. Stimuli	95
Experiment 1 Stimuli	95
Experiment 2 Stimuli	97
Experiment 3 Stimuli	98
C. Summary of Pretests	100

## List of Tables

Table		Page
1.	Standardized and Unstandardized Coefficients for Experiment 1	38
2.	Multivariate Tests for Experiment 1	45
3.	MANOVA Results for Experiment 1	46
4.	Standardized and Unstandardized Coefficients for Experiment 2	57
5.	MANOVA Results for Experiment 2	59
6.	Standardized and Unstandardized Coefficients for Experiment 3	67
7.	Multivariate Tests for Experiment 3	69
8.	MANOVA Results for Experiment 3	70
9.	Summary of Hypothesis Testing of all Three Experiments	74

## List of Figures

Figure		Page
1.	Hypothesized model of anthropomorphism appeals	29
2.	Interactive effects of product category and appeal type on mean attitude toward the advertisement	48
3.	Interactive effects of product knowledge and appeal type on mean advertisement recall	50
4.	Interactive effects of loneliness and appeal type on mean advertisement recall	51
5.	Interactive effects of product knowledge and appeal type on attitudes toward the advertisement	61
6.	Interactive effects of product knowledge and appeal type on mean attitudes toward the advertisement	71
7.	Interactive effects of loneliness and appeal type on mean attitudes toward the advertisement	72

## CHAPTER 1: INTRODUCTION

*It's not what you look at that matters, it's what you see.*

- Henry David Thoreau

Anthropomorphism is the imbuing of nonhuman agents with humanlike characteristics, motivations, intentions, and emotions (Epley, Waytz, & Cacioppo, 2007). Examples include talking to one's pet as if it could understand what one was saying or cursing at one's computer for seeming to defy one's commands. At first glance, anthropomorphism may appear to have little, if any, relevance to marketing managers or researchers. At closer examination, however, anthropomorphism can be seen as a valuable tool to understand and influence consumer thinking.

Anthropomorphism is an inherent human tendency that pervades human judgment (Burghardt, 1997). Anthropomorphic thinking is evolutionary, universal (Mithen & Boyer, 1996), and has been documented around the world for centuries (Guthrie, 1993). Anthropomorphism abounds in the marketplace as well (Kiesler, 2006). Consumers see smiling faces on cars and envision families of products (Aggarwal & McGill, 2007). Owners of *Roomba* vacuums, which have autonomous movement, describe their vacuum in social terms (Forlizzi, 2007). At times, consumers even give their products names. As it is natural and inevitable to make evaluations through one's own experience (Kennedy, 1992), it stands to reason that consumers naturally and inevitably see their world of goods

and services through their human experience. Moreover, this form of consumer reasoning is not without consequences.

Anthropomorphism has been shown in a variety of contexts, such as pets (Downey & Ellis, 2008) and computers (Sundar, 2004), to strengthen bonds to the anthropomorphized entity. In a recent study of car owners, those who were primed to think of their car in social, human terms showed less intention to replace their car than those who thought of their car strictly in objective terms (Chandler & Schwarz, 2010). Similarly, a rental car company has placed names on their cars and believes the named cars are better maintained as a result (Levine, 2009). Interestingly, anthropomorphism has also been shown to affect risk perceptions in the case of slot machines made to have humanlike facial features (Kim & McGill, 2011). Taken together, these findings suggest consumer anthropomorphism (i.e., instances when consumers treat any marketplace entity as humanlike) may transform consumer thinking from a normally objective perspective to a social one.

Anthropomorphism may be thought of as seeing more than is actually there. When consumers inevitably think of their products as human, they attribute many features, such as intelligence and emotion, to the product that are not innate to the product itself. This attribution of human characteristics could potentially increase consumer value perceptions. Probing this possibility, a recent study was conducted on the relationship between unprimed consumer anthropomorphism (i.e., how much the consumer perceived a product as human) and personal value (Hart, Jones, & Royne, 2013). The study, which spanned four products commonly owned by students (laptop,

cell phone, USB drive, and toothbrush), asked subjects to think of each product, one at a time, and to recall the product's purchase price, frequency of use, and method of acquisition. Subject personal value and anthropomorphism were also measured. The sample of 247 was gathered at a major US university and included 149 males and 98 females. With personal value as the dependent variable, a hierarchical linear regression analysis revealed that although marketplace variables (purchase price, frequency of use, and method of acquisition) were considered on the first step, the sole second step variable, anthropomorphism, had a positive and significant influence on personal value across all four product categories. For three products (laptop, cell phone, and USB drive), this influence was significant at  $p < .01$  while for the fourth product, toothbrush, this influence was significant at  $p < .05$ . Interestingly, for the USB drive and toothbrush, marketplace variables had no significant influence on personal value. Overall, these findings suggest that when explaining consumer value perceptions, anthropomorphism can account for individual variance beyond the influence of common marketplace factors.

Consumers are not the only ones responsible for the abundance of anthropomorphism in the marketplace. Marketers commonly prime consumers to anthropomorphize their products. Product designers, for example, occasionally include humanlike features in their products. For instance, *Motorolla's Droid* smart phones have an eye in the center of their display. In studies utilizing cars and cell phones made to appear as having humanlike eyes and a mouth, it was found that priming consumer anthropomorphism with physical features resembling a human could potentially enhance evaluation of the good (Aggarwal & McGill, 2007; Landwehr, McGill, & Herrmann,

2011). In another study about the anthropomorphism of cars, it was found that anthropomorphizing a car can aid consumers in differentiating a series of cars in the same product line (Keaveney, Herrmann, Befurt, & Landwehr, 2012). Aside from physically modifying goods, anthropomorphism of goods is also encouraged through promotions (Delbaere, McQuarrie, & Phillips, 2011). For example, 2011 *Dodge Durango* advertisements explain the truck's two-year absence from the marketplace as time spent developing itself in ways such as "touring Europe" and "working out." The *Durango* spot ends suggesting that, "Durango has done more in two years than most other cars do in their lifetime."

As the anthropomorphism of goods has been shown to influence consumer evaluations both when unprimed (Hart et al., 2013) and primed (Aggarwal & McGill, 2007; Chandler & Schwarz, 2010; Kim & McGill, 2011; Landwehr et al., 2011), there is reason to believe that anthropomorphism appeals will be influential in presentation of services as well. Anthropomorphism appeals may even offer a special advantage to services marketing managers. Applying these appeals to services may lead to an advantage in anthropomorphism's potential not only to improve consumer evaluations of a service, but also to increase the tangibility of a service. Throughout the growth of service marketing research, tangibility has remained the critical, if not central, construct of the stream (Berry & Clark, 1986; Royne-Stafford, Reilly, Grove, & Carlson, 2011; Shostack, 1977; Stafford, 1996; Stafford, Stafford, & Day, 2002; Tarn, 2005; Zeithaml, Parasuraman, & Berry, 1985). To increase the tangibility of a service, Berry and Clark (1986) suggest four communication strategies: association, physical representation,

documentation, and visualization; anthropomorphism can be viewed as belonging to the association strategy (i.e., a strategy to link a service to an external good, person, even, place, or object). Other service advertising research shows that association strategies are an effective means of increasing tangibility which in turn increases advertisement effectiveness (Stafford, 1996). As an association strategy, anthropomorphism appeals are expected to increase the tangibility of a service by associating the service with a human or humanlike entity. For example, *Geico* billboard advertisements feature a savvy gecko lizard with a human personality declaring, "I'm here in [your city] to save you money."

### **Statement of the Problem**

Despite its frequent and varied occurrences, anthropomorphism is often overlooked or confused with other concepts. It has been said that anthropomorphism is “commonly observed, but poorly understood” (Epley et al., 2007, p. 877). Even with anthropomorphism's frequent mention in many scientific fields, the scientific community's understanding of the subject remains limited. In marketing, the paucity of knowledge of anthropomorphism is no different (Brown, 2010; Kiesler, 2006). While consumers naturally anthropomorphize products and marketing practitioners commonly employ anthropomorphism in promotions and product design, empirical research of the subject remains limited.

In recent years, a handful of empirical research efforts have begun to address the anthropomorphism of goods (Aggarwal & McGill, 2007; Chandler & Schwarz, 2010; Delbaere et al., 2011; Hart et al., 2013; Keaveney et al., 2012; Kim & McGill, 2011; Landwehr et al., 2011). This line of research has been promising to marketing



practitioners as anthropomorphism has been shown to influence evaluations of a car or cell phone (Aggarwal & McGill, 2007; Delbaere et al., 2011), categorization of a car line (Keaveney et al., 2012), and intentions to retain a currently owned car (Chandler & Schwarz, 2010). Though demonstrating the potential of anthropomorphism as a marketing tool, this stream of research has remained largely focused on physical goods (e.g., Aggarwal & McGill, 2007; Chandler & Schwarz, 2010; Delbaere et al., 2011; Hart et al., 2013; Keaveney et al., 2012; Kim & McGill, 2011; Landwehr et al., 2011). A single empirical effort from marketing to investigate anthropomorphism of a nonphysical entity was done in the context of risk perception toward a disease presented as humanlike (Kin & McGill, 2011, study 2). However, it is critical to the future success of consumer anthropomorphism research to further demonstrate that anthropomorphism can potentially improve consumer evaluations of any marketplace entity (i.e., goods as well as services), physical or nonphysical, through anthropomorphism appeals.

Service advertising research has long sought effective means to increase the tangibility of services. Within service advertising, anthropomorphism appeals can be categorized as an association strategy to increase tangibility. A content review of anthropomorphic animals in print advertisements reveals that services, particularly compared to durable goods, were found to commonly utilize humanlike, anthropomorphic animals (Spears, Mowen, & Chakraborty, 1996). Nonetheless, the topic has not received any systematic investigation outside of its mention in allegory research (Stern, 1988). In an allegoric appeal, a nonhuman entity is treated as human (i.e., anthropomorphized), but there is also a central theme of moral conflict or moral

overtones (Stern, 1988). Anthropomorphism appeals in which the service is merely depicted as humanlike without the addition of moral themes have not been investigated. Such appeals may offer service marketers a simpler means to increase the tangibility and evaluations of their service. Yet, anthropomorphism appeals involving services are commonplace in practice but rare in empirical investigation.

In addition to the lack of empirical research on humanlike services, marketing's insight into anthropomorphism is limited by the small number of product categories that have been considered. Overall, marketing's exploration of anthropomorphism has focused primarily on the anthropomorphism of cars and/or cell phones (e.g., Aagarwal & McGill, 2007; Chandler & Schwarz, 2010; Keaveney et al., 2012; Landwehr et al., 2011). Without considering product type's potential influence on anthropomorphism, generalizability of previous findings remains narrowed to cars and cell phones.

Finally, despite the development of an antecedent theory of anthropomorphism (Epley, Akalis, Waytz, & Cacioppo, 2008; Epley, Waytz, Akalis, Cacioppo, 2008; Epley et al., 2007; Waytz et al., 2010) and the implicit control it may offer promotional managers of goods and services, marketing researchers have not demonstrated it is applicable in the context of consumer anthropomorphism. A sole effort from marketing to incorporate one of Epley et al.'s (2007) antecedent factors, loneliness (i.e., social motivation to anthropomorphize), was unable to link this factor with a consumer's level of anthropomorphism (Delbaere et al., 2011). Though this finding casts some doubt on the possibility of adapting Epley et al.'s (2007) antecedent theory to consumer

anthropomorphism, there remains the need to validate such effort as well as to address the other antecedent factors that have not been explored.

### **Research Questions**

The present study seeks to address several research questions in pursuit of understanding anthropomorphism appeals. First, do anthropomorphism appeals in which the good is presented as humanlike increase advertisement effectiveness? Second, do anthropomorphism appeals in which a service is presented as humanlike increase advertisement effectiveness? Third, does a consumer's propensity to anthropomorphize a product depend upon the hedonic or utilitarian attitudes consumers hold toward the product? Fourth, does the effectiveness of an anthropomorphism appeal depend on the product type (good or service)? Finally, do individual variables, such as consumer product knowledge or loneliness, moderate the effectiveness of anthropomorphism appeals? These answers will provide an understanding of current and potential use of anthropomorphism in advertising as well as serve as a basis for future research.

### **Overall Design**

To address the present study's questions as to the effectiveness of anthropomorphism appeals, three experiments involving print advertisements were conducted. These experiments sought to quantify the increased advertising effectiveness of anthropomorphism appeals across goods and services. However, a potentially confounding factor is the type of product being advertised. Given the results of previous studies showing that anthropomorphism varied across products (Hart et al., 2013), the present research sought to further explore variance in consumer anthropomorphism

tendencies by varying product stimuli across hedonic and utilitarian characteristics.

Therefore, before conducting the first experiment, a pretest was conducted to identify one hedonic and one utilitarian product category to be used in the subsequent experimental stimuli. Each of the subsequently created advertisements involving goods and services were then pre-tested to establish the anthropomorphic manipulation.

The first experiment has a 2 (anthropomorphism/non-anthropomorphism appeal) x 2 (hedonic/utilitarian product) x 2 (good/service) factor design and utilized text-only print advertisements. These advertisements depicted either a hedonic or utilitarian good or service described as humanlike or in their usual, non-anthropomorphic terms. The second experiment presents subjects with either a series of anthropomorphic or non-anthropomorphic advertisements involving the previously identified hedonic good. In the final experiment, visual elements were combined with text to create print advertisements for a 2 (drawing/photo image) x 2 (anthropomorphism/non-anthropomorphism appeal) factor design. In each of the experiments, individual variables were measured for later evaluation as potentially moderating factors. In particular, self-assessed product knowledge and loneliness were measured under the expectation that they would moderate the impact of an anthropomorphism appeals on advertisement effectiveness. Based on previous findings (Epley, Akalis et al., 2008; Epley, Waytz et al., 2008; Epley et al., 2007; Waytz et al., 2010), decreasing product knowledge and increasing loneliness were expected to strengthen the relationship between anthropomorphism appeals and advertisement effectiveness.

## **Significance of the Study**

Though anthropomorphism has recently received deserved empirical investigation in the context of humanlike goods (Aggarwal & McGill, 2007, Chandler & Schwarz, 2010; Hart et al., 2013; Keveaney et al., 2012; Kim & McGill, 2011; Landwehr et al., 2011), there is little empirical work to guide managers of goods or services in the use of anthropomorphism as a promotional tool (Delbaere et al., 2011). To address this gap, the present research introduces the concept of an anthropomorphism appeal: an appeal in which one or more nonhuman entities is presented as humanlike in one or more ways. The present study offers evidence that anthropomorphism appeals positively influence consumer memory and potentially evaluation of a product as well. In doing so, the current research supports the repositioning of consumer anthropomorphism as a construct of interest to all marketers, rather than only those designing physical goods as previous studies support.

Promotional managers considering anthropomorphism appeals are guided by the present study's evaluation of individual moderating factors (loneliness and product knowledge). These individual factors are shown to play instrumental roles in the relationship of anthropomorphism appeals and advertisement effectiveness. These findings demonstrate that segmentation strategies can be particularly useful when anthropomorphism appeals are deployed. Specifically, it is shown that consumers who are high in loneliness and/or low in product knowledge respond to anthropomorphism appeals with enhanced attitudes, intentions, and memory.

The presently evidenced individual differences in anthropomorphism offer deeper insights into the cognitive mechanism that underlies the phenomenon. Critically, the results pertaining to individual moderating factors establish support for the antecedent theory of anthropomorphism proposed by Epley et al. (2007). Though this theory has been validated in psychology experiments (Epley, Akalis et al., 2008; Epley, Waytz et al, 2008; Waytz et al, 2010), there is reason to believe that such antecedent theory may not hold in the context of advertising. Particularly, one component of this theory, social motivation (i.e., loneliness), was previously found to have a non-significant influence on consumer anthropomorphism (Delbaere et al., 2011). On the contrary, the present research offers support for such antecedent theory across three experiments and does so while being the first series of studies to adapt the complete antecedent theory of anthropomorphism from psychology to the marketing context. This evidenced linkage between marketing and psychology investigations of anthropomorphism serves as key evidence for future marketing research efforts to consider both streams of research.

This chapter provided a brief overview of anthropomorphism appeals. The concept of anthropomorphism was introduced as a potentially valuable tool for promotional managers of goods and services. The context of the current research, its research questions, and overall approach were also discussed. In the next chapter, the concept of anthropomorphism will be developed and focused to the advertising context, after which the current research's theoretical model and hypotheses will be developed.

## **CHAPTER 2: LITERATURE REVIEW**

This chapter will describe anthropomorphism, offer evidence that consumer anthropomorphism is likely to be widespread, and show that anthropomorphizing a product is likely to lead to beneficial outcomes for marketers. The discussion then expands upon anthropomorphism, its theoretical roots, various perspectives on anthropomorphism, neurological aspects, and potential value to marketing managers. Finally, this chapter concludes with a discussion of the contextual and individual factors most likely to moderate anthropomorphism appeals.

### **The Prevalence of Anthropomorphism and Origin of the Concept**

Anthropomorphism is the imbuing of nonhuman agents with humanlike characteristics, motivations, intentions, and emotions (Epley et al., 2007). Put another way, anthropomorphism is attributing characteristics of humanity (e.g., language and symbolism) to nonhuman things, events, or other animals (Guthrie, 1993). In simpler terms, anthropomorphism can be thought of as seeing humanness in the nonhuman world.

Humans can anthropomorphize seemingly anything. They see faces in rocks, clouds, and natural formations (Guthrie, 1993). They love and hate their computers which seem to have attitudes both good and bad. It has been suggested that 99% of pet owners talk to their animals and believe their pets understand to a degree (Katcher, 1981). Even the invisible can be anthropomorphized, as in the case of ghosts (Bering, 2006).

Though anthropomorphism may seem to be a strange form of reasoning, the attributing of mental states to nonhuman entities is inherently comparable to assigning mental states to actual humans (Shilhab, 2002). In other words, it is possible to treat

humans as human or nonhuman, just as it is possible to treat nonhumans as human or nonhuman. Rather than being a rare form of reasoning, treating nonhuman as human is both natural and commonplace (Epley et al., 2007; Guthrie, 1993; Kennedy, 1992; Mithen & Boyer, 1996). Anthropomorphic thinking occurs without intention or deliberation (Burghardt, 1997). To this point, it has long been suggested that anthropomorphism is a necessary tool for humans to understand nonhuman agents (Darwin, 1872).

Anthropomorphism has been discussed by philosophers since the sixth century B.C (Leshner, 1992). The term "anthropomorphism" was first uttered by Xenophanes, who in his worldly travels noted the similarity between the images of local gods and those worshiping them. The gods of Xenophanes' time had been seen in the same light that the worshipers understood themselves. Since the time of Xenophanes, anthropomorphism research has grown into many scientific fields, such as psychology (Epley et al., 2007), social psychology (Kwan & Fiske, 2008), theology (Guthrie, 1993), journalism (Nan, Anghelcev, Myers, Sar, & Faber, 2006), robotics (Hegel, Krach, Kircher, Wrede, & Sagerer, 2008), computer science (Luczak, Roetting, & Schmidt, 2003; Perrson, Laaksolahti, & Lonnqvist, 2002), neurology (Gazzola, Rizzolatti, Wicker & Keysers, 2007; Harris, Todorov, & Fiske, 2005), management (Andersen, 2008), advertising (Aggarwal & McGill, 2007; Choi, Miracle, & Biocca, 2001; Delbaere et al., 2011; Kim & McGill, 2011; Spears et al., 1996), and product design (Keaveney et al., 2012; Landwehr et al., 2011). With research on anthropomorphism coming from a wide



variety of research fields, it is not surprising that there are a wide variety of perspectives on the subject.

### **Perspectives on Anthropomorphism**

By some research accounts, anthropomorphism is thought to be a categorical mistake (Fisher, 1990, 1991). From this perspective, anthropomorphism is the mistaken categorization of a nonhuman entity as human. Animism (i.e., perceiving life in nonliving entities), a similar phenomenon to anthropomorphism, has also been seen as a categorical mistake (Piaget, 1929). These types of categorical errors are seen to be made particularly by children (Piaget, 1929). Children, confused by the boundary between themselves and the world, Piaget (1929) explained, display egocentrism and treat the world as self. As the children age and better understand the differences between self and the world, this categorical error is thought to decline (Piaget, 1929). However, there is strong evidence to suggest that anthropomorphism is not a mere mistake, but rather has an evolutionary relationship to human reasoning (Mithen & Boyer, 1996).

In many instances, anthropomorphism can be seen as informing the individual through transposing the human category with the nonhuman category of the entity in question. It is often the case that rather than being a mistake, anthropomorphism allows for powerful inference making. For example, treating laboratory mice as if they had emotions, as humans do, would in fact engender a more accurate perspective than to assume they do not (Morton, Burghardt, & Smith, 1990). In other cases, what appears to be a categorical error may in fact be a conservative perceptual gamble (Guthrie, 1993). For example, if walking alone one night, it would be better to mistake a garbage can as a

robber than to mistake a robber as a garbage can. What appears to be a categorical mistake (anthropomorphizing the garbage can) is often a safe perceptual bet (Guthrie, 1993). That is, anthropomorphism is the perceptual bet on humanness. Lending further evidence that anthropomorphism is not simply a mistake, is the fact that it continues throughout life (Epley et al., 1997; Guthrie, 1993). Furthermore, it has been argued that it is inevitable for individuals to form evaluations through their own human experience (Kennedy, 1992). In the example from Xenophenes time, entire populations of worshippers used their understanding of their own humanity to inform their understanding of higher powers.

In many fields, anthropomorphism is seen as a potential methodological concern for interpreting the behavior of nonhuman animals (Schilhab, 2002) as well as humans (Kassarjian, 1978; Kennedy, 1992). In this regard, anthropomorphism can be a source of inaccurate inferences with regard to the behaviors observed. For example, treating a primate as human may lead to some inaccurate interpretations of the primate's behavior. Anthropomorphism may even lead to inaccurate inferences when treating humans as human. To the degree that one's own idea of human differs from the reality of the humans we are observing, our interpretations may be inaccurate. For instance, in marketing research it has been suggested that to treat consumers as human in the sense that in each of their decisions they are well reasoned and attitudinally-driven is itself a problematic form of anthropomorphism (Kassarjian, 1978).

In marketing, researchers have only recently begun to think of anthropomorphism as potentially offering opportunities for product managers (Aggarwal & McGill, 2007;

Delbaere et al., 2011; Keaveney et al., 2012; Kim & McGill, 2011; Landwehr et al., 2011) and brand managers (Puzakova, Kwak, & Rocerto, 2009). Rather than seeing anthropomorphism in terms of its categorical accuracy, marketing researchers are investigating anthropomorphism's perceptual influence.

### **Perceptual and Neurological Transformation**

Seeing human in the nonhuman world of products is a transformative experience. Research on the anthropomorphism of goods has found that anthropomorphic thought grounds object cognition in social cognition (Chandler & Schwarz, 2010). In doing so, consumer attention is shifted away from pragmatic considerations to interpersonal ones (Chandler & Schwarz, 2010). Nonetheless, it may be argued that anthropomorphism is simply a form of metaphor. Use of metaphors, particularly human metaphors, is widespread in marketing research and can, at times, be misleading (Davies & Chun, 2003). However, on the neural level, anthropomorphism is not a metaphorical transformation, but a literal one.

Chandler and Schwarz (2010) explain that when thinking about objects and people, there are important differences in the processing of information. These differences are not merely in self-report and behavioral measures (e.g., Aggarwal & McGill 2007; Chartrand, Fitzsimons, & Fitzsimons 2008), but on a neural level as well (e.g., Gazzola et al., 2007; Harris & Fisk, 2008; Harris et al., 2005; Waytz et al., 2010). Gazzola et al. (2007) found that mirror neuron systems, which are normally thought to activate only when observing other humans, engaged when subjects watched anthropomorphized agents move. Furthermore, when individuals make dispositional

attributions about another human, there is activation in the medial prefrontal cortex and superior temporal sulcus (Harris et al., 2005). Similar neural network activation was observed when subjects were anthropomorphizing objects (Harris & Fiske, 2008). In a study involving gadgets, anthropomorphizing the gadgets activated similar neural correlates as when mentalizing humans (Waytz et al., 2010). These findings suggest that anthropomorphism, aside from possible perceptual influence, causes changes in neural patterns as well. These changes in neural patterns may thus offer marketers a uniquely transformative opportunity to influence consumer thinking beyond mere metaphor.

### **Anthropomorphism's Relevance to Marketing**

While recent studies on the anthropomorphism of goods have shown the phenomena to influence consumer evaluations of the good (Aggarwal & McGill, 2007; Hart et al., 2013; Landwehr et al., 2011), intentions to retain it (Chandler & Schwarz, 2010), and evaluations of the related brand (Delbaere et al., 2011), questions remain regarding whether an anthropomorphism appeal has value to advertisers of goods and services alike.

To establish the value of anthropomorphism appeals, the present research will consider advertising effectiveness both in its longstanding attitudinal and behavioral conceptualization (attitude toward the advertisement, attitude toward the brand, and purchase intentions; Lutz, 1975) as well as its cognitive conceptualization (i.e., recall; Brasel & Gips, 2008; Ratneshwar & Chaiken, 1991; Wakolbinger, Denk, & Oberecker, 2009; Yaveroglu & Donthu, 2008). For more than three decades, attitude toward the brand, attitude toward the advertisement, and purchase intention have been considered

principal outcomes of interest to marketers (e.g., Beerli & Santana, 1999; Chang, 2009; Lutz, 1975; Spears & Singh, 2004). Given the dearth of advertising research that has utilized these outcomes, there is value in the present research also utilizing these outcomes for comparative purposes. However, there is concern related to the overwhelming amount of promotional stimuli that consumers come into contact with (Wu & Newell, 2003). The cognitive tasks of recognizing, recalling, and comprehending an advertisement is made more difficult by the sheer number of promotional messages in today's marketplace (Wu & Newell, 2003). As a result, many advertising studies include exposure-based outcome measurements, such as of recall (e.g., Wakobinger et al., 2009), brand recognition (e.g., Brasel & Gips, 2008; Drèze & Hussherr, 2003), and advertisement comprehension (e.g., Ratneshwar & Chaiken, 1991).

In addition to measuring advertisement effectiveness in terms of attitude (attitude toward the brand and attitude toward the advertisement) and intended behavior (purchase intention), the present study will also assess the potential ability of anthropomorphism appeals to increase exposure-based measures of advertisement effectiveness by utilizing a distraction task and subsequent recall task. The proceeding sections will address each of advertising effectiveness measurements and their related hypotheses.

### **Attitude toward the Brand**

Attitude toward the brand is conceptualized as a relatively enduring, unidimensional summary evaluation of the brand that presumably energizes behavior (Spears & Singh, 2004). The present research proposes that anthropomorphism appeals enhance a consumer's attitude toward the brand. Delbaere et al. (2011) found that

advertisements in which a good was presented as humanlike, compared to advertisements without such human presentation, resulted in increased brand personality perceptions and liking of the advertised good. Delbaere et al., (2011) reason that when an advertisement personifies a good (i.e., portray it as humanlike), the humanlike presentation acts similar to a spokesperson by increasing the emotional connection between the consumer and the brand (Callcott & Phillips, 1996; Phillips, 1996). Similarly, advertisements with animated spokescharacters, a form of anthropomorphism appeal, have been shown to increase the effectiveness of hedonic product ads (Stafford et al., 2002). It is equally expected that consumers, when exposed to any anthropomorphism appeal in which a good, brand, or service is presented as humanlike, will have improved attitudes toward the brand as a result of an increased emotional connection with the brand.

H<sub>1</sub>: Anthropomorphism appeals will be associated with higher levels of attitude toward the brand than non-anthropomorphism appeals.

### **Attitude toward the Advertisement**

Attitude toward the advertisement is conceptualized as a consumer's favorable or unfavorable evaluation of the advertisement (Spears & Singh, 2004). This outcome has been shown to be of influence on consumer attitude toward the brand, both directly and indirectly (Brown & Stayman, 1992; McKenzie, Lutz, & Belch, 1986). Within the context of anthropomorphism appeals, it is expected that humanlike presentations of marketplace entities will lead to improved attitudes toward the advertisement.

Anthropomorphism researchers have frequently suggested that human treatment is often applied to a nonhuman entity in an effort to better understand the entity (Epley et

al., 1997; Guthrie, 1993; Kennedy, 1992). Seeing human may afford consumers an easier means to process a stimulus. Such preference for easy stimulus processing, or processing fluency (Schwarz et al., 1991), has been shown to be influential on an individual's preferences (Bornstein & D'Agostino, 1992; Zajonc, 1968), evaluations (Alter & Oppenheimer, 2008) and attitude toward the advertisement (Labroo, Dhar, & Schwartz, 2007, Lee & Labroo 2004). In presenting a good or service as human, anthropomorphism appeals offer consumers the opportunity to increase processing fluency by interpreting a stimulus within their most familiar framework: their own humanity (Delbaere et al., 2011). Furthermore, Schwarz et al. (1991) find that processing fluency influences judgment independently of the accompanying content. In other words, the opportunity to improve consumer evaluations through processing fluency could have broad generalizability. Likewise, Schwarz (2004) suggests that any means of increasing processing fluency (e.g., anthropomorphism appeal) should have a similar effect upon an individual's judgment. The processing fluency afforded by an anthropomorphism appeal is thus expected to improve consumer attitude toward the advertisement.

H<sub>2</sub>: Anthropomorphism appeals will be associated with higher levels of attitude toward the advertisement than non-anthropomorphism appeals.

### **Purchase Intentions**

Purchase intentions are conceptualized as an individual's conscious plan to make an effort to purchase a product (Spears & Singh, 2004). Purchase intentions are relevant to advertisers because of consumer reasoned action (Ajzen & Fishbein, 1975), which holds that consumer desires, attitudes, and intentions are prior mental states to actions,

such as purchasing a product. In this instance, anthropomorphism appeals are expected to improve a consumer's evaluation of the product, brand, and advertisement, thus increasing the behavioral intention to acquire the product. Previous marketing studies would similarly anticipate an increase in intention to purchase a product as attitudes toward the brand and advertisement improve (Bagozzi & Warshaw, 1990; Bagozzi & Yi, 1988). In accordance with these studies, the present research hypothesizes that anthropomorphism appeals will increase purchase intentions through its indirect effects on attitudes toward the brand and advertisement.

H<sub>3</sub>: Compared to non-anthropomorphism appeals, anthropomorphism appeals will be associated with higher purchase intentions as a result of attitudes toward the brand and advertisement.

### **Recall**

This research also considers advertisement effectiveness in cognitive terms: recall. Recall was introduced in the 1930s (du Plessis, 1994) and continues to be one of the most commonly captured cognitive outcomes in marketing research (Lardinoit & Derbaix, 2001; Singh, Rothschild, & Churchill, 1988; Wakobinger et al., 2009; Wu & Newell, 2003). It is anticipated that anthropomorphism appeals will increase recall of advertisement content.

Recall measures consumer awareness of an advertisement by prompting them for feedback on their memory of the advertisement (du Plessis, 1994). Recall is a form of declarative memory (Haist, Shimamura & Squire, 1992) that involves a subject describing a stimulus which is not present (Singh et al., 1988). As opposed to techniques



to directly access a memory, such as recognition, recall approaches the memory indirectly (du Plessis, 1994). Recall is seen as a two-stage process involving retrieval and discrimination of a memory (Lardinoit & Derbaix, 2001). Alternatively, recognition involves only the discrimination of a stimulus (Lardinoit & Derbaix, 2001). In terms of aided/unaided-recall, recall is equated to unaided-recall while recognition is equated to aided-recall (Park & Hastak, 1994).

In a study on the effects of anthropomorphism on word learning, it was found that among three treatments (anthropomorphic, illustration, and no-picture), anthropomorphism lead to enhanced learning and recall of words (Blanchard & McNinch, 1984). As it has been demonstrated that the mere presence of others is physiologically arousing (Zajonc 1965), so too may be the perception of humanness is arousing. Moreover, anthropomorphizing may be seen as a form of elaboration, which offers additional pathways for recalling a message (Anderson, 1995). As there is evidence that the mere act of anthropomorphism is neurologically stimulating (Gazzola et al., 2007) and that more neural activation leads to improved memory for a stimulus (Kapur et al., 1994), there is reason to believe that consumers will have more recall for related promotional messages when they are engaged in anthropomorphism. Essentially, when consumers view an advertisement and interpret a product as human, they automatically elicit more neural activity than they would when interpreting the product in their usual fashion. This increased neural activity is expected to in turn foster improved recall for the advertisement.

H<sub>4</sub>: Anthropomorphism appeals will be associated with higher levels of advertisement recall than non-anthropomorphism appeals.

### **Moderation of Anthropomorphism Appeals**

The present research takes a contingency approach to investigating anthropomorphism appeals. The contingency approach involves emphasizing the influence of context on the performance of variables (Belk, 1975; Stafford et al., 2002). From this perspective, it is anticipated that the impact of anthropomorphism appeals will be moderated by two contextual factors, product category (hedonic/utilitarian) and product type (good/service). In addition to contextual factors, individual factors are also expected to encourage anthropomorphism (Epley et al., 2007). Two individual factors, product knowledge and loneliness will be assessed as moderators of the anthropomorphism appeal process. The next four sections will offer evidence for each of these moderators as having a likely role in anthropomorphism appeals.

#### **Product Category**

Given the results from previous studies, anthropomorphism's influence on advertising outcomes could be expected to vary by product. One way of categorizing products is in terms of the benefit that consumers seek. This categorization suggests consumers seek utilitarian and/or value-expressive benefits (Holbrook, 1986; Woods, 1960). Value-expressive products, similarly referred to as hedonic products (e.g., Stafford et al., 2002), are products that primarily provide the consumer with socioemotional benefits (Stafford et al., 2002). Utilitarian products are those that primarily provide the consumer with functional or performance benefits (Stafford et

al.2002). Research on the effectiveness of metaphors in advertising has found that the influence of a metaphoric presentation on consumer attitudes varies across product categories (hedonic and utilitarian) (Ang, 2002). Additionally, the impact of metaphoric images on brand personality perceptions has been shown to vary by product category (Ang & Lim, 2006). While anthropomorphism appeals represent a subset of metaphoric appeals (i.e., the metaphor that something is a human), there is a similar expectation that product category will play a role in moderating the overall influence of such an appeal.

Product category (utilitarian and hedonic) has been repeatedly shown to influence the strength of a variety of advertising appeals (e.g., Day & Stafford, 1997; Chaudhuri, Aboulnasr, & Ligas, 2010; Geuens, De Pelsmacker, & Fasseur, 2011; Holbrook & Lehmann, 1980; Johar & Sirgy, 1991; Stafford et al., 2002). Among these efforts, most relevant to anthropomorphism appeals is the finding that the effectiveness of a service appeal with an animated spokesperson is dependent upon the product category (Stafford et al., 2002). Specifically, the influence of service advertisements with an anthropomorphic character was stronger for hedonic products than for utilitarian ones. It was reasoned that animated spokespersons led to more source credibility and improved attitudes when the service being promoted had primarily fun, enjoyable or exciting benefits (Stafford et al., 2002). The present research similarly expects the influence of an anthropomorphism appeal to be higher for hedonic services than utilitarian ones, but extends this expectation to hedonic goods as well.

H<sub>5</sub>: Anthropomorphism appeals involving hedonic products will be associated with higher levels of advertising effectiveness compared to those involving utilitarian products.

### **Product Type**

This research also investigates goods and services. Just as service marketing research has long argued for the relevance of (in)tangibility when managing a product (eg., Shostack, 1977), so too does the present research expect that there will be differences in the magnitude of an anthropomorphism appeal's influence based upon whether or not the anthropomorphized entity is physically tangible (goods) or non-physical (services). It is expected that anthropomorphism appeals will be of greater influence when the entity being portrayed as human is a nonphysical entity. This expectation stems from findings suggesting that increasing tangibility of services has been shown to improve consumer attitudes, recall, and in some circumstances, intentions to patronize the service (Stafford, 1996). As the physicality of goods already offers consumers tangibility, it is expected that anthropomorphism appeals in which a good is presented as humanlike will offer a relatively smaller advantage compared to anthropomorphic presentations of services. Essentially, anthropomorphizing any entity (good or service) may have its consequences, but the anthropomorphism of a good does not afford a perceptual transformation from intangible to tangible. As this relative perceptual transformation could be expected to be greater for intangible entities (services) compared to tangibles entities (goods), so too is the strength of anthropomorphism appeals expected to be greater for intangible products.

H<sub>6</sub>: Anthropomorphism appeals involving services will be associated with higher levels of advertising effectiveness compared to those involving goods.

### **Product Knowledge**

One of the motivational factors driving a consumer to anthropomorphism is effectance motivation (Epley et al., 2007). This factor describes the desire to be more effective in our interactions with our environment. As effectance motivation increases, so does an individual's tendency to anthropomorphize (Epley et al., 2007; Epley, Waytz, et al., 2008; Waytz et al., 2010). Effectance motivation encapsulates the cognitive value in anthropomorphism. As Darwin (1872) noted, anthropomorphism is a tool for understanding. If we desire more control or see control as more relevant to our goals, anthropomorphism becomes an increasingly valuable tool to place the stimulus within the familiar cognitive framework of humanity (Waytz et al., 2010).

In this understanding of the nonhuman as human, individuals are able to engage in inductive inference, a process of applying human schema to a nonhuman entity in order to make inferences about an entity (Epley et al., 2007). In the consumer context, individuals anthropomorphize to better understand products. However it has been suggested that animism and anthropomorphism decline with age because individuals acquire more accurate mental models of the world (Piaget, 1929). For consumers, the inferential value of marketplace anthropomorphism should be limited by the amount of preexisting, relevant knowledge the individual has about the products in question. Put another way, consumers could be expected to make fewer anthropomorphism-derived inferences the more knowledge they have of the product category, as such inferences

would not be necessary when the to-be-inferred understanding is already possessed.

Conversely, it is expected that anthropomorphism appeals will offer additional effectiveness incentives for consumers with less product knowledge.

H<sub>7</sub>: As consumer product knowledge (decreases) increases, anthropomorphism appeals will be associated with (higher) lower levels of advertising effectiveness.

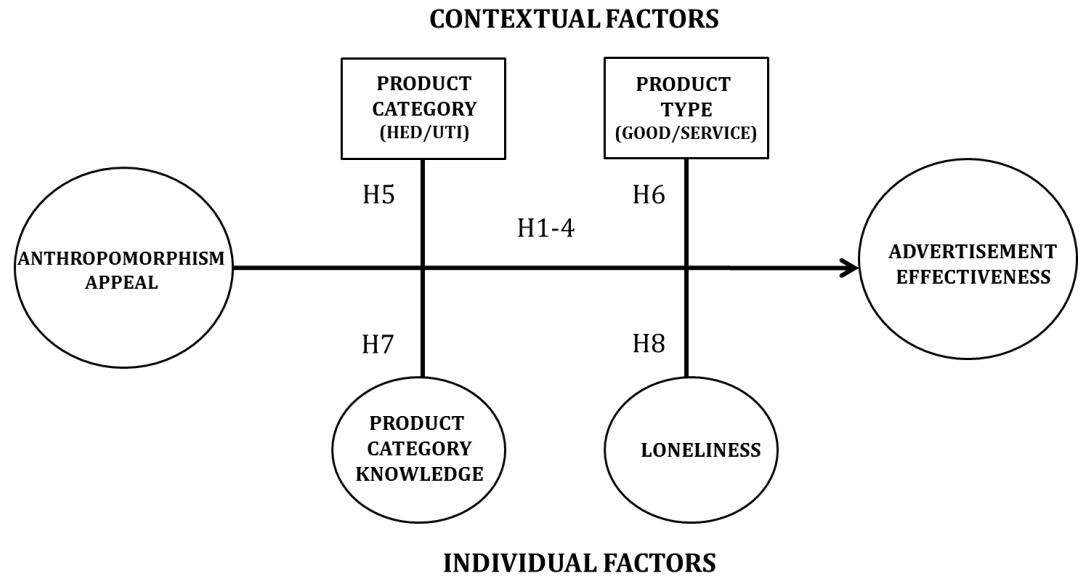
### **Loneliness**

Social motivation for anthropomorphism comes from a desired feeling of connectedness (Epley et al., 2007). At times, individuals engage in anthropomorphism because of the social satisfaction it brings (Epley et al., 2007). For example, the feeling of loneliness is associated with increased anthropomorphism (Epley, Waytz, et al., 2008). When individuals are lonely, treating something as human gives them a feeling of social contact (Epley, Akalis, et al., 2008). When consumers are socially motivated, treating products as humanlike may satisfy them. Related to this are the findings that individual extraversion also leads to increased anthropomorphism (Luczak et al., 2003). So much as loneliness and extraversion lead to more desired social contact, anthropomorphism can be seen as creating human-contact out of the nonhuman world. For these reasons, anthropomorphism appeals are expected to offer an added incentive to socially motivated consumers to treat a product as human. In this way, anthropomorphism appeals offer more to socially motivated consumers and are therefore expected to be associated with a higher increase in advertising effectiveness.

H<sub>8</sub>: As consumer loneliness (decreases) increases, anthropomorphism appeals will be associated with (lower) higher levels of advertising effectiveness.

## **Summary**

This chapter further developed the concept of anthropomorphism while offering evidence that consumer anthropomorphism is widespread in the marketplace. Discussion of recent marketing research on the anthropomorphism of goods revealed that while anthropomorphism has been demonstrated to influence consumer thought, it has not received due attention from service researchers. Addressing this limitation, the concept of an anthropomorphism appeal was introduced as a likely tool to increase the advertising effectiveness of goods and services. Offering insight to promotional managers, the most likely contextual and individual factors influencing the impact anthropomorphism appeals were discussed. Finally, supporting evidence from marketing and psychology was offered for the study's hypothesized model (Figure 1). Each of the next three chapters will report one of the three experiments' method, results, and discussion. An overall conclusion follows in the last chapter.



*Figure 1.* Hypothesized model of anthropomorphism appeals



## **CHAPTER 3: EXPERIMENT 1**

The first experiment involved text-only advertisements and evaluated of all eight of the study's hypotheses. Written permission to conduct this experiment and the remaining two experiments were obtained from the Institutional Review Board. This chapter presents the method, results, and discussion.

### **Method**

The first experiment utilized a 2 x 2 x 2 factor (service/good by anthropomorphism/non-anthropomorphism appeal by hedonic/utilitarian product), between subjects design in which a good or service was presented as humanlike in the anthropomorphism appeal condition. The following sections present the pretests, procedure, subjects, measurements, and analyses related to the first experiment. Because the first experiment involved the manipulation of three latent variables (product category, product type, and appeal type), pretests were conducted to evaluate the manipulations.

### **Pretests**

To identify and develop the advertisements for the first experiment, a series of three pretests were required. The first pretest serves to determine which product will represent the hedonic and utilitarian product categories. The second pretest determines whether good/service products of each product category are perceived as hedonic and utilitarian in the same way as their parent category. A third pretest acts as a manipulation check of the anthropomorphism appeal condition. A description of each pretest is provided below.

**Pretest of product category.** The first pretest determined which products to utilize in the experimental ads. This pretest measured the hedonic and utilitarian attitudes toward a series of ten products (automobile, computer, telecommunication, storage, cleaning, alcohol, wedding, photography, massage, gaming). Subjects were given the name of one of ten products. After viewing the product name, subjects responded to a number of attitudinal items intended to measure the hedonic and utilitarian attitudes of the subject toward the product. These attitudes were measured using the HED/UTI scale developed by Voss, Spangenberg, and Grohmann (2003). The HED/UTI scale is frequently used to measure consumer attitudes toward a product category (e.g., Hoelzl, Pollai, & Kastner, 2011; Okada, 2005; Ravindr, Raghunathan, & Mahajan, 2008). The HED/UTI scale (Voss et al., 2003) has ten semantic differential items that reflect two unidimensional consumer attitudes toward the product. Five of the items refer to the hedonic dimension of a consumer's product attitude and five of the items refer to the utilitarian dimension of consumer's product attitude. The five items measuring the utilitarian dimension are "effective/ineffective," "helpful/unhelpful," "functional/not functional," "necessary/unnecessary," and "practical/impractical" (Voss et al., 2003). The five items measuring the hedonic dimension are "not fun/fun," "dull/exciting," "not delightful/delightful," "not thrilling/thrilling," and "enjoyable/unenjoyable" (Voss et al., 2003). Reliability analyses of the HED/UTI scale showed acceptable to excellent results (George & Mallery, 2003) with HED items having  $\alpha = .75$  and UTI items having  $\alpha = .93$ .

The sample for the first pretest and all data collections was recruited through *Amazon.com's Mechanical Turk* (AMT). AMT is an online micro-task market, where

anyone can post a simple task to be completed for a specified amount of money or can be paid to complete a task. Numerous studies have shown that workers on AMT provide reliable data, with several researchers widely replicating studies from the social sciences (for some review and methodological description, see Mason & Suri, 2011). According to *Amazon.com*, in 2011 workers numbered over 500,000 and came from over 190 different countries. However, parameters can be set to determine which workers qualify for any given task. In this instance, subjects were requested only from the United States. This choice is intended to minimize the semantic issues that may arise from distributing an instrument out of the country. Otherwise, age and gender were not be narrowed in order to generalize the research's findings across a broad demographic population.

Through AMT, 350 subjects were recruited to view one of the product categories and respond to the HED/UTI scale items. Using Mahalanobis distance with a cut-off of  $p = .01$ , 18 multivariate outliers were removed. Each successive data analysis utilizes this same multivariate outlier removal process and criterion. The results of mean analysis reveal that cleaning products were perceived with the highest mean utilitarian attitude (6.28 out of 7) and the lowest hedonic attitude (3.24 out of 7), making it the best choice to represent the utilitarian category in the successive experiments. The test results also show that gaming was perceived with the highest mean hedonic attitude (4.97 out of 7) while being the only product category to evoke significantly more hedonic attitudes than utilitarian ones (4.03 out of 7). Therefore, gaming was selected to represent the hedonic product category. These results are summarized in Appendix B along with the results from the other pretests.

**Pretest of product type.** After the first pretest identified one hedonic and one utilitarian product category, the second pretest verified that good and service products of the hedonic category evoke hedonic attitudes while good and service products of the utilitarian category evoke utilitarian attitudes. Again the HED/UTI scale (Voss et al., 2003) was utilized. It was expected that the good and service versions of the utilitarian product category would be associated with more utilitarian than hedonic attitudes as well as more utilitarian attitudes than those associated with either hedonic product. Similarly, the good and service versions of the hedonic category were expected to engender predominantly hedonic attitudes and especially more than the products of the utilitarian category. Reliability analyses of the HED/UTI scale showed acceptable to good results (George & Mallery, 2003) with HED items having  $\alpha = .71$  and UTI items having  $\alpha = .90$ .

A sample of 180 was gathered; 1 subject was removed through multivariate outlier analysis. 179 subjects then had their responses analyzed to reveal the expected pattern of product attitudes. The cleaning good and service were viewed with the highest mean utilitarian attitudes (6.37 and 5.97 out of 7 respectively) and lowest mean hedonic attitudes (3.32 and 3.43 out of 7 respectively). The gaming good and service were viewed with the lowest mean utilitarian attitudes (4.42 and 4.66 out of 7 respectively) and the highest mean hedonic attitudes (5.17 and 4.42 out of 7 respectively). Furthermore, *t*-tests demonstrate that the hedonic good has significantly higher hedonic attitudes ( $p < .001$ ) and significantly lower utilitarian attitudes ( $p < .001$ ) compared to the utilitarian good. Similarly, *t*-tests show that the hedonic service has significantly higher hedonic attitudes ( $p < .001$ ) and lower utilitarian attitudes ( $p < .001$ ) compared to the utilitarian

service. In total, these results support the intended factorial design of product category (hedonic/utilitarian) by product type (goods/service). These results are in Appendix B.

Following the second pretest, eight text advertisements were then created so that there were both anthropomorphic and non-anthropomorphism versions of hedonic and utilitarian good and service advertisements. For anthropomorphic versions of each advertisement, the good or service was presented as humanlike (see Appendix A). For example, for the anthropomorphic gaming service advertisements, the service name was presented in an introduction (e.g., “Hi! I am a new gaming service named, GameOn!”) and the benefits of the service were stated in the first person (e.g., “I ensure each of your games stay up-to-date”). In the non-anthropomorphism appeal condition, the name and its benefits were referred to without first person language (e.g., “Easily keep each of your games up-to-date”). In previous experiments involving the anthropomorphism of a disease, a similar procedure was used where information about the disease was stated in the first person in the anthropomorphism condition (Kim & McGill, 2011, study 2). This process was repeated so that there were eight print advertisements (four anthropomorphism appeals, four non-anthropomorphism appeals) created for use in the first experiment. The following pretest checks these eight ads for the intended manipulation of anthropomorphism.

**Pretest of anthropomorphism.** The third pretest serves as a manipulation check for the anthropomorphism treatments of the first experiment (Perdue & Summers, 1986). Using a between subjects design, the third pretest presented subjects with one print advertisement and a series of three items to measure advertisement anthropomorphism.

These advertisement anthropomorphism items reflect the extent to which subjects perceived the advertisement to intend anthropomorphic reasoning. This scale included three 7-point Likert scale items ranging in terms of agreement from “I strongly disagree” through “I neither agree nor disagree” to “I strongly agree.” The item statements include, “the advertisement presented the product as humanlike,” “in the advertisement, the product seemed like a human in one or more ways,” and “the advertisement intended me to think of the product as human.” Reliability analyses of the advertisement anthropomorphism scale items showed the items to be excellent (George & Mallery, 2003), ranging across pretests from  $\alpha = .91$  to  $\alpha = .95$ . To ensure each of the anthropomorphic advertisements was understood by subjects to encourage humanlike treatment, the mean advertisement anthropomorphism scores for each pair of anthropomorphic and non-anthropomorphic advertisements were compared using *t*-tests. This pretest concluded with two demographic questions about age and gender.

AMT was used to gather a sample of 280 subjects (205 males, average age of 28 years, 275 Americans) of whom 9 were excluded as multivariate outliers using Mahalanobis distance and a cut-off of  $p = .05$ . Two-hundred and seventy-one responses were then analyzed to reveal the anticipated pattern of significantly higher advertisement anthropomorphism perceived in each anthropomorphism appeal condition than in its non-anthropomorphism appeal counterpart. The mean advertisement anthropomorphism for each pair of ads (anthropomorphism, non-anthropomorphism, *t*-test significance) is as follows: gaming goods (4.14, 2.21,  $p < .01$ ), gaming services (4.65, 2.28,  $p < .01$ ) cleaning goods (4.68, 2.32,  $p < .01$ ), and cleaning services (5.32, 3.71,  $p < .01$ ). Given

the results showing the anthropomorphism appeals are perceived to present the product significantly more humanlike than their non-anthropomorphism counterparts, the ads were deemed acceptable for use in the first experiment.

### **Procedure**

In the first experiment each subject was asked to respond to a series of eight items related to loneliness and self-assessed product knowledge. Following these preliminary items, each subject was presented with a series of three print advertisements, two of which were filler ads and one of which was the randomized treatment condition. The order was filler-treatment-filler. Each subject saw the same filler advertisements. After viewing the filler-treatment-filler advertisement series, each subject was given a 2-5 minute distraction task in the form of a simple maze. Subjects were then prompted with the brand name from the treatment advertisement and asked to recall, without aid, the related advertisement in their own words. This free response was later coded for subject recall. A similar procedure has previously been recommended to gauge consumer recall of advertisements (du Plessis, 1994). Next, each subject responded to items related to traditional measures of advertisement effectiveness (attitude toward the brand, attitude toward the advertisement, and purchase intentions). Finally, each subject was asked three demographic questions pertaining to age, gender, and nationality.

### **Subjects**

A sample of 300 was gathered using AMT. This sample included 184 males and 116 females of average age 31 years old of which 294 were American. When the sample was analyzed, multivariate outliers were identified using Mahalanobis distance with a

cut-off of  $p = .01$ . This cleaning procedure resulted in removing 2 subjects, leaving 298 for further analyses.

## **Measures**

The first experiment's latent measurement model was assessed with a CFA. This assessment produced a significant chi-square (641.93,  $p < .000$ ,  $df = 242$ ). This chi-square value is below a 3:1 ratio to degrees of freedom, suggesting an overall acceptable fit (Schreiber et al., 2006). Following the recommendation of Hu and Bentler (1999), the SRMR is reported alongside a comparative fit index to assess model fit. SRMR, an absolute fit index, is valuable in judging model fit because of its ability to be interpretable when scale items have different ranges (e.g., 1-5 and 1-7), as the index uses standardized values. CFI, a comparative fit index, is chosen for its control of sample size. These indices show  $SRMR = .04$  and  $CFI = .95$ . The SRMR value is below .08, an indication of good fit (Hu & Bentler, 1999). The CFI value is within the .95 or greater range that Hu and Bentler's (1999) suggest as indicating good fit. These indices indicate a good fit for the measurement model. Additionally, item loadings for their intended constructs were generally very high (Table 1). In combination, these indices and loadings suggest the first experiment's measurement model fits the data.



Table 1

*Standardized and Unstandardized Coefficients for Experiment 1*

Variable	Construct	$\beta$	<i>B</i>	<i>SE</i>
Pleasant/unpleasant	A <sub>a</sub>	.891	1.000	.
Likable/unlikable	A <sub>a</sub>	.923	1.103	.044
Interesting/boring	A <sub>a</sub>	.783	1.237	.071
Tasteful/tasteless	A <sub>a</sub>	.714	.805	.054
Artful/artless	A <sub>a</sub>	.469	.632	.074
Good/bad	A <sub>a</sub>	.857	1.058	.051
Unappealing/appealing	A <sub>b</sub>	.822	1.000	
Bad/good	A <sub>b</sub>	.845	.914	.051
Unpleasant/pleasant	A <sub>b</sub>	.890	.933	.049
Unfavorable/favorable	A <sub>b</sub>	.912	1.038	.051
Unlikable/likable	A <sub>b</sub>	.914	1.049	.052
Never/definitely	PI	.946	1.000	
Definitely do not intend /definitely intend	PI	.953	.976	.027
Low interest / high interest	PI	.923	1.055	.034
Not buying / buying	PI	.956	.953	.026
Probably not / probably	PI	.926	1.111	.035
Lack companionship	Loneliness	.736	1.000	
Left out	Loneliness	.880	1.045	.074
Isolated	Loneliness	.873	1.234	.088
Know about	P. Knowledge	.923	1.000	
Knowledgeable	P. Knowledge	.950	1.046	.033
Among friends	P. Knowledge	.588	1.084	.049
Compared to most	P. Knowledge	.892	1.073	.044
Know a lot	P. Knowledge	.936	1.133	.040

*Note.* A<sub>a</sub> = attitude toward the advertisement, A<sub>b</sub> = attitude toward the brand, PI = purchase intentions, P. Knowledge = product knowledge.

The latent measures of the first study also had their convergent and discriminant validity assessed. This assessment was also done with the output of the CFA and using a calculation for average variance extracted and shared variance. Average variance

extracted represents how much variance captured by the latent variable in relation to the amount of variance due to measurement error. Average variance extracted was .942, well above the recommended .5 criterion (Hair, Black, Babin, & Anderson, 2010). Shared variances were calculated for each pair of latent variables. While shared variance was high for the expectedly correlated advertising effectiveness measurements (attitude toward the advertisement, attitude toward the brand, and purchase intentions), the remaining pairs of latent constructs (i.e., loneliness and product knowledge) had shared variance ranging from .001 to .545. Given that these shared variance levels are far below the average variance extracted, there is support for discriminant validity among the latent variables (Hair et al., 2010).

At the exception of recall, for which Cohen's Kappa was used to assess the reliability, Cronbach's alphas were computed to measure the internal reliability of each of the other variables. Cronbach's alphas ranged from .86 to .97 demonstrating good ( $.8 \leq \alpha < 0.9$ , George & Mallery, 2003) to excellent ( $0.9 \leq \alpha$ , George & Mallery, 2003) levels of internal consistency. These reliability measures are reported in parentheses next to the name of each of the variables.

**Loneliness** ( $\alpha = .86$ ). To measure subject loneliness, a three-item self-reported loneliness scale developed by Hughes, Waite, Hawkey, and Cacioppo (2004) and validated in the context of anthropomorphism (Epley, Akalis, et al., 2008) was used. This scale is a shortened version of the 20-item UCLA loneliness scale developed by Russell, Peplau, and Cutrona (1980). The shortened scale consists of three 5-point Likert scale items where subjects are asked to reflect how often they "feel they lack

companionship," "feel left out," or "feel isolated from others" (Hughes et al., 2004).

Responses range from 1 ("never") to 5 ("always") (Hughes et al., 2004).

**Product knowledge** ( $\alpha = .96$ ). Self-assessed product knowledge was measured using a scale from Li, Daughterty, and Biocca (2002). This scale has been previously used in marketing studies involving consumer learning (e.g., Jiang & Benbasat, 2008; Suh & Lee, 2005; Sundar & Kim, 2005). The scale has five items (Li et al., 2002) which take the form of five knowledge statements that the subject rates using 7-point Likert items ranging from "strongly disagree" to "strongly agree" (Li, Daughterty, & Biocca, 2002). These statements include "I know pretty much about X," "I feel knowledgeable about X," "Among my circles of friends, I'm one of the experts on X," "Compared to most other people, I know more about X," and "When it comes to X, I really know a lot" (Li et al., 2002).

**Attitude toward the brand** ( $\alpha = .94$ ). With a substantial number of marketing studies measuring attitude toward the brand, there are a multitude of measurement options. In their development of an attitude toward the brand scale, Spears and Singh (2004) considered 52 measurement items from marketing literature. Their efforts produced a 5-item, unidimensional attitude toward the brand scale (Spears & Singh, 2004). This scale has since been used in other research involving advertisement effectiveness where attitude toward the advertisement and purchase intentions are also collected (e.g., Amos & Spears, 2010; Torres, Sierra, & Heiser, 2007). Moreover the scale (Spears & Singh, 2004) has been validated alongside scales for attitude toward the advertisement and purchase intentions, two other scales this present research utilizes.

The process of validating each measure alongside one another helps guard against any potential overlap in attitudinal measures (Spears & Singh, 2004). The scale's items are in the form of 7-point semantic differentials which include "unappealing/appealing," "bad/good," "unpleasant/pleasant," "unfavorable/favorable," and "unlikable/likable" (Spears & Singh, 2004).

**Attitude toward the advertisement** ( $\alpha = .89$ ). Following ad-exposure in each experiment, subjects' attitude toward the treatment advertisement was measured. Previous studies have captured attitudes toward the advertisement using a variety of more than 75 scales (Bruner, 1998). Among these options, the present research utilized a unidimensional scale with established psychometric properties developed and validated by Madden, Allen, and Twible (1988). This scale consists of seven 7-point semantic differentials, including "pleasant/unpleasant," "likable/unlikable," "interesting/boring," "tasteful/tasteless," "artful/artless," and "good/bad" (Madden et al., 1988). This scale has subsequently been used in several advertising studies (e.g., Chang, 2004, 2009; Choi et al., 2001; Spears & Singh, 2004). Important to the present research is that this scale was used in Spears and Singh's (2004) scale development studies for attitude toward the brand and purchase intention scales (Spears & Singh, 2004). In using the same attitude toward the advertisement scale used in Spears and Singh (2004), the present research will guard against any potential overlap in attitudinal measures.

**Purchase intentions** ( $\alpha = .97$ ). In marketing research, purchase intention is captured with a variety of measurements (Kalwani & Silk, 1982; Spears & Singh, 2004). These measurements have ranged from single item measures to multi-item scales (Spears

& Singh, 2004). Each of these measures is intended to reflect a consumer's conscious plan to purchase a product (Spears & Singh, 2004). In developing their purchase intention scale, Spears and Singh (2004) initially considered 15 measurement items from marketing literature that were intended to measure purchase intentions. This analysis resulted in a unidimensional purchase intention scale that includes five seven-point semantic differentials (Spears & Singh, 2004). This scale has been successfully used with the attitude toward the brand scale from Spears and Singh (2004) in other studies (e.g., Amos & Spears, 2010; Torres et al., 2007). The scale's items include "never/definitely," "definitely do not intend to buy/definitely intend," "very low/high purchase interest," "definitely not buying/definitely buying," and "probably not/probably buy it" (Spears & Singh, 2004). As with attitude toward the brand and attitude toward the advertisement, the present study chose to utilize a purchase intention scale that has been validated alongside the other two scales.

**Recall** ( $K = .824$ ). Recall was measured using a method borrowed from Ratneshwar and Chaiken (1991). Subjects were given a brand name and then asked to recall the associated advertisement in their own words. This procedure was also in line with other research suggesting that recall be assessed by providing a brand name (du Plessis, 1994). Though subjects were prompted with the brand name from the advertisement, they were not given any information or stimuli from the advertisement, thus constituting an unaided recall task for the information not being shown (i.e., a task to remember a stimulus that is not present, Singh et al., 1988). This free-response was later coded by two coders for the amount of accurate pieces of information (ranged from 0 to

5) that were listed to quantify subject recall for the treatment advertisement. The two coder scores were then assessed for inter-rater agreement before being collapsed into a single measurement for statistical analyses. Responses to the study's distraction task were all correct and the average subject took just over two minutes to complete it. Interrater agreement for the measure of advertisement recall was estimated using Cohen's Kappa. The result was acceptable with  $K = .824$  agreement at  $p < .001$ .

### **Analysis**

In each experiment, MANOVA and spotlight analysis were used to evaluate the hypotheses. As the dependent measures of advertising effectiveness are expected to be correlated and the experimental designs are factorial, a MANOVA was used for the initial statistical analyses. The subsequent evaluation is completed using spotlight analysis to avoid dichotomizing continuous variables (Fitzsimons, 2008).

Multivariate analysis of variance (MANOVA) is intended to demonstrate how changes in independent variables have significant effects on multiple dependent variables that are expected to be correlated. MANOVA also allows for insights into the interaction among independent factors or among dependent variables. Here, the multiple continuous dependent variables are those related to advertisement effectiveness. The independent factors are those related to product type (good/service), product category (hedonic/utilitarian), and presentation type (anthropomorphism/non-anthropomorphism). Compared to running a series of individual ANOVAs for each dependent variable, MANOVA takes into account covariance among dependent variables and reduces the chance of type I error.

To test the hypotheses that anthropomorphism appeals are associated with higher advertisement effectiveness in terms of attitude toward the brand (H<sub>1</sub>), attitude toward the ad (H<sub>2</sub>), and recall (H<sub>4</sub>), a MANOVA was conducted after each experiment. To evaluate the mediation hypothesis related to purchase intention (H<sub>3</sub>), a series of linear regression analyses are conducted following the four-step method for establishing mediation developed by Baron and Kenny (1986). The two moderation hypotheses (H<sub>5</sub>-H<sub>6</sub>) related to product category and product type are evaluated using MANOVA as well. The two moderation hypotheses (H<sub>7</sub>-H<sub>8</sub>) related to loneliness and product knowledge are evaluated in a spotlight analysis rather than dichotomizing the variables for use in MANOVA (Fitzsimons, 2008). This analysis involves evaluating the moderator alongside the study's other predictors (category, type) using a moderation-probing script, MODPROBE (Hayes & Matthes, 2009). This moderation probing script mean-centers each variable then runs a series of regression analyses to evaluate the moderator at mean levels as well as levels one standard deviation above and below the mean. This form of spotlight analysis allows for a robust evaluation each continuous moderator hypothesis (H<sub>7</sub>-H<sub>8</sub>) at three levels.

## **Results**

The first step in analysis was to conduct multivariate tests of the study's factors. The Wilks' lambda scores for each factor/interaction were significant at  $p < .05$ , with the exception of Anthropomorphism Appeal X Product Category and the three-way interaction term of Anthropomorphism Appeal X Product Type X Product Category

(Table 2). These results suggest there are several significant differences to be explained by the study's factors and factor interactions.

Table 2

*Multivariate Tests for Experiment 1*

Effect	<i>Λ</i>	<i>F</i>	<i>df</i> <sub>1</sub>	<i>df</i> <sub>2</sub>	<i>p</i>
Anthro. Appeal	.938	3.906	4	237	.004
Type (service/good)	.960	2.497	4	237	.043
Category (hedonic/utilitarian)	.926	4.758	4	237	.001
Anthro X Type	.974	1.608	4	237	.173
Anthro X Category	.945	3.481	4	237	.009
Type X Category	.958	2.612	4	237	.036
Anthro X Type X Category	.970	1.845	4	237	.121

The first experiment evaluated the hypothesized direct main effects of anthropomorphism appeals ( $H_1$ ,  $H_2$  and  $H_4$ ) using MANOVA. As seen in Table 3, the *F*-statistics pertaining to the main effects of an anthropomorphism appeal on attitude toward the brand ( $F(1) = .152$ ,  $p = .708$ ) and attitude toward the advertisement ( $F(1) = .032$ ,  $p = .867$ ) were non-significant. These non-significant findings fail to support  $H_1$ -  $H_2$ . However, the *F*-statistic pertaining to recall (19.099) was significant ( $p < .000$ ), supporting  $H_4$ . These results are summarized in Table 3.

Table 3



*MANOVA Results for Experiment 1*

Factor	Dependent	<i>df</i>	<i>F</i>	<i>p</i>	$\eta\rho^2$
Anthro. Appeal	A <sub>b</sub>	1	0.152	0.708	0.004
	A <sub>a</sub>	1	0.032	0.867	0.000
	PI	1	0.240	0.742	0.000
	Recall	1	19.099	0.000	0.055
Category (HED/UTI)	A <sub>b</sub>	1	2.201	0.146	0.009
	A <sub>a</sub>	1	2.848	0.095	0.012
	PI	1	.985	0.332	0.004
	Recall	1	17.883	0.000	0.069
Type (Good/Service)	A <sub>b</sub>	1	4.063	0.045	0.017
	A <sub>a</sub>	1	3.159	0.077	0.013
	PI	1	6.817	0.010	0.028
	Recall	1	1.441	0.231	0.006
A. Appeal X Category	A <sub>b</sub>	1	0.490	0.484	0.001
	A <sub>a</sub>	1	4.597	0.033	0.002
	PI	1	1.952	0.164	0.019
	Recall	1	0.296	0.587	0.001
A. Appeal X Type	A <sub>b</sub>	1	0.000	0.991	0.000
	A <sub>a</sub>	1	1.325	0.251	0.005
	PI	1	1.979	0.161	0.008
	Recall	1	0.332	0.571	0.001
Category X Type	A <sub>b</sub>	1	1.097	.296	.005
	A <sub>a</sub>	1	.036	.849	.000
	PI	1	1.301	.255	.005
	Recall	1	3.074	.081	.013
A. Appeal X Category X Type	A <sub>b</sub>	1	.187	.666	.001
	A <sub>a</sub>	1	.822	.365	.003
	PI	1	.886	.347	.004
	Recall	1	3.887	.050	.016

*Note.* A<sub>a</sub> = attitude toward the advertisement, A<sub>b</sub> = attitude toward the brand, PI = purchase intentions.

Evaluation of the mediation hypothesis related to purchase intentions (H<sub>3</sub>) utilized a four-step method from Baron and Kenny (1986). Within these steps, a series regression

analyses evaluates the potential of full and partial mediation. The first step of is to establish that purchase intentions can be regressed on the anthropomorphism appeal variable. This effort was non-significant ( $\beta = .041, t = .231, p = .818$ ) therefore leaving only the possibility that an anthropomorphism appeal's influence on purchase intentions is either fully mediated or is altogether non-significant. The second step regresses purchase intentions onto its proposed mediator. In this case, this step was repeated once for attitude toward the ad ( $\beta = .588, t = 8.222, p < .000$ ) and attitude toward the brand ( $\beta = .800, t = 12.444, p < .000$ ) as both were proposed to mediate this relationship. In both cases, these steps produced significant results. The final step establishes full mediation by regressing purchase intentions onto the appeal variable while controlling for the mediator. This final step was conducted once for each mediator (attitude toward the brand and attitude toward the ad). This step reveals that the influence of an anthropomorphism appeal on purchase intentions is fully mediated by attitude toward the brand ( $\beta = .586, t = 12.420, p < .000$ ) and attitude toward the ad ( $\beta = .588, t = 8.204, p < .000$ ). This analysis offers support for H<sub>3</sub>.

Hypotheses 5 through 8 concern the present research's predictions regarding moderation. The two contextual moderators, product category (H<sub>5</sub>) and product type (H<sub>6</sub>), are, by design, factorial and as such were evaluated during the first experiment's MANOVA (see Table 3). The two individual moderators, loneliness (H<sub>7</sub>) and product knowledge (H<sub>8</sub>), were measured using continuous scales. Given the disadvantages of dichotomizing continuous variables, these moderators are instead evaluated using spotlight analysis.

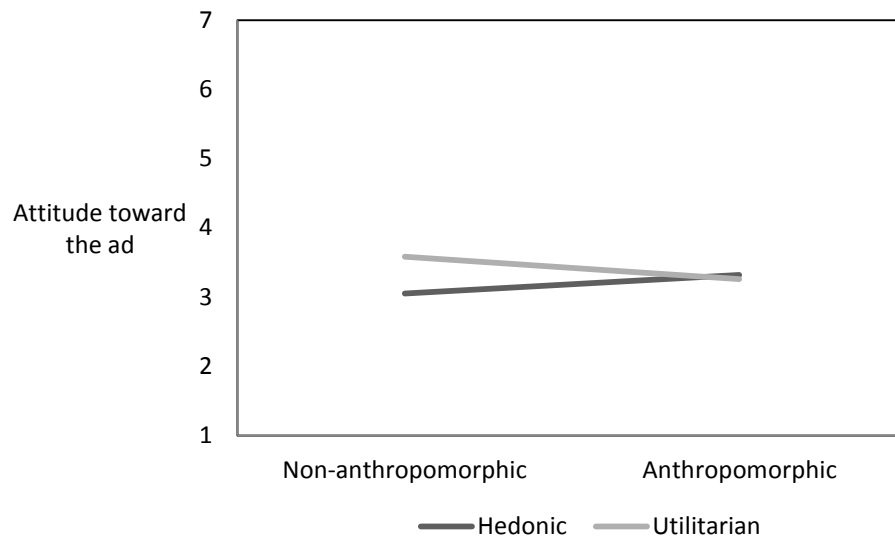


Figure 2. Interactive effects of product category and appeal type on mean attitude toward the advertisement

Product category (hedonic/utilitarian) was found to have a significant interaction with anthropomorphic appeals. This interaction influenced attitude toward the advertisement ( $F(1) = 4.597, p = .033$ ), but not attitude toward the brand ( $F(1) = .490, p = .484$ ) or purchase intentions ( $F(1) = 1.952, p = .164$ ), or recall ( $F(1) = .296, p = .587$ ). Means analysis reveals that while attitude toward the advertisement is lower for non-anthropomorphism presentations of a hedonic product compared to utilitarian ones, anthropomorphic versions of these same advertisements favored hedonic products (Figure 2). These results offer partial support for H<sub>5</sub> pertaining to the enhanced effects of anthropomorphism appeals when the product being presented is hedonic.

Product type (good/service) was not found to moderate any direct effects of anthropomorphism appeals on attitude toward the ad ( $F(1) = .000, p = .991$ ), attitude toward the brand ( $F(1) = 1.325, p = .251$ ), or recall ( $F(1) = .332, p = .571$ ) nor any indirect effect on purchase intentions ( $F(1) = 1.979, p = .161$ ). Therefore, there was failure to support  $H_6$  which suggested that anthropomorphism appeals would be more effective for services than goods.

As noted, self-assessed product knowledge ( $H_7$ ) and loneliness ( $H_8$ ) had their moderating role assessed using a spotlight analysis. In a spotlight analysis, the moderation relationship is probed at multiple levels: at its mean value, one standard deviation above the mean, and one standard deviation below the mean. All measures were mean-centered before these evaluations.

The spotlight analysis revealed anthropomorphism appeals' influence on recall was higher for those reporting mean product knowledge ( $\beta = .534, t = 3.567, p < .000$ ) and higher still for those one standard deviation below the mean product knowledge level ( $\beta = .690, t = 3.232, p < .001$ ). For those reporting product knowledge one standard deviation above the mean, the interaction was non-significant ( $\beta = .379, t = 1.78, p = .076$ ). That is, the less product knowledge a subject had, the stronger of an influence anthropomorphism appeals had on their recall. These results offer partial support for the  $H_7$ , which suggested that anthropomorphism appeals would decrease in effectiveness as product knowledge increased (Figure 3).

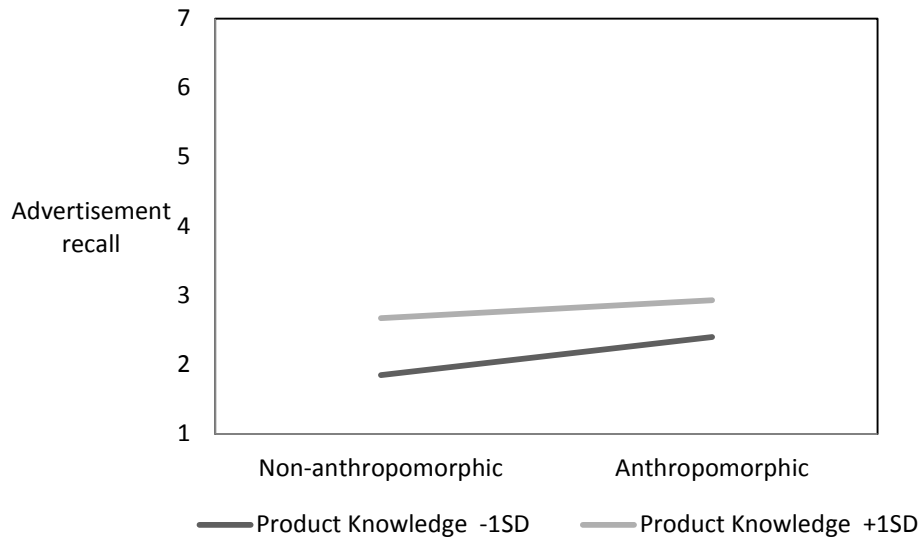


Figure 3. Interactive effects of product knowledge and appeal type on mean advertisement recall

Loneliness was found to moderate the relationship between anthropomorphism appeals and recall at two levels of loneliness probed in the spotlight analysis. More specifically, at mean levels of loneliness ( $\beta = .578, t = 3.645, p < .000$ ) or one standard deviation above the mean ( $\beta = .706, t = 3.304, p = .001$ ) anthropomorphism appeals were associated with higher levels of recall. Those with loneliness one standard deviation below the mean ( $\beta = .390, t = 1.828, p = .069$ ) did not significantly moderate this relationship. Therefore, for those with relatively average and above average reported loneliness, anthropomorphism appeals were associated with higher recall (Figure 4). This finding offers partial support for H<sub>8</sub> as only the effects of anthropomorphism appeals on recall (not attitude toward the brand, etc.) were shown to be moderated by loneliness.

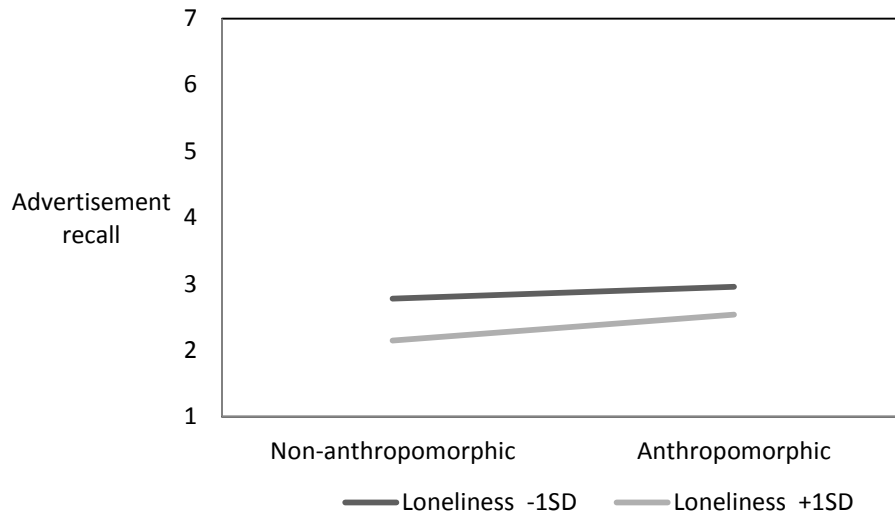


Figure 1. Interactive effects of loneliness and appeal type on mean advertisement recall

### Discussion

Results of the first experiment suggest that while anthropomorphism appeals are not associated with increased attitude toward the brand (H<sub>1</sub>) or ad (H<sub>2</sub>), they are associated with increased recall (H<sub>4</sub>) and indirectly with increased purchase intentions (H<sub>3</sub>). This suggests that even simple, textual human presentations of a variety of products can increase recall for related advertisement content and can increase purchase intentions as consumer attitudes improve. An important point is that the types of information recalled were not of an anthropomorphic nature (Appendix A), but rather were explicit pieces of product information. Therefore, anthropomorphism appeals appear to facilitate storage and retrieval of product information by associating it within a more familiar, commonly used framework: the human framework. When this association improves consumer attitudes toward the brand or ad, it subsequently increases purchase intentions.

Additional consideration of moderating variables and non-significant findings offers a deeper understanding of these appeals.

Moderators are shown to occasionally play significant roles. Though product type (good/service) did not interact with anthropomorphism appeals (H<sub>6</sub>), hedonic products interacted with these appeals to enhance attitude toward the advertisement (H<sub>5</sub>). As this effect increased attitude toward the ad, it is possible that consumers felt the anthropomorphism appeal was more fitting when the purpose of the product was predominantly hedonic. Other research has similarly found that metaphors can be more effective tools when used in conjunction with hedonic products (e.g., Ang, 2002).

Individual moderating variables (loneliness, product knowledge) were also found to play significant roles. These moderators functioned to potentially increase the main effect of an anthropomorphism appeal on advertisement recall. Specifically, the influence of an anthropomorphism appeal on recall was higher for more lonely subjects (H<sub>8</sub>) and/or those with less product knowledge (H<sub>7</sub>). These findings suggest that anthropomorphism appeals have both inferential and social value. When consumers have less knowledge of the product being presented, the anthropomorphism appeals presents a valuable framework with which some inferences can be made. For more knowledgeable consumers, this is not the case as they already possess adequate knowledge models for the product being presented. For more lonely consumers, anthropomorphism appeals may increase recall as these consumers are particularly motivated to attend to social, human stimuli.

Partial support for H<sub>7-8</sub> acts as a critical support for applying Epley et al.'s (2007) antecedent theory of anthropomorphism in the marketing context. In particular, product knowledge was derived from the antecedent factor of effectance motivation while loneliness was derived from the antecedent factor of social motivation. The results of the first study demonstrate the potential advantages that importing Epley et al.'s (2007) theory may offer marketers.

An essential result of the first experiment relates to the lack of support for H<sub>1-2</sub>. Because previous research found that product anthropomorphism enhances evaluation of the product (e.g., Aggarwal & McGill, 2007; Hart et al., 2013), it is surprising that anthropomorphism appeals were not associated with enhanced attitudes in the present study. This difference, in part, may be due to the inability of a single, text-only advertisement to sufficiently prime humanlike treatment from the viewer. This scenario, however, is somewhat unrealistic as anthropomorphism appeal ads typically occur in a series of similarly themed advertisements. It may be the case that the degree of subject anthropomorphism is increased through repeated exposure to anthropomorphism appeals. Therefore, a second experiment was designed to investigate this possibility. The following chapter will detail the methods and results for this second experiment.



## **CHAPTER 4: EXPERIMENT 2**

Following the analyses of the first experiment, a second experiment was designed involving a series of print advertisements. While the first experiment explored consumers' responses to an individual anthropomorphism appeal, the second experiment explores consumers' responses to a series of anthropomorphism appeals. This experiment allows for additional evaluation of H<sub>1</sub> - H<sub>3</sub> (attitude toward the brand, attitude toward the advertisement, and purchase intentions) and H<sub>7</sub> - H<sub>8</sub> (product knowledge and loneliness). This chapter presents the pertaining method, result, and discussion.

### **Method**

#### **Procedure**

The procedure of the second experiment is identical to the first experiment with a few minor differences. Instead of presenting subjects with a filler-treatment-filler ad series as was done in the first experiment, the second experiment will present subjects with a series of three treatment advertisements. Like the advertisements from the first experiment, the ads from the second experiment again take textual form (see Appendix A). In the anthropomorphism appeal condition, product benefits were again listed in the first person.

Subjects were shown a series of either three anthropomorphic or non-anthropomorphic advertisements regarding a gaming good. This experiment only utilized the gaming good to act as a pilot for the effectiveness of an ad series. If the gaming good series demonstrated additional effects, gaming services as well as cleaning goods and services would have examined as well. A gaming good was chosen to pilot the group as

all previous marketing studies have focused on goods and most of these goods have been complex (Hart et al., 2013). Considering the gaming good to be presented is a video game system, a relatively complex good, it is seen as similar to previous stimuli.

As in the first experiment, following exposure to the stimuli, each subject responded to a series of questions related to loneliness, product knowledge, and advertisement effectiveness. Each subject concluded with the same three demographic items (i.e., age, gender, nationality).

### **Pretest**

A pretest was conducted to test the manipulation of the experimental stimuli. Subjects saw a series of either three anthropomorphism ads or a series of three non-anthropomorphism ads. AMT was used to gather a sample of 70 subjects (37 males, 33 females, average age of 35, 69 Americans); 4 were excluded as multivariate outliers using Mahalanobis distance and a cut-off of  $p = .01$ . A sample of 66 responses was then analyzed using a series of  $t$ -tests. Results demonstrate that perceived advertisement anthropomorphism for the anthropomorphism ad series (5.74 out of 7) is significantly higher ( $p < .01$ ) than the non-anthropomorphism ad series (4.78 out of 7). This evidenced difference in advertisement anthropomorphism supports the use of each series in the second experiment.

### **Subjects**

A sample of 80 was gathered using AMT. This sample included 47 males and 33 females of average age 32 years old of which 78 were American. Of these subjects, two

were excluded from analysis after having been identified as multivariate outliers using Mahalanobis distance and a cut-off of  $p = .01$ .

## **Measures**

The second experiment utilizes the same measures as the first experiment, but recall was not included. The second experiment's latent measurement model was also assessed with a CFA. This assessment produced a significant chi-square (455.40,  $p < .000$ ,  $df = 242$ ). This chi-square value is below a 3:1 ratio to degrees of freedom, suggesting an overall acceptable fit (Schreiber et al., 2006). Following the recommendation of Hu and Bentler (1999), the SRMR and CFI fit indices are examined for model fit. These indices show SRMR = .06 and CFI = .90. The SRMR value is below .08, an indication of good fit (Hu & Bentler, 1999). However, the CFI value is outside of the .95 or greater range that Hu and Bentler's (1999) suggest as indicating good fit. Together these indices suggest moderate fit. An additional consideration of item loadings (Table 4) shows items loaded consistently high on their intended constructs. In total, these results suggest the second experiment's measurement model is acceptable.

Table 4

*Standardized and Unstandardized Coefficients for Experiment 2*

Variable	Construct	$\beta$	<i>B</i>	<i>SE</i>
Pleasant/unpleasant	A <sub>a</sub>	.813	1.000	.
Likable/unlikable	A <sub>a</sub>	.922	1.216	.117
Interesting/boring	A <sub>a</sub>	.856	1.271	.141
Tasteful/tasteless	A <sub>a</sub>	.635	.769	.127
Artful/artless	A <sub>a</sub>	.659	.881	.141
Good/bad	A <sub>a</sub>	.917	1.239	.123
Unappealing/appealing	A <sub>b</sub>	.838	1.000	
Bad/good	A <sub>b</sub>	.842	.941	.100
Unpleasant/pleasant	A <sub>b</sub>	.848	.948	.101
Unfavorable/favorable	A <sub>b</sub>	.924	1.148	.104
Unlikable/likable	A <sub>b</sub>	.941	1.124	.098
Never/definitely	PI	.957	1.000	
Definitely do not intend /definitely intend	PI	.965	.961	.045
Low interest / high interest	PI	.950	1.101	.057
Not buying / buying	PI	.945	.914	.048
Probably not / probably	PI	.927	1.029	.060
Lack companionship	Loneliness	.738	1.000	
Left out	Loneliness	.887	1.075	.138
Isolated	Loneliness	.924	1.296	.168
Know about	P. Knowledge	.870	1.000	
Knowledgeable	P. Knowledge	.901	1.081	.092
Among friends	P. Knowledge	.900	1.127	.101
Compared to most	P. Knowledge	.899	1.204	.109
Know a lot	P. Knowledge	.961	1.279	.101

*Note.* A<sub>a</sub> = attitude toward the advertisement, A<sub>b</sub> = attitude toward the brand, PI = purchase intentions, P. Knowledge = product knowledge.

These measures also had their convergent and discriminant validity assessed.

Average variance extracted was .947, well above the recommended .5 criterion (Hair et al., 2010). As in experiment 1, shared variance was high for the advertising effectiveness measurements (attitude toward the advertisement, attitude toward the brand, and purchase

intentions), but the remaining pairs of latent constructs had shared variance ranging from .005 to .554. With shared variance levels are far below the average variance extracted, there is support for discriminant validity among the latent variables (Hair et al., 2010).

Cronbach's alphas were computed to measure the internal reliability for attitude toward the ad ( $\alpha = .92$ ), attitude toward the brand ( $\alpha = .94$ ), purchase intention ( $\alpha = .98$ ), loneliness ( $\alpha = .88$ ), and product knowledge ( $\alpha = .96$ ). Cronbach's alphas ranged from .88 to .98 demonstrating good ( $.8 \leq \alpha < 0.9$ , George & Mallery, 2003) to excellent ( $0.9 \leq \alpha$ , George & Mallery, 2003) levels of internal consistency.

## **Results**

Multivariate test of the second experiment's sole factor, anthropomorphism appeal, revealed a non-significant Wilks' lambda ( $\Lambda = .989$ ,  $F(3) = .286$ ,  $p = .835$ ). This non-significant multivariate score suggests that the anthropomorphism appeal factor does not contain significant differences between group mean values of any of the dependent variables.

The second experiment evaluated the first two hypothesized main effects of anthropomorphism appeals ( $H_1$ -  $H_2$ ) using MANOVA (Table 5). The  $F$ -statistics pertaining to the main effects of an anthropomorphism appeal on attitude toward the brand ( $F(1) = .866$ ,  $p = .355$ ) and attitude toward the advertisement ( $F(1) = .399$ ,  $p = .530$ ) were non-significant. These non-significant findings fail to support  $H_1$ -  $H_2$ .

Table 5

*MANOVA Results for Experiment 2*

Factor	Dependent	<i>df</i>	<i>F</i>	<i>p</i>	$\eta\rho^2$
Anthro Appeal	A <sub>b</sub>	1	.866	0.355	0.011
	A <sub>a</sub>	1	.399	0.530	0.005
	PI	1	.463	0.498	0.006

*Note.* A<sub>a</sub> = attitude toward the advertisement, A<sub>b</sub> = attitude toward the brand, PI = purchase intentions.

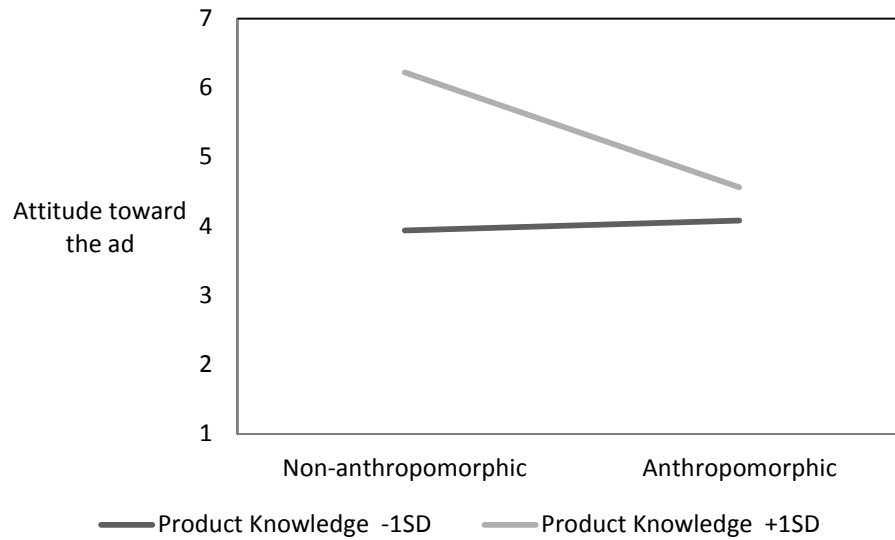
A mediation analysis of H<sub>3</sub> using the same procedure as the first experiment yielded similar results. This analysis utilized Baron and Kenny's (1986) four-step method for evaluating mediation. The first step reveals that anthropomorphism appeals have a non-significant direct effect ( $\beta = .260, t = .681, p = .498$ ) on purchase intentions. This non-significant first step suggests either no mediation or full mediation. The next step regressed purchase intentions onto the proposed moderators. This reveals that attitude toward the brand ( $\beta = 1.010, t = 7.616, p < .000$ ) and attitude toward the ad ( $\beta = .867, t = 8.134, p < .000$ ) have a significant influence on purchase intentions. A final step confirms the full mediation possibility by finding significant influence of attitude toward the brand ( $\beta = 1.008, t = 7.513, p < .000$ ) and attitude toward the ad ( $\beta = .864, t = 8.041, p < .000$ ) while controlling for the focus predictor, anthropomorphism appeal. In total, this analysis supports H<sub>3</sub> related to the influence of an anthropomorphism appeal on purchase intentions being mediated by attitude toward the brand and ad.

The second experiment evaluated two moderating factors: product knowledge (H<sub>7</sub>) and loneliness (H<sub>8</sub>). As in the first experiment, these continuous moderators were

evaluated using spotlight analysis. This analysis included mean-centering each variable and then evaluating the main effect at three levels of each moderator: at its mean value, one standard deviation above the mean, and one standard deviation below the mean.

Spotlight analysis reveals that while the interactive term of product knowledge and anthropomorphism appeal has a significant, negative effect on attitude toward the ad ( $\beta = -.363, t = 7.513, p = .030$ ), this effect only occurs for those with relatively high product knowledge (Figure 5). This influence occurred in such a way that anthropomorphism appeals were associated with decreased attitude toward the advertisement ( $\beta = -.777, t = -1.941, p = .046$ ) when subjects' product knowledge was one standard deviation above the mean. Mean product knowledge levels ( $\beta = -.142, t = -.504, p = .616$ ) and one standard deviation below the mean ( $\beta = .493, t = 1.219, p = .227$ ) did not significantly interact with anthropomorphism appeals. These results offer partial support for H<sub>7</sub>, which suggested that advertisements would decrease in advertising effectiveness (attitude toward the brand, attitude toward the ad, purchase intentions, and recall) as product knowledge increased.

Loneliness was not found to moderate the relationship between anthropomorphism appeals and attitude toward the advertisement, attitude toward the brand, or purchase intentions. These findings are in line with those of the first experiment, where loneliness failed to moderate these same relationships. This analysis fails to support H<sub>8</sub>.



*Figure 5.* Interactive effects of product knowledge and appeal type on attitudes toward the advertisement

### Discussion

The second experiment, as the first, fails to support the hypotheses pertaining to attitude toward the brand ( $H_1$ ) and attitude toward the ad ( $H_2$ ). Despite exposing subjects to two additional anthropomorphism appeals than the first experiment, consumer attitudes were not affected. Hence, it appears that the influence of anthropomorphism appeals is not enhanced through repetition.

Loneliness and product knowledge were again evaluated for their potential role as moderators. Though loneliness did not play a significant moderation role in the second experiment, product knowledge did. The analysis shows that more knowledgeable consumers may experience a negative influence of anthropomorphism appeals on attitude toward the advertisement. This finding is unique among all anthropomorphism research



findings in that it demonstrates a potentially negative valence response in some individuals. In conjunction with the moderation analysis from the first experiment, these results suggest that individual variables play a critical role in determining the influence of an anthropomorphism appeal. In the first experiment, an individual's knowledge and loneliness were seen to determine the amount of information recalled while in the second experiment an individual's knowledge is seen to determine the valence of their attitude toward the ad.

Like the first experiment, there were no observed main effects of an anthropomorphism appeal on attitude toward the brand or attitude toward the ad. After the first experiment, it was reasoned that a single ad exposure was not sufficient to prime the necessary level of anthropomorphism to influence consumer attitudes. The second experiment evaluated this possibility by presenting subjects with a series of advertisements, rather than a single ad. However, the second experiment again revealed no main effects on consumer attitudes. In combination, the results of the first two experiments suggest that text, rather than ad repetition may be the limitation. Specifically, text-only advertisements may not be sufficient to achieve deep anthropomorphic reasoning on the viewer's behalf regardless if they are repeated or not. Though anthropomorphism may offer several advantages, such as perceptual fluency, inferences, and the feeling of social contact, it may be necessary for the anthropomorphized entity to be more salient than brief texts can afford. Adding a visual element, such as a drawing or photograph, may increase the depth of anthropomorphic reasoning. This additional depth of anthropomorphic reasoning may thereby tap the

attitudinal change evidenced in previous anthropomorphism studies (e.g., Aggarwal & McGill, 2007). Hence, a third experiment is designed to evaluate this possibility. The next chapter provides details about the methods and results of this third experiment.

## **CHAPTER 5: EXPERIMENT 3**

Following the analysis of the first and second experiments, a third experiment was designed to examine the influence of a single anthropomorphism appeal with text and visual elements (see Appendix A). It was felt that the text-only advertisements may have lacked in the humanlike treatment they engendered and as a result did not succeed at fostering attitudinal change. Therefore, the third experiment utilized a visual element in addition to a text in an effort to increase the salience of the anthropomorphism appeal. These visual elements were either drawn or photographed.

### **Method**

#### **Procedure**

The third study follows the same procedure as the second experiment, but differs in terms of ad stimuli. Like the second experiment, subjects are exposed to either an anthropomorphism or non-anthropomorphism appeal and then asked a series of questions. However, the ads of the third experiment include a visual element alongside the ad text. The visual element in each ad was either a drawing or a photograph of the product. Furthermore, subjects were exposed to only one ad rather than a series.

Drawn and photographed visual elements were selected to represent two typical forms of visual print advertisements. The drawn visual includes a product with a humanlike mouth and eyes in the anthropomorphism appeal condition as previous studies have done (e.g., Aggarwal & McGill, 2007). The non-anthropomorphism version of the drawn visual depicts the product with normal features rather than humanlike ones. The photographed visual depicts the product on a red carpet with paparazzi watching it to

create the context of a human celebrity. The non-anthropomorphism photographed visual was identical but presented the product in its normal context rather than a human one. Otherwise, the text accompanying the visual element in each ad was identical between drawn and photographed stimuli.

The third experiment utilized an automobile in each ad. As the first experiment evidenced the moderating role of product category (hedonic/utilitarian) on an anthropomorphism appeal's influence and the third study did not seek to evaluate this distinction, the third study utilized a product that was not distinctly hedonic or utilitarian: an automobile.

### **Pretest**

A pretest was conducted as a manipulation check of the anthropomorphic ad stimuli as in the previous experiments. However, these stimuli include visual elements in each print advertisement. AMT was used to gather a sample of 145 subjects (85 males, 60 females, average age 32, and 145 Americans) of whom 5 were excluded as multivariate outliers. A sample of 140 was analyzed using a series of *t*-tests. Results demonstrate that mean advertisement anthropomorphism for the photographed visual anthropomorphism ad (5.01 out of 7) was significantly ( $p < .01$ ) higher than the non-anthropomorphism version (3.51 out of 7). Similarly, the mean advertisement anthropomorphism for the drawn visual anthropomorphism ad (4.27 out of 7) was significantly ( $p < .01$ ) higher than the non-anthropomorphism version (1.84 out of 7). These results supported the use of the stimuli in the third experiment (for summary of results, see Appendix B).

## **Subjects**

A sample of 185 adults was gathered using AMT. This sample included 120 males and 65 females with average age of 29 years of which 183 were American. Three subjects were excluded having been identified as multivariate outliers using Mahalanobis distance and a cut-off of  $p = .01$ .

## **Measures**

The third experiment utilizes the same measurement array as the first experiment, but recall was not included. As in the previous experiments, the latent measurement model was assessed with a CFA. This assessment produced a significant chi-square (399.47,  $p < .000$ ,  $df = 242$ ). This chi-square value is below a 3:1 ratio to degrees of freedom, suggesting an overall acceptable fit (Schreiber et al., 2006). Following the recommendation of Hu and Bentler (1999), the SRMR and CFI fit indices are examined for model fit. These indices show SRMR = .06 and CFI = .94. The SRMR value is below .08, an indication of good fit (Hu & Bentler, 1999). However, the CFI value is just outside of the .95 or greater range that Hu and Bentler's (1999) suggest as indicating good fit. These indices suggest the second study's measurement model has moderate to good fit. Additionally, item loadings were examined to show consistently high loading of items on their intended constructs (Table 6).

Table 6

*Standardized and Unstandardized Coefficients for Experiment 3*

Variable	Construct	$\beta$	<i>B</i>	<i>SE</i>
Pleasant/unpleasant	A <sub>a</sub>	.776	1.000	.
Likable/unlikable	A <sub>a</sub>	.864	1.038	.108
Interesting/boring	A <sub>a</sub>	.841	1.256	.137
Tasteful/tasteless	A <sub>a</sub>	.813	1.050	.118
Artful/artless	A <sub>a</sub>	.790	1.142	.134
Good/bad	A <sub>a</sub>	.903	1.115	.111
Unappealing/appealing	A <sub>b</sub>	.900	1.000	
Bad/good	A <sub>b</sub>	.896	.922	.066
Unpleasant/pleasant	A <sub>b</sub>	.899	.902	.064
Unfavorable/favorable	A <sub>b</sub>	.932	1.022	.066
Unlikable/likable	A <sub>b</sub>	.930	1.026	.066
Never/definitely	PI	.930	1.000	
Definitely do not intend /definitely intend	PI	.960	1.010	.051
Low interest / high interest	PI	.895	1.007	.065
Not buying / buying	PI	.940	.985	.054
Probably not / probably	PI	.925	.973	.057
Lack companionship	Loneliness	.700	1.000	
Left out	Loneliness	.808	.990	.133
Isolated	Loneliness	.934	1.391	.185
Know about	P. Knowledge	.916	1.000	
Knowledgeable	P. Knowledge	.894	1.000	.068
Among friends	P. Knowledge	.814	.871	.082
Compared to most	P. Knowledge	.857	.973	.078
Know a lot	P. Knowledge	.892	.950	.072

*Note.* A<sub>a</sub> = attitude toward the advertisement, A<sub>b</sub> = attitude toward the brand, PI = purchase intentions, P. Knowledge = product knowledge.

These measurements then had their convergent and discriminant validity assessed. Average variance extracted was .941, well above the recommended .5 criterion (Hair et al., 2010). As in experiment 1, shared variance was high for the advertising effectiveness measurements (attitude toward the advertisement, attitude toward the brand, and purchase

intentions), but the remaining pairs of latent constructs had shared variance ranging from .001 to .310. With shared variance levels are far below the average variance extracted, there is support for discriminant validity among the latent variables (Hair et al., 2010).

Cronbach's alphas were computed to measure the internal reliability for attitude toward the ad ( $\alpha = .91$ ), attitude toward the brand ( $\alpha = .96$ ), purchase intention ( $\alpha = .97$ ), loneliness ( $\alpha = .85$ ), and product knowledge ( $\alpha = .94$ ). Cronbach's alphas ranged from .85 to .97 demonstrating good ( $.8 \leq \alpha < 0.9$ , George & Mallery, 2003) to excellent ( $0.9 \leq \alpha$ , George & Mallery, 2003) levels of internal consistency.

## **Results**

Multivariate test of the second experiment's two factors, anthropomorphism appeal, revealed significant scores for individual factors but not for their interaction term (Table 7). The significant multivariate score suggests that the anthropomorphism appeal and visual type factors contain significant differences between group mean values of the dependent variables.

The third experiment evaluated the first two hypothesized main effects of anthropomorphism appeals ( $H_1$ -  $H_2$ ) using MANOVA (Table 8). The  $F$ -statistics pertaining to the main effects of an anthropomorphism appeal were significant in the case of attitude toward the brand ( $F(1) = 4.015, p = .047$ ) and attitude toward the advertisement ( $F(1) = 10.975, p = 001$ ). These findings offer partial support for  $H_1$  and  $H_2$  (attitude toward the brand and attitude toward the ad).

Table 7

*Multivariate Tests for Experiment 3*

Effect	<i>A</i>	<i>F</i>	<i>df</i> <sub>1</sub>	<i>df</i> <sub>2</sub>	<i>p</i>
Anthro. Appeal	.938	3.862	3	176	.010
Visual Type (drawing/photo)	.882	7.862	3	176	.000
Anthro X Type	.982	1.073	3	176	.362

Mediation analysis of the hypothesis related to purchase intentions (H<sub>3</sub>) was conducted using the same four-step method (Baron & Kenny, 1986) as the previous two experiments. As in the first two experiments, anthropomorphism appeal has non-significant direct relationship ( $\beta = .039, t = .187, p = .852$ ) with purchase intentions, leaving only the possibilities of no mediation or full mediation. In the following step, both attitude toward the brand ( $\beta = .562, t = 7.636, p < .000$ ) and attitude toward the ad ( $\beta = .478, t = 5.761, p < .000$ ) were found to have significant relationships with purchase intentions. In the final step, it is found that the influence of anthropomorphism appeal on purchase intentions is fully mediated by attitude toward the brand ( $\beta = .572, t = 7.718, p < .000$ ) and attitude toward the ad ( $\beta = .508, t = 5.988, p < .000$ ). These results offer support for H<sub>3</sub>, showing that an anthropomorphism appeal can increase purchase intentions through increasing attitude toward the brand or ad.



Table 8

*MANOVA Results for Experiment 3*

Factors	Dependent	<i>df</i>	<i>F</i>	<i>p</i>	$\eta\rho^2$
Anthro Appeal	A <sub>b</sub>	1	4.015	0.047	0.022
	A <sub>a</sub>	1	10.975	0.001	0.059
	PI	1	0.064	0.801	0.000
Visual (Drawing/Photo)	A <sub>b</sub>	1	15.376	0.001	0.058
	A <sub>a</sub>	1	0.058	0.829	0.000
	PI	1	20.079	0.000	0.067
A. Appeal X Visual	A <sub>b</sub>	1	0.224	0.637	0.001
	A <sub>a</sub>	1	1.233	0.268	0.007
	PI	1	0.983	0.323	0.006

*Note.* A<sub>a</sub> = attitude toward the advertisement, A<sub>b</sub> = attitude toward the brand, PI = purchase intentions.

Similar to the second experiment, the third experiment evaluated the same two moderating factors: loneliness and product knowledge. These continuous moderators were again evaluated using spotlight analysis.

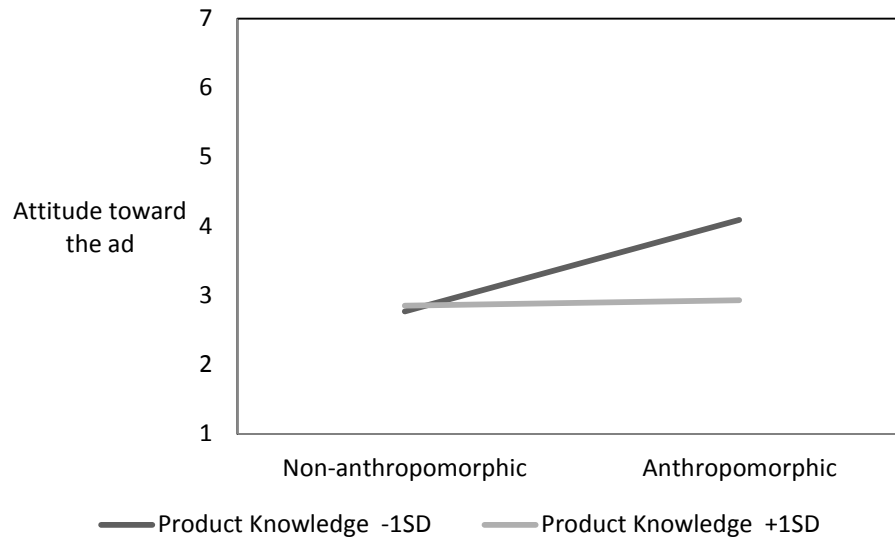


Figure 2. Interactive effects of product knowledge and appeal type on mean attitude toward the advertisement

Product knowledge was again shown to play a moderating role on an anthropomorphism appeal’s influence on attitude toward the advertisement. Anthropomorphism appeals were seen to have a stronger, positive influence on attitude toward the advertisement at mean levels of product knowledge ( $\beta = .559, t = 2.278, p = .025$ ) or one standard deviation below the mean ( $\beta = .826, t = 2.397, p = .019$ ). Subjects with product knowledge one standard deviation above the mean ( $\beta = .291, t = .815, p = .417$ ) did not significantly moderate this relationship. Overall, subjects with less product knowledge responded more positively to anthropomorphism appeals than those with relatively more knowledge (Figure 6). These results offer partial support for H<sub>7</sub> which

suggested that (decreasing) increasing product knowledge would be associated with (higher) lower levels of advertisement effectiveness.

Loneliness was found to moderate the main effect on attitude toward the advertisement. Those with mean levels of loneliness ( $\beta = .637, t = 2.530, p = .013$ ) and those one standard deviation above the mean ( $\beta = .834, t = 2.285, p = .025$ ) were associated with improved attitudes, but those one standard deviation below the mean ( $\beta = .441, t = 1.245, p = .216$ ) did not significantly moderate this relationship (Figure 7). This offers partial support for H<sub>8</sub> which suggests that (decreasing) increasing loneliness would be associated with (lower) higher levels of advertisement effectiveness.

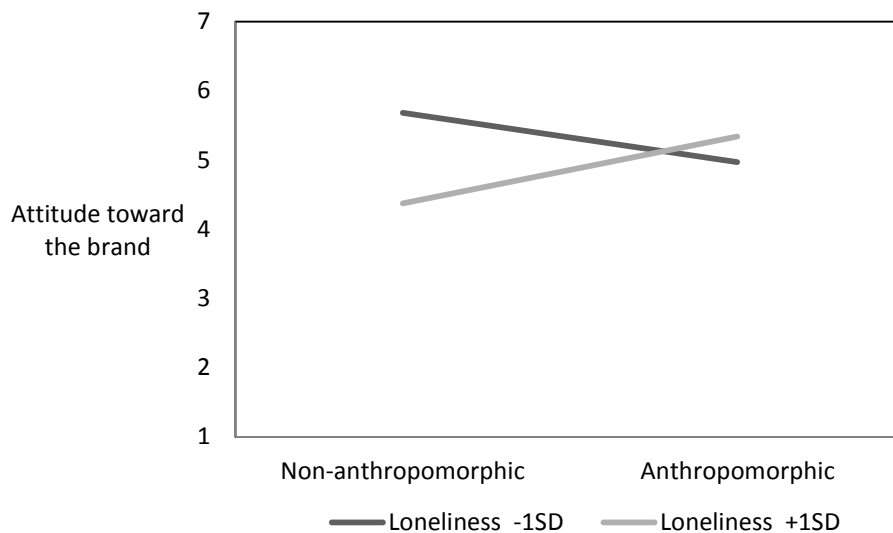


Figure 7. Interactive effects of loneliness and appeal type on mean attitude toward the advertisement

## Discussion

The results of the third experiment showed improved response to anthropomorphism appeals with visual elements compared to those in the first and second study which utilized text alone. This additional benefit took the form of increased attitude toward the brand and attitude toward the ad. It is thought that the visual elements added to viewer depth of anthropomorphic reasoning. Interestingly, the visual type (drawn/photographed) did not interact with anthropomorphism appeals, suggesting that a visual element increases anthropomorphic reasoning but that the type of visual element was not of consequence.

As in the second experiment, product knowledge was seen to moderate the relationship of anthropomorphism appeals on attitude toward the ad. Again, less knowledgeable subjects responded more favorably to anthropomorphism appeals than more knowledgeable ones. Loneliness was found to also moderate the influence of anthropomorphism appeals on attitude toward the advertisement. This influence was shown to improve attitudes when consumers reported average and relatively high loneliness. These findings show anthropomorphism appeals may find more success when targeted at specific individuals. The next chapter discusses each of these findings alongside those from the first two experiments to synthesize an overall perspective on anthropomorphism appeals.

## CHAPTER VI: GENERAL DISCUSSION

This chapter considers the results of all three studies (Table 9). These results offer an interesting picture of anthropomorphism appeals for theorists and promotional managers. Of interest to theorists is that the present studies support previously unevaluated anthropomorphism theory and expand upon it. For promotional managers, anthropomorphism appeals can be seen as beneficial presentations that are best managed with consideration for design, contextual, and individual factors. The following sections present the theoretical and managerial implications followed by a discussion of the research's limitations and future directions. This chapter concludes with a summary of the research's contribution.

Table 9

*Summary of Hypothesis Testing of all Three Experiments*

H#	Effect	Concern	Experiment 1	Experiment 2	Experiment 3
1	Main	Attitude to the brand	NS	NS	S
2	Main	Attitude to the ad	NS	NS	S
3	Mediation	Purchase intentions	S	S	S
4	Main	Recall	S	-	-
5	Moderation	HED/UTI	P	-	-
6	Moderation	Good/service	NS	-	-
7	Moderation	Product knowledge	P	P	P
8	Moderation	Loneliness	P	NS	P

*Note.* NS = not supported, S = supported, P = partially supported

## **Theoretical Implications**

The results across three experiments offer several insights into the theory of consumer anthropomorphism as well as anthropomorphism theory as a whole. The first and third experiments demonstrate that the scope of a single advertisement is adequate enough to engage consumer anthropomorphic reasoning. Critically, even this brief window of metaphoric thinking is shown to impact consumer recall and purchase intentions while potentially impacting attitude toward the brand and attitude toward the advertisement. Considering these results together, there is emergent support for the notion of degrees of anthropomorphic reasoning. Additionally, the magnitude and valence of a consumer's attitudinal response are determined by a combination of design, contextual, and individual factors. Finally, there is strong support for the adaptation of Epley et al.'s (2007) antecedent theory of anthropomorphism to the marketing context. The following discussion expands upon each of these insights.

In the first and third study it is shown that a single advertisement is adequate enough to engage consumer anthropomorphic reasoning. This finding is important as previous research has focused upon modifying the physical appearance of a good in order to manipulate anthropomorphism. Physically modifying a good to appear humanlike in one or more ways may indeed act as a continuous source of anthropomorphic priming. However, in the present work, even brief exposure to a basic textual advertisement was seen to engender increased recall and purchase intentions when anthropomorphism appeals were utilized. When a visual element was combined with an anthropomorphic text, subject response included increased attitude toward the brand and ad. The

implication is that consumer anthropomorphism can be influential even in brief moments of engagement, such with a print advertisement.

The three studies suggest there are degrees of a consumer's anthropomorphic reasoning. Though anthropomorphism theorists (e.g., Guthrie, 1997) have thought that anthropomorphism occurs across a gradient from metaphoric to literal anthropomorphism, to the knowledge of the author this gradient has never been established through empirical findings. In the present studies, anthropomorphism appeals were seen to have an increasing influence on subjects when the stimulus included text and visual elements rather than text alone. This suggests that the visual element caused increased levels of anthropomorphic reasoning that were not present when text alone was used. It may be the case that anthropomorphism offers additional perceptual fluency when there are additional elements (i.e., visual and textual elements) to be interpreted in human terms. Additionally, when more anthropomorphic elements are present, anthropomorphic reasoning may necessarily increase to process the entire stimulus as humanlike. A prominent conclusion for theorists then becomes that anthropomorphism must be considered in terms of degrees rather than being an on-off switch as may be implied from research designs with control and anthropomorphism treatment conditions. Experimental stimuli involving anthropomorphism should be carefully designed with regard to the number of anthropomorphic elements as these elements appear to engender increased levels of anthropomorphic reasoning.

The three studies show the magnitude and valence of a consumer's attitudinal response may be determined by a combination of design, contextual, and individual

factors. In terms of design, the inclusion of a visual element alongside text produced a greater attitudinal response from subjects. In terms of context, there was an additional influence on attitude toward the advertisement when the product being presented was hedonic rather than utilitarian. Finally, and most substantially, individual factors were shown to predict both the magnitude and valence of subject response to anthropomorphism appeals. Considering these factors, it appears anthropomorphism is a phenomena that cannot be fully understood without recognizing the role of the stimulus design, the context in which it occurs, and the individual's propensity to anthropomorphize.

Important to the broader understanding of anthropomorphism is evidence that there are instances when anthropomorphic thinking has a negative impact on subject attitudes. High product knowledge levels can reverse the normally positive influence of an anthropomorphism appeal. This was seen in the second experiment when subjects viewing anthropomorphism appeals who reported relatively high product knowledge (one standard deviation above the mean) were found to have less favorable ( $\beta = -.777$ ) attitudes toward the advertisement. This reversal of influence when consumers were particularly knowledgeable implies that anthropomorphism appeals may be disliked when they are unneeded to satisfy a knowledge deficit. It may seem to consumers who report high product knowledge that anthropomorphism appeals are inaccurate knowledge models for the product in question. It may also be the case that these consumers feel manipulated to entertain a metaphor toward a product they understand when they have a sufficient, preexisting knowledge model.



Psychologists (e.g., Epley et al., 2007) have recognized that individual factors play significant roles in predicting the individual's tendency to engage in anthropomorphic reasoning. The present work offers support for this theory in showing an influence of both product knowledge and loneliness (factors derived from Epley et al., 2007) in the context of marketing. However, the antecedent factors that are derived from this theory have not been successfully applied in other marketing studies (e.g., Delbaere et al., 2011). In this regard, the present research acts as a unique demonstration of how Epley et al.'s (2007) theory can be successfully bridged to the consumer context.

### **Managerial Implications**

The present series of studies suggest anthropomorphism appeals are a useful promotional tool that is optimized alongside segmentation strategies. Three studies demonstrate that anthropomorphic reasoning, even when brief (i.e., the scope of a single advertisement exposure), can potentially increase recall (experiment 1), attitude toward the brand (experiment 3), attitude toward the advertisement (experiment 3), and purchase intentions (experiments 1, 2, and 3; see Table 9). These positive effects can be further increased when consumers have relatively low product knowledge, relatively high loneliness, and the product category is hedonic. At times when viewer product knowledge is relatively high, anthropomorphism appeals may have a negative influence on attitude toward the ad.

The most readily attained benefit of an anthropomorphism appeal is increased recall. By merely presenting a product as humanlike in a basic textual ad, it was easier for subjects to recall the information related to it. An important point here is that the

types of information recalled were not strictly anthropomorphic, but rather were product information presented in the first person. This finding alone offers support for the widespread use of anthropomorphism that can be seen in the marketplace. For this matter, anthropomorphism appeals can be seen to offer special advantage to the extent to which the advertisement is intended to reinforce viewer recall of information. This result also suggests that anthropomorphism appeals may offer brands a better means to achieve top-of-the-mindedness. One consideration for this finding is that recall was increased for an anthropomorphism appeal even when subject attitudes did not improve. In other words, anthropomorphism appeals enhance recall even when they do not enhance attitudes toward the brand or ad.

Though the first and second experiments did not evidence an attitudinal influence of anthropomorphism appeals, the additional visual elements in the third experiment caused a significant, positive influence on each attitudinal outcome. This was evidenced in the third experiment where there were additional main effects seen upon attitudes toward the brand and attitudes toward the advertisement. For practitioners, this result suggests that anthropomorphism appeals are stronger when the ad presentation has a rich array of elements (e.g., text, visuals) with which to depict the human metaphor.

### **Segmentation Strategies**

Segmentation strategies are strongly implicated in terms of product category and individual characteristics. When the product being depicted as humanlike was hedonic, anthropomorphism appeals are shown to have an additional, positive influence on viewer attitude toward the advertisement. In terms of individual moderating factors, recall was

enhanced for subjects with relatively low product knowledge and/or relatively high loneliness. Similarly, attitude toward the ad was enhanced for subjects with low product knowledge and/or high loneliness. Finally, subjects with relatively high product knowledge responded negatively to anthropomorphism appeals. In total, the present research suggests marketers would be most successful at employing anthropomorphism appeals for hedonic products using several anthropomorphic elements (e.g., textual and visual) while targeting segments of less knowledgeable, more lonesome consumers. A deeper explanation of the role of each of these segmentation variables is discussed below.

Promotional managers should consider anthropomorphism appeals as particularly useful tools to influence consumers with less product knowledge. Product knowledge was a significant moderator in each experiment. The general pattern of influence was that less knowledgeable consumers responded more favorably to and recalled more material from anthropomorphism appeals than relatively more knowledgeable consumers. These findings support the notion that anthropomorphism offers less knowledgeable consumers a familiar frame of mind to process product stimuli. This finding is similar to other research (Hart et al., 2013) that reported an inclination for consumers to anthropomorphize complex products, which may be frequently associated with product knowledge deficits.

Promoters may also expect higher levels of advertisement effectiveness when anthropomorphism appeals are targeted at lonely consumers. Loneliness was found to play a moderating role in the first and third experiments, with beta coefficient ranging from  $\beta = .390$  to  $\beta = .834$ . These coefficient sizes suggest that loneliness plays a

substantial role when applicable. As predicted, anthropomorphism appeals had a stronger influence on advertisement effectiveness for more lonely subjects. In the first experiment, increased levels of loneliness were associated with increased levels of recall for information from an anthropomorphism appeal. In the third experiment, increased levels of loneliness were associated with increased attitudes toward the advertisement.

Contextual moderators were also found to play a role in determining how effective anthropomorphism appeals were. In particular, product category moderated the influence of an anthropomorphism appeal in such a way that hedonic anthropomorphism appeals were associated with increased attitudes toward the advertisement and purchase intentions where utilitarian anthropomorphism appeals were not. This finding resembles that of Ang (2002) who demonstrated differences between the effectiveness of metaphoric presentations of hedonic and utilitarian products. The present evidence offers an important managerial implication: anthropomorphism appeals can, in part, be managed using a product-based perspective rather than strictly an individual-based approach. In other words, improving consumer response to anthropomorphism appeals may not strictly be a matter of segmenting individual consumers (i.e., in terms of product knowledge and loneliness). Rather, anthropomorphism appeals may be more appropriately deployed for particular products. This product-based perspective of managing consumer anthropomorphism is echoed in a study where more complex products were anthropomorphized to a greater extent (Hart et al., 2013). Future research should expand upon the product categories and characteristics that enhance or detract from the effectiveness of anthropomorphism appeals.

## **Limitations and Future Directions**

Though the present research offers unique insights into anthropomorphism appeals, some limitations should be noted alongside future directions that may amend these limitations. The design of the present experiments naturally cast limits on the research implications. For instance, recall was only measured in the first experiment. This measurement was not carried forward to the second and third study primarily for practical reasons. In order to measure recall, filler ads had to be included, a distraction task had to be implemented, respondents had to take time to make free-responses, and finally coding had to take place. The increased time and expense made it an impractical procedure to repeat. However, in not carrying the measurement of recall forward, it is not clear whether or not repeated exposures (such as the series of advertisements in the second experiment) or visual elements (such as those in the third experiment) play any role in enhancing recall of anthropomorphism appeals. Similarly, the contextual factors of product category and type were not carried to the second and third experiments. Future research could consider these foregone scenarios.

Though anthropomorphism appeals were shown to enhance recall of advertisement material, it is not clear from a brand management perspective how such results may apply to brand names. This lack of clarity comes from recall having been measured after eliciting a response using the brand name of the treatment ad, thereby preventing the free-recall of the brand name. As brand name is a paramount element of the branding process, future research should consider the ability of an anthropomorphism appeal at fostering recall of specifically brand names. It may even be the case that a

brand name is especially reinforced by anthropomorphism appeals as brands are known to have unique names and personalities in a similar way to humans, thereby meshing well with the human metaphor.

The present studies evidenced that visual and text elements combined produced the most favorable subject response. It was reasoned that additional elements increased subjects' degree of anthropomorphic reasoning. However, it may be the case that yet additional layers of presentation elements could further increase anthropomorphic reasoning. Future research should explore the potential of television and Internet ads at displaying humanlike movement and audio to further enhance the salience of anthropomorphism appeals. Internet ads may also be explored in terms of their ability to increase humanlike presentation through interactivity.

Finally, as noted by other research (Hart et al., 2013), there is not a validated scale to measure consumer anthropomorphism. This is of concern because manipulation checks are a cornerstone of sound experimental designs, yet experiments involving anthropomorphism are each utilizing naïve measures (e.g., Aggarwal & McGill, 2007). The same limitation is in the current research where a naïve 3-item scale was created to measure advertisement anthropomorphism. In using a non-validated measure, it is uncertain the manner in which the control and treatment stimuli differed or failed to differ. An important step for future experimental anthropomorphism research in marketing and across other fields is the development of context-specific anthropomorphism scales with validated psychometric properties.

## **Contribution and Conclusion**

The present series of studies makes key contributions to theory and practice. On the front end of these contributions is that the present research offers three empirical evaluations of a relatively unexplored, yet commonplace phenomenon: consumer anthropomorphism. Furthermore, this empirical glimpse evaluated contextual (i.e., product category and product type) and individual (i.e., product knowledge) variables that have not been previously considered. Beyond these contributions is the value the present study has in demonstrating that anthropomorphism appeals can increase advertising effectiveness. Anthropomorphism appeals are shown to increase recall, attitude toward the brand, attitude toward the ad, and purchase intentions. These findings support the continued use of anthropomorphism appeals in practice and their continued investigation in marketing research. The present study is also of special value in its successful adaptation of Epley et al. (2007) antecedent theory of anthropomorphism to marketing. This theoretical importation acts as an early connection between the quickly developing fields of anthropomorphism research in psychology and marketing. For practitioners, the present study offers an early roadmap to designing anthropomorphism appeals, selecting which products to present, targeting the right consumers, and avoiding the wrong ones.

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## APPENDIX A – Stimuli

### Experiment 1 Stimuli

#### Hedonic – Good Ads

##### *Non-anthropomorphism Appeal*

A new video game system is out called GameOn!

- Play the latest, cutting-edge video games
- Built-in Wi-Fi for wireless internet access
- 250 gigabytes of memory
- Operate with wireless controllers
- Update your system automatically

##### *Anthropomorphism Appeal*

I am a new video game system called GameOn!

- I can play the latest, cutting-edge video games
- I have a built-in Wi-Fi for wireless internet access
- I have a memory of 250 gigabytes
- I operate with wireless controllers
- I update myself automatically

#### Hedonic – Service Ads

##### *Non-anthropomorphism Appeal*

A new video game service is out called GameOn!

- Access over 1000+ games available for download or demo from your home
- Easily keep each of your games updated
- Connect to the World's largest gaming community
- 24-hour technical support
- Receive special offers of 25-75% off game prices

##### *Anthropomorphism Appeal*

I am a new video game service called GameOn!

- I have over 1000+ games available for download or demo from your home
- I keep each of your games updated
- I connect you to the World's largest gaming community
- I offer 24-hour technical support
- I will give you special offers of 25-75% off game prices

#### Utilitarian – Good Ads

##### *Non-anthropomorphism Appeal*

A new kind of vacuum, CleanOn!

- Powerful 12amp motor
- Nimble swivel head
- Dual HEPA filters
- Lightweight design for agile cleaning
- Illuminate your path with automatic headlights

*Anthropomorphism Appeal*

I am CleanOn, a new kind of vacuum!

- I have a powerful 12amp motor
- I am nimble with a swivel head
- I have dual HEPA filters
- I am lightweight and perform agile cleaning
- I automatically illuminate my path with my headlights

Utilitarian – Service Ads

*Non-anthropomorphism Appeal*

A new cleaning service, CleanOn!

- Enjoy a clean home this Summer
- Get a fast and thorough cleaning of any room
- Specially formulated cleaning products
- Available 7 days a week for your convenience
- Satisfaction guaranteed

*Anthropomorphism Appeal*

I am a CleanOn, new cleaning service!

- I want to help you enjoy a clean home this Summer
- I can perform a fast and thorough cleaning of any room
- I use specially formulated cleaning products
- I am available 7 days a week for your convenience
- I guarantee your satisfaction

## Experiment 2 Stimuli

### Non-anthropomorphism Advertisement Series

A new video games: GameOn!

GameOn is one of the industry's most innovative games. Different from all other games, GameOn is focused on unique and memorable gaming experiences. Buying a new game can be risky, so a free demo is available.

---

GameOn is improving!

All games have a problem now and then. The trouble really comes when you try to get help. Not with GameOn. You can call anytime 24 hours a day, 7 days a week. When you need help, it is always there.

---

GameOn is expanding!

With so many customers like you, GameOn is expanding. To celebrate, free game content for download will be made available for existing customers.

### Anthropomorphism Appeal Ad Series

I am a new video game, GameOn!

I am one of the industry's most innovative games. Sure, I could do things like the rest of them, but I focus on unique and memorable gaming experiences. I know that my approach might seem risky, so I am making myself available for free demo.

---

Hi everyone! It's me, GameOn, to tell you about how I am improving.

Let's face it- all games have a problem now and then. The trouble really comes when you try to get help. Not me with though. You can call me anytime 24 hours a day, 7 days a week. When you need help, I've got your back.

---

GameOn here again. I am growing!

With so many customers like you, I am growing. To celebrate, I am making free game content for download by my existing customers.

## Experiment 3 Stimuli

### Drawing Visual Ads

#### *Non-anthropomorphism Appeal*



Envision yourself with me, Flash, a new kind of sports car!

I have an elegant design that is both stylish and aerodynamic. With my powerful 300 horsepower engine, driving with me is less like transportation and more like an adventure. My sophisticated onboard computer takes care of the rest, ensuring your route, traction, and safety.

#### *Anthropomorphism Appeal*



Envision yourself in a new kind of sports car- Flash!

Flash has an elegant design that is both stylish and aerodynamic. With a powerful 300 horsepower engine, driving the Flash is less like transportation and more like an adventure. Flash's sophisticated onboard computer takes care of the rest, ensuring your route, traction, and safety.

## Photographic Visual Advertisements

### *Non-anthropomorphism Appeal*



### *Anthropomorphism Appeal*



## APPENDIX B – Summary of Pretests

### Pretest 1

Category	HED	UTI
auto	3.49	5.73
cpu	4.66	5.97
telecom	4.4	5.5
record	3.71	5.74
clean	3.24	6.28
alcohol	4.27	3.7
wed	4.59	4.45
photo	4.3	5.18
massage	4.21	4.88
games	4.97	4.03

### Pretest 2

	Type	HED	UTI
Good	Cleaning	3.32	6.37
	Video	5.17	4.42
Service	Cleaning	3.43	5.95
	Video	4.42	4.66
Good	Cleaning	6.37	6.37
	Video	4.42	4.42
Service	Cleaning	5.95	5.95
	Video	4.66	4.66

### Pretests 3 through 5

	PRETEST 3				PT 4	PRETEST 5	
	Gaming Text		Cleaning Text		Ad Series	Text & Visual	
	<u>Good</u>	<u>Service</u>	<u>Good</u>	<u>Service</u>		<u>Drawing</u>	<u>Photo</u>
Anthro Ad	4.14	4.65	4.68	5.32	5.74	5.01	4.27
Obj Ad	2.21	2.28	2.32	3.73	4.78	3.51	1.84

Note. Values represent mean perceived advertisement anthropomorphism