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Use does not wear ragged the fabric of friendship:

Thinking of objects as alive makes people less willing to replace them.

Jesse Chandler

Norbert Schwarz

University of Michigan

Contact information:

Jesse Chandler

Dept. of Psychology

University of Michigan

530 Church Street

Ann Arbor, MI 48109-1043

E-mail: jjchndl@umich.edu

Voice: 734-330-0104

Abstract

Anthropomorphic beliefs about objects lead people to treat them as if they were alive. Three experiments, using different products and different manipulations of anthropomorphic thought, demonstrate the consequences of anthropomorphic thought on replacement intentions.

Participants induced to think about their computer or car in anthropomorphic terms (i) did not consider the quality of the product when making replacement decisions. Instead, they (ii) attended to features that are more relevant in an interpersonal context. Furthermore, participants (iii) were less willing to replace their products when anthropomorphic cues were salient. While anthropomorphic beliefs about brands are often seen as advantageous by marketers because they increase feelings of loyalty and commitment, similar beliefs about products may be less desirable from a marketing perspective.

(120 words)

Use does not wear ragged the fabric of friendship:

Thinking of objects as alive makes people less willing to replace them.

Although most people know that cars and computers are inanimate, at times they treat them as if they were alive. Most of us at some point have argued (or pled) with a computer, felt attached to a favorite sweater or expressed love for a new car. Anthropomorphic objects are also commonly featured in movies and books intended for both children (e.g., *The Brave Little Toaster*, Disch, 1987; *Cars*, Anderson & Lasseter, 2006) and adults (e.g., *2001: A Space Odyssey*, Kubrick, 1968; *Christine*, King, 1983). People are experts in representing, predicting and interacting with both the physical and social worlds. When thinking about objects and people, there are important differences in the processing of information, both at a neural level (Mitchell, Heatherton & Macrae, 2002; Yoon, Gutchess, Feinberg & Polk, 2006) and in terms of self-report and behavioral measures (e.g. Cosmides, 1989). Thus whether a target is categorized as living or not has downstream consequences on what information comes to mind, what information is deemed relevant and what predictions seem plausible when thinking about the target.

We examine the consequences of anthropomorphism on the kinds of information consumers' attend to when forming product replacement intentions. Whereas objects are primarily evaluated based on how well they function, functionality is far less important when evaluating people – and we assume that the same may hold for anthropomorphized objects. We predict, and find, that priming anthropomorphic beliefs about a product shifts attention away from pragmatic considerations (such as the product's functionality) and makes consumers sensitive to information that figures prominently in the interpersonal realm (such as the product's perception as “warm” or “cold”). In three studies, consumers (i) report lower intentions to replace

a product they own when they are induced to think about it in anthropomorphic terms (Studies 1-3). More important, (ii) priming consumers to think about the product in anthropomorphic terms decouples replacement intentions from the product's perceived quality and functionality; whereas product quality predicts replacement intentions in the control conditions of all studies, it does not do so in the anthropomorphic thought conditions (Studies 1-3). Instead, (iii) consumers who are primed to think about the product in anthropomorphic terms turn to information that is valued in the interpersonal domain and are less likely to replace a product with (experimentally manipulated) "warm" rather than "cold" connotations (Study 3). Next, we review relevant research and develop our rationale in more detail.

Anthropomorphic Thought

In principle almost any object of thought can become anthropomorphized, even invisible entities (e.g. ghosts; Bering, 1999) or purely symbolic concepts (e.g. brands; Aaker, 1997 for a review see Guthrie, 1993). People are particularly likely to spontaneously anthropomorphize objects that have human-like physical features, such as eyes (Jones, Smith & Landau, 1991; Haley & Fessler, 2005; Jipson & Gelman, 2007), hands (Woodward, 1999) or a human-like form (Aggarwal, 2007; Trampe, Stapel & Siero, 2007), or that behave in an apparently complex or intentional manner (Heider, 1946; Epley, Waytz, Akalis & Cacioppo, 2008). In addition, individual difference variables, like loneliness and desire for social contact, are associated with a higher propensity to anthropomorphize objects (Epley, Akalis, Waytz, & Cacioppo, 2008). Throughout, the findings are compatible with general models of knowledge accessibility (Higgins, 1996) and suggest that any variable that increases the temporary or chronic accessibility of agentic beliefs is likely to foster anthropomorphic thought about objects (Epley et al., 2007).

When people think about objects in anthropomorphic terms, they apply knowledge about the social world to the inanimate world. This is reflected in categorization decisions (e.g., Jones

et al., 2001) and the use of social categories (like gender or age) in the description of objects (e.g., Heider & Simmel, 1944; Berry & Springer, 1993). Moreover, people apply social schemas to objects and prefer objects that fit the schema. This leads consumers to prefer product lines that match social structures, such as “family”, and cars that smile rather than frown (Aggarwal & McGill, 2007).

Once a product is anthropomorphized, it becomes possible for consumers to enter into a relationship with it, changing the emotional quality of consumers’ experience with their possessions. Social interaction is pleasurable, and imbuing a product with anthropomorphic cues leads consumers to experience more positive affect when interacting with it (Wang, Baker, Wagner & Wakefield, 2007). Indeed, even in the absence of anthropomorphic cues, some consumers spontaneously experience uniquely social emotions when interacting with objects, including love (Schultz, Kleine & Kerman, 1991) and trust (Aaker et al., 2004). Over time connections to special products and objects can grow, leading consumers to form a sense of attachment that parallels interpersonal attachment patterns (Wallendorf & Arnould, 1988; Ball & Tasaki, 1992; Bowlby, 1980). As a result, much like in interpersonal relationships, consumers can come to depend on objects, feeling a sense of security when they are close and distress when they are absent (Thomson, MacInnis & Park, 2005). Some companies have experimented with capitalizing on customers feelings of loyalty to reduce business costs. For example, Zipcar decided to name all of its rental vehicles and reported that this led customers to be more diligent about cleaning and maintaining them (Levine, 2009). In combination, these observations suggest that consumers should be less willing to replace a product they own when they think about it in anthropomorphic terms.

Moreover, anthropomorphic thought is likely to influence which type of information consumers consider crucial in evaluating a product. This prediction follows from the observation

that thought about the inanimate world is usually dominated by instrumental considerations, whereas thought about the social world is not. For example, product quality and performance are central to product evaluation and these instrumental attributes usually trump more symbolic attributes of the product, such as brand image and brand personality. For example, in a study of retail store brands, Zentes and colleagues found that the effect of store performance on attitudinal and behavioral measures of customer loyalty was more than twice as strong as the effect of customers' perceptions of brand personality (Zentes, Morschett & Schramm-Klein, 2008). In contrast, people maintain interpersonal bonds with relatively little regard for the instrumental contributions offered by others (Leach, Ellemers, & Barreto, 2007; Jones & Vaughan, 1990). Instead, considerations of the intentions behind actions (Falk, Fehr & Fischbacher, 2008), communality and relational status often trump considerations of instrumentality, like the actual contributions of the other's skills and competence to one's own outcomes (Ybarra, Chan & Park, 2001; Wojciszke, Bazinska & Jaworski, 1998; Marijin, Spears, Van der Plight & Jakobs, 1992; for a recent review see Ybarra et al. 2008). Social relationships are maintained even when they require costly sacrifices (Simmons, Marine & Simmons, 1977) and people routinely invest resources in caring for the old, the sick and the weak, even when they can no longer serve a useful function (Branscombe, Wann, Noel, & Coleman, 1993; Levine & Moreland, 2002).

In combination, this theorizing leads to three predictions pertaining to the role of anthropomorphic thought in consumers' product replacement decisions. First, consumers are less willing to replace a product they own when they are induced to think about it in anthropomorphic terms than when they are not. Second, consumers are less likely to base replacement decisions on instrumental attributes of the product under anthropomorphic thought conditions and, third, more likely to consider attributes that are usually deemed important in the interpersonal domain.

The Present Research

We tested these predictions in three studies, using an experimental strategy that differs from the two dominant strategies employed in anthropomorphism research. One common strategy is essentially correlational and relies on observed parallels between social cognition and object cognition as evidence of anthropomorphic thought (e.g., Aggarwal, 2004; Berry & Springer, 1993; Heider & Simmel, 1944; Schultz, Kleine & Kerman, 1991; Thomson, MacInnis & Park, 2005; Wallendorf & Arnould, 1988; Ball & Tasaki, 1992). A second common strategy endows objects with human features to elicit anthropomorphic beliefs, e.g., by having the object talk, smile, frown, and so on (e.g., Aggarwal & McGill, 2007; Epley et al., 2008; Haley & Fessler, 2005; Jones, Smith & Landau, 1991). Although both approaches have demonstrated anthropomorphic thoughts about objects, skeptics may wonder to which extent the results reflect the spontaneous application of social knowledge to objects as opposed to the influence of pragmatic linguistic or situational considerations. Parallels between how individuals describe objects and people could reflect mere linguistic convenience. Moreover, the presentation of objects with human features may convey that the object is to be thought about in human terms – or why else would it be endowed with these features? From this perspective, the observation of apparent agentic beliefs about an anthropomorphized object may, at least in part, be the result of inferences about the intentions of the communicator (Schwarz, 1996).

The present studies attempt to attenuate these ambiguities in two ways. First, we do not assess object descriptions that may invite the use “human” terms for reasons of linguistic convenience. Instead, we assess product replacement intentions as a decision to which social norms are applicable. Second, we hold the object constant and manipulate, through a preceding question, whether technical or “psychological” attributes of the objects are likely to come to mind.

Moreover, we make extensive efforts to disguise the purpose of the experiments to limit demand characteristics. In all studies, participants were induced to think about their computer (Study 1) or their car (Studies 2 and 3) as alive. In Study 1, a metaphor comprehension task was introduced as a separate study; it included a question that directly asked participants about the ways in which their computer is like a tool or like a friend or family member. In Studies 2 and 3, we replaced this blatant manipulation with a more subtle one that asked participants to rate their car on attributes pertaining to either technical characteristics or personality characteristics, paralleling the assessment of brand personalities. Following these manipulations, participants described the product in their own words and reported how likely they are to replace it in the near future. As predicted, (i) participants reported lower replacement intentions when anthropomorphic beliefs were rendered highly accessible (Studies 1-3). Moreover, (ii) participants' replacement intentions depended on the quality of the product when anthropomorphic beliefs were not primed, but were independent of product quality when anthropomorphic beliefs were primed (Studies 1-3). We further assumed that anthropomorphic thought would increase the impact of "psychological" characteristics of a product. To test this prediction, Study 3 led participants to see the color of their car as either "warm" or "cold", two characteristics that figure prominently in the interpersonal domain (Asch, 1946). As expected, (iii) these attributes influenced replacement intentions under anthropomorphic thought conditions, but not otherwise (Study 3).

Study One

Method

Participants ($N = 127$) were recruited from the introductory psychology pool of a large mid-western university and completed the study online for credit. They were told: "We are conducting research on metaphors. You will be presented with a number of questions designed to

examine how people interpret metaphors. Some of the metaphors may seem strange, but we would like you to try your best to answer them as best you can. After each metaphor, we will ask you a number of factual questions in order to understand your responses.”

In order to minimize demand characteristics, attention was shifted away from the dependant variables of interest by embedding the task in a series of other metaphors and by emphasizing that participants descriptions of the metaphors themselves were the dependant variable of interest. All participants completed several free-response warm up questions followed by specific questions relating to the topic and vehicle of the metaphor (e.g. “In what way is a basketball player a skyscraper?” followed by questions about basketball players and skyscrapers). Next, participants assigned to one of three experimental conditions wrote about the way in which their computer was either a family member, a best friend, or a tool (“In what way is your computer your brother/best friend/a tool?”); participants assigned to the control condition made no metaphorical comparison for their computer. Subsequently, participants were asked to describe their computer in their own words and reported how likely they were to replace it within the next 24 months (1 = *not at all*, 7 = *very much so*).

Participants’ open-ended descriptions of their computers were rated for valence by two coders blind to condition and the hypotheses of the experiment. Agreement between coders was high ($\alpha = .90$) and their scores were averaged to form an index of computer quality (-3 = *extremely negative description*; +3 = *extremely positive description*).

Results

Coders’ ratings of participants’ open-ended descriptions of their computers suggested that thinking of a computer in metaphorical terms resulted in a significant increase in the positivity of the descriptions, suggesting that *all* metaphors brought positive features of the computer to mind

(family member, $M = 1.55$, $SE = .21$; best friend, $M = 1.25$, $SE = .22$) compared to the tool and control conditions, (tool, $M = 1.13$, $SE = .21$; control condition, $M = .73$, $SE = .21$), $F(1, 121) = 3.27$, $p < .08$, $\eta_p^2 = .03$, for the planned contrast. The most parsimonious explanation of these means is that thinking about one's computer in metaphorical terms had a positive effect on descriptions, independent of whether the metaphor was anthropomorphic (friend, family member) or not (tool); contrasts adjusting for the number of conducted and implicit contrasts (Contrasts: Kin 1, Friend 1, Tool 1, Control -3; Kin 3, Friend 1, Tool -2, Control -2; Alive v. Non-alive, each of the alive metaphors against the other conditions; see Rosenthal, Rosnow & Rubin, 2000) confirmed that this was in fact the case, $F(1, 121) = 6.98$, $p_{\text{adjusted}} < .05$, $r_{\text{contrast(adjusted)}} = .18$.

Next, we turn to participant's willingness to replace their computers. Participants wanted to replace their computer less when they had thought of it as family ($M = 1.76$, $SE = .35$) or as a friend ($M = 1.73$, $SE = .37$) than when they had thought of it as a tool ($M = 2.50$, $SE = .37$) or in the control condition ($M = 2.72$, $SE = .36$). As expected, planned contrasts with the valence of the description entered as a covariate revealed that thinking of a computer as if it was alive made people less willing to replace it, $F(1, 120) = 4.25$, $p < .05$, $\eta_p^2 = .03^i$, whereas the use of the non-anthropomorphic tool metaphor did not affect replacement intentions relative to the control condition, $F < 1$.

Turning to the relationship between people's willingness to replace their computer and the positivity of their product description, we predicted that the perceived quality of the computer will matter less for those who have anthropomorphized their computer. After all, people do not replace other living beings based on their poor technical qualities. To test this hypothesis, participants' willingness to replace their computer was regressed on computer quality, a dummy coded variable comparing anthropomorphic versus non-anthropomorphic conditions and the interaction between these variables. Reflecting the findings discussed above, we found that

people who anthropomorphized their computer were less willing to replace it, $\beta = -.43$, $t(120) = 3.47$, $p < .001$. Additionally, as perceived computer quality increased, willingness to replace it decreased, $\beta = -.42$, $t(120) = 3.69$, $p < .01$. More important, these findings were qualified by the predicted interaction between anthropomorphism and computer quality, $\beta = .42$, $t(120) = 2.78$, $p < .01$. As shown in Figure 1, more negative descriptions of the computer's quality predicted participants' willingness to replace their computer in the non-anthropomorphic conditions, $\beta = .35$, $t(60) = 2.89$, $p < .01$, but not in the anthropomorphic conditions, $\beta = .10$, $t(61) < 1$.

Discussion

In sum, thinking about their computer in terms of *any* metaphor increased the positivity of participants' descriptions, independent of whether the metaphor was anthropomorphic (friend or family member) or not (tool). Presumably, this is because all three metaphors draw attention to positive features of the computer, although the precise features that people think about may differ. More important, *only* anthropomorphic metaphors reduced participants' willingness to replace their computers and this effect held even after controlling for the positivity of their description of their computer. In contrast, participants who thought of their computer as a tool were as likely to replace it as control group participants, despite having provided a more positive description. Finally, participants' description of the quality of their computer predicted their willingness to replace it in the tool condition and the control condition, but was unrelated to replacement intentions in the anthropomorphic metaphor conditions. While these findings are consistent with our theoretical rationale, two possible alternative accounts deserve attention.

First, although our anthropomorphism manipulations were embedded in a set of questions about other metaphors, it is possible that demand characteristics contributed to our findings. Specifically, it may be difficult for people to say they will replace an object that they had just described as a friend or a family member, regardless of whether they accept the anthropomorphic

premise. Second, thinking about one's computer as a friend or family member may prime positive attributes that may otherwise not come to mind and these attributes, rather than anthropomorphic thought per se, may have reduced reported replacement intentions. A perusal of participants' free-response descriptions of their computers provides no apparent support for this possibility; moreover, the above results were obtained while controlling for positivity of the description. Nevertheless, a replication that avoids this ambiguity would be welcome.

Study 2 addresses both of these concerns. It uses a more subtle manipulation of anthropomorphic thought and replicates the findings of Study 1 in the absence of differences in participants' product descriptions.

Study Two

While inducing anthropomorphic thought by asking people in which ways their computer is like a friend or family member has a high level of face-validity, this advantage comes at the cost of demand characteristics. Conversely, more subtle manipulations reduce the concern of demand characteristics, but do so at the cost of face-validity. Concerns with either strategy are attenuated when blatant and subtle manipulations converge in producing the same pattern of results. Accordingly, Study 2 uses a novel and subtle manipulation of anthropomorphic thought by rating a product either on technical characteristics or on related personality characteristics. As research into brand personality indicates (e.g., Aaker 1997; Fournier, 1998; Plummer, 2000), consumers attribute traits to brands, which suggests that questions about the traits of products may seem rather innocuous in the context of a market research survey.

Method

Participants ($N = 92$) completed the study online for partial course credit. They were told that the survey explored “what people think about their cars.” Participants assigned to the Anthropomorphism condition first rated their car on five bipolar scales anchored with personality traits (*reserved - enthusiastic, quarrelsome - sympathetic, dependable - irresponsible, open to new experiences – uncreative, and anxious - calm*), whereas participants assigned to the Object condition rated synonymous mechanical attributes of their car (*quiet – loud, unresponsive – responsive, unreliable – reliable, versatile – limited, shaky - smooth*). Participants assigned to the Control condition completed neither of these scales. Subsequently, participants described their car in their own words and rated the likelihood that they would replace their car before they left college (1 = *not at all*, 7 = *very much so*).

Results

The strategy of analysis was similar to Study 1. Descriptions were coded for valence by two coders blind to conditions and hypotheses ($\alpha = .80$); the coders’ ratings were averaged to create a composite measure of perceived car quality ($-3 = \textit{extremely negative description}$; $+3 = \textit{extremely positive description}$). Planned contrasts were computed to compare the Anthropomorphism condition to the other two conditions and both ratings scale conditions to the no-rating control condition. In contrast to Study 1, there was no difference in overall valence of participants’ descriptions of their car, $F_s < 1$.

Next we turn to how willing participants were to replace their car. Planned contrasts comparing the anthropomorphic condition to the other two conditions confirmed that people reported less intention to replace their car after thinking of it in terms of personality traits ($M = 2.23$, $SE = .35$) than after thinking of it in terms of technical characteristics ($M = 3.14$, $SE = .37$)

or in the control condition ($M = 3.15$, $SE = .34$), $F(1,89) = 4.52$, $p < .04$, $\eta_p^2 = .05$. Planned comparisons revealed that the personality-rating condition differed from technical attributes, $F(1, 89) = 3.21$, $p < .05$, one-tailed, as well as the control condition, $F(1, 89) = 3.55$, $p < .05$, one-tailed, whereas the latter two conditions did not, $F < 1.2$.

Turning to the relationship between people's descriptions of their cars and their willingness to replace them, participants' reported intentions were regressed on condition (again dummy coded into anthropomorphic versus non-anthropomorphic), car quality, and the interaction between these variables. Reflecting the findings discussed above, participants who had thought about their cars in personality terms rather than technical terms reported lower intentions to replace their cars, $\beta = -.21$, $t(87) = 2.21$, $p < .03$. Also, as expected, the more negative the description of their car, the more willing they were to replace it, $\beta = -.50$, $t(87) = 4.17$, $p < .001$. As in Study 1, however, this finding was qualified by an interaction between anthropomorphic prime and quality rating, $\beta = .25$, $t(87) = 2.10$, $p < .05$ (Figure 2). An examination of the simple effects revealed that while poor quality ratings increased intention to replace in the non-anthropomorphic and control conditions, $\beta = -.45$, $t(58) = 3.56$, $p < .001$, intention to replace was unrelated to quality in the anthropomorphic condition $\beta = -.12$, $t(28) < 1$.

Discussion

In sum, Study 2 replicated the findings of Study 1 with a new product category and a more subtle manipulation of anthropomorphic thought. As in Study 1, consumers (i) reported lower replacement intentions when they were induced to think about the product in anthropomorphic terms. Moreover, (ii) product quality predicted replacement intentions in the absence of anthropomorphic primes, but was unrelated to product quality when anthropomorphic beliefs were primed. These convergent findings attenuate concerns about the potential demand

characteristics associated with the more blatant manipulation used in Study 1 and highlight that merely thinking about the “personality” traits of a product, which are frequently included in market research surveys, is sufficient to elicit anthropomorphic thoughts.

Nevertheless, two possible alternative explanations deserve attention; both pertain to unintended effects of the anthropomorphic thought manipulation. First, the personality traits we used as anthropomorphic primes may also have primed *other* positive features of the product. These features may be unrelated to anthropomorphic thought per se, but may result in more positive evaluations and hence lower replacement intentions. Second, rating the car on technical characteristics vs. personality characteristics may not only have primed technical vs. agentic concepts (as was intended), but the rated attributes themselves may have differential evaluative implications. Both of these concerns imply that differences in anthropomorphic thought are confounded with a differential accessibility of valenced attributes of the car. Empirically, the data provide no support for this possibility. Any difference in the accessibility of valenced attributes should be reflected in participants’ subsequent free-response descriptions of their cars, yet these descriptions showed no difference in valence ($F < 1$). This observation also suggests that the more positive evaluations observed in the anthropomorphic conditions of Study 1 were unlikely to drive replacement intentions in that study, given the replication of Study 1 findings in the absence of evaluation differences in Study 2.

Study Three

Studies 1 and 2 showed that consumers base their replacement intentions on the perceived quality of the product in the absence of anthropomorphic thought, but do not attend to product quality once the product is anthropomorphized. This observation is consistent with the assumption that instrumental considerations loom larger in the impersonal than in the personal world. By the same token, however, features that are valued in the interpersonal domain should

be *more* likely to affect product replacement intentions when consumers are induced to think about the product in anthropomorphic terms than when they are not. Study 3 tests this prediction by manipulating participants' perception of whether their car's color is "warm" or "cold", a dimension that figures prominently in perceptions of socio-moral traits and global evaluations of positivity in interpersonal contexts (Asch, 1946; Ijzerman & Semin, in press; Williams & Bargh, 2008).

Method

Participants ($N = 158$) completed the study online for partial course credit; they were randomly assigned to the conditions of a 2 (Color Labels: warm vs. cold) x 3 (Anthropomorphic primes: psychological vs. physical vs. control) -factorial between-participants design.

To manipulate the warm or cold connotations of the car, participants were asked to select the color that most closely resembled their own car's color from a matrix of nine colored squares. The five most common car colors were labeled with "warm" (e.g., "summer blue") or "cold" (e.g., blizzard blue") names. All participants saw a mixture of "warm" and "cold" color names along with four foil colors (e.g., "canary yellow") and had to remember the name of their own car's color as part of an alleged memory task. Note that this procedure ensured that all participants were exposed to a mix of warm and cold color names, thus avoiding the problem that some participants would only be exposed to warm and others only to cold concepts; instead, the conditions merely differ in whether the color of the participant's own car is associated with a warm or cold label. This procedure randomly assigned 58 participants to the "warm" and 64 participants to the "cold" condition; 31 participants who selected less common colors, and 5 participants who forgot the color name associated with their car or who claimed that none of the color squares matched the color of their car, were dropped from analysis.

Next, participants were randomly assigned to rate their car along 5 scales anchored with adjectives that implied either *psychological* (e.g. “reserved” to “enthusiastic”) or *physical* features (e.g., “quiet” to “loud”); a control group did not provide ratings. This manipulation is identical with the one used in Study 2. Participants then described their car in their own words, indicated their desire to replace their car before they left college (1 = *not at all*; 7 = *very much*), and reported the name assigned to the color of their car (thus completing the memory task).

Results

Descriptions were coded for valence by two coders blind to conditions and hypotheses ($\alpha = .89$); the coders’ ratings were averaged to create a composite measure of perceived car quality (-3 = *extremely negative description*; +3 = *extremely positive description*). Analyses of this index revealed no influence of the experimental manipulations (all $ps > .3$).

Replacement intentions were regressed on the car quality index, the warm/cold manipulation, dummy variables representing the anthropomorphism manipulation, and their interactions (Table 1). Overall, participants who described their car negatively were more willing to replace it. However, this was qualified by an interaction between the personality trait rating condition and car quality (Figure 3). Simple slopes tests indicated that although participants were more willing to replace poor quality ($M = 5.06$) than high quality cars ($M = 2.66$) in the physical feature and control conditions, $t(120) = 3.72, p < .001$, this relationship vanished in the psychological feature condition ($M_{\text{poor quality}} = 2.89, M_{\text{high quality}} = 2.81$), $t < 1$. Participants’ unwillingness to replace anthropomorphized cars, regardless of quality, is also reflected in a main effect of the dummy variable representing the psychological feature condition. These results replicate the findings of Studies 1 and 2.

Going beyond our earlier findings, an interaction of the two experimental manipulations further indicated that participants were particularly unwilling to replace anthropomorphized cars

when their color had been associated with warm ($M = 2.23$) rather than cold ($M = 3.48$) labels, $t(120) = 2.10, p < .04$, for the simple slope test (Figure 4). In contrast, color labels did not influence participants' replacement willingness in the physical features and control conditions ($M_{\text{warm}} = 4.13, M_{\text{cold}} = 3.59$), $t < 1$. Thus, characteristics that are valued in the interpersonal domain influenced replacement intentions under induced anthropomorphic thought, but not otherwise.

Discussion

Replicating Studies 1 and 2, participants (i) reported a lower willingness to replace their car when they had thought about it in anthropomorphic terms and (ii) their replacement intention was decoupled from their perception of the car's quality. Going beyond the earlier studies, participants who had thought about their car in anthropomorphic terms were (iii) particularly unwilling to replace it when they were led to perceive its color as "warm", a highly valued trait in the interpersonal domain. In contrast, warm/cold connotations of the car's color did not affect the replacement intentions reported by participants in the non-anthropomorphic thought conditions.

General Discussion

Taken together, these findings suggest that attending to "psychological" features of a product (i) leads consumers to report lower replacement intentions (Studies 1-3) and (ii) decouples replacement intentions from considerations of product quality. Specifically, consumers' replacement intentions depended on the quality of the product when anthropomorphic beliefs were not primed, but were independent of product quality when anthropomorphic beliefs were primed (Studies 1-3). Conversely, thinking of "psychological" features of a product (iii) leads consumers to attend to features that are valued in the interpersonal domain. Specifically, consumers who were induced to see their car as "warm" reported lower replacement intentions than consumers who were induced to see it as "cold", but only under anthropomorphic thought

conditions (Study 3). These findings suggest that anthropomorphic thought changes the information that consumers attend to when thinking about products while generally reducing replacement intentions. Going beyond earlier work, they further show that anthropomorphic beliefs about a product are easily elicited without adding anthropomorphic features to the object itself

It is particularly noteworthy that thinking about objects in anthropomorphic ways is sufficient to eliminate the otherwise observed relationship between perceived product quality and replacement intention: Whereas participants in the non-anthropomorphic conditions of all studies reported a higher willingness to replace their cars or computers the less favorably they perceived their quality, this relationship vanished once they anthropomorphized the object. Moreover, merely rating the object along scales anchored with personality traits was sufficient to elicit this effect, further illustrating how easily consumers adopt an anthropomorphic perspective on their possessions.

In the social realm, people are reluctant to replace others for many reasons and the same is probably true for anthropomorphized products. First, powerful social norms prevent the easy dissolution of interpersonal relationships (Ybarra et al., 2008). Second, in the social realm, capability must be balanced with other information such as communality and intentions, both of which often matter more than (and do not correlate perfectly with) actual outcomes (Ybarra, 2008; Falk, Fehr & Fischbacher, 2008). To the extent that consideration of intentions deemphasizes outcomes, the performance of anthropomorphized objects may have less impact. Additionally, intentions may lead behavior that is otherwise innocuous and expected of objects to become noteworthy. A car that stays in your garage is hardly noteworthy, but an old friend who stays with you is worthy of commendation. Additional research will be needed to identify the mediating variables that contribute to this effect.

The observed findings cannot be explained as a result of merely increasing positive regard towards the object. First, although an increase in positive regard would predict a decreased willingness to replace the product, it would not predict the observed decoupling between the positivity of the description and replacement intentions. Second, any observed differences in positivity were inconsistent across studies and did not predict the observed differences in replacement intentions. In Study 1, anthropomorphized objects were described in marginally more positive terms, but positivity did not mediate the observed difference in replacement intentions. In Studies 2 and 3, no difference in the positivity of participants' free-response descriptions emerged to begin with.

Implications

Our findings highlight that anthropomorphizing products is not always a good idea for either marketers or consumers. On the one hand, the increased attachment resulting from anthropomorphizing a product (say a car) should benefit other products and services needed for its maintenance (e.g., oil changes). After all, costs are a secondary consideration in maintaining a valued relationship. To date we know little about this possibility and exploring the role of product anthropomorphism in product maintenance decisions provides a promising avenue for future research. On the other hand, anthropomorphizing a product may reduce consumers' willingness to replace it, as demonstrated by the present studies, potentially increasing consumers' maintenance cost beyond economically defensible levels while reducing producers' sales. In contrast, anthropomorphizing brands (rather than products) may be more beneficial from a marketer's perspective: whereas loyalty to a specific object interferes with its replacement, loyalty to the brand encourages replacement of the object with another exemplar from the brand.

Our findings further show that anthropomorphic cues can direct attention away from some features and towards others. This may allow careful marketers to increase the desirable features

accessible to a consumer or to downplay undesirable features. But as previous research noted, this strategy may come with consequences that are not always obvious. Anthropomorphic cues may turn an otherwise innocuous air intake grille into a welcoming smile or a threatening scowl or may allow an idiosyncratic collection of objects to become a family (Aggarwal & McGill, 2007). To the extent that such anthropomorphic perceptions prime corresponding relational expectations, consumers may respond negatively when the product does not live up to them. For example, Aggarwal (2004) found that people dislike products that imply a specific kind of interpersonal relationship style (a communal or exchange orientation), only to subsequently violate the norms associated with it. Presumably these behaviors would be less objectionable if interpersonal norms implied by these relational schemas were not made salient by anthropomorphic cues. Similarly, anthropomorphic primes may direct consumers' attention away from the physical quality of a product and towards other, less instrumental features, as observed in Study 3. This could hurt products of superior technical quality and benefit competitors with more appealing "interpersonal" features.

Finally, the observation that anthropomorphic thought is easily elicited by asking for trait ratings (Studies 2 and 3) raises a potentially important methodological concern for market research surveys. Stimulated by research into brand personality (Aaker, 1997), many applied market research surveys assess consumers' perceptions of a brand by asking for ratings that usually include a mix of agentic and non-agentic traits. Our findings suggest that the agentic traits may foster anthropomorphized perceptions of the brand with downstream effects on intentions. If so, collecting ratings of agentic traits may introduce a previously unobserved source of systematic context effects in market research (Weaver & Schwarz, 2008), potentially undermining the predictive value of respondents' answers for consumers who were not first

induced into to think in anthropomorphic terms. Future research may fruitfully address this possibility.

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Figure Captions

Figure 1. The relationship between computer quality and people's willingness to replace it in the next 12 months as a function of condition and quality of the computer. Participants in the Anthropomorphism condition described either how their car was their best friend or their brother. Control conditions either described the way their computer was a useful tool or wrote nothing. Car Quality was evaluated by coding participants' descriptions of their computers. Low and High values are plotted one standard deviation below and above the mean.

Figure 2. The relationship between car quality and people's willingness to replace it before they leave college. Participants in the anthropomorphism condition filled out a personality questionnaire for their car. Control conditions either rated their car on non-anthropomorphic traits or did not rate their car. Car Quality was evaluated by coding participants' descriptions of their cars. Low and High values are plotted one standard deviation below and above the mean.

Figure 3. The relationship between car quality and people's willingness to replace it before they leave college. Participants in the anthropomorphism condition filled out a personality questionnaire for their car. Control conditions either rated their car on non-anthropomorphic traits or did not rate their car. Car Quality was evaluated by coding participants' descriptions of their cars. Low and High values are plotted one standard deviation below and above the mean.

Figure 4. The relationship between car quality and people's willingness to replace it before they leave college. Participants in the anthropomorphism condition filled out a personality

questionnaire for their car. Control conditions either rated their car on non-anthropomorphic traits or did not rate their car. Warm and Cold prime refers to the metaphorical connotations of a color label applied to the subjects car.

Figure 1

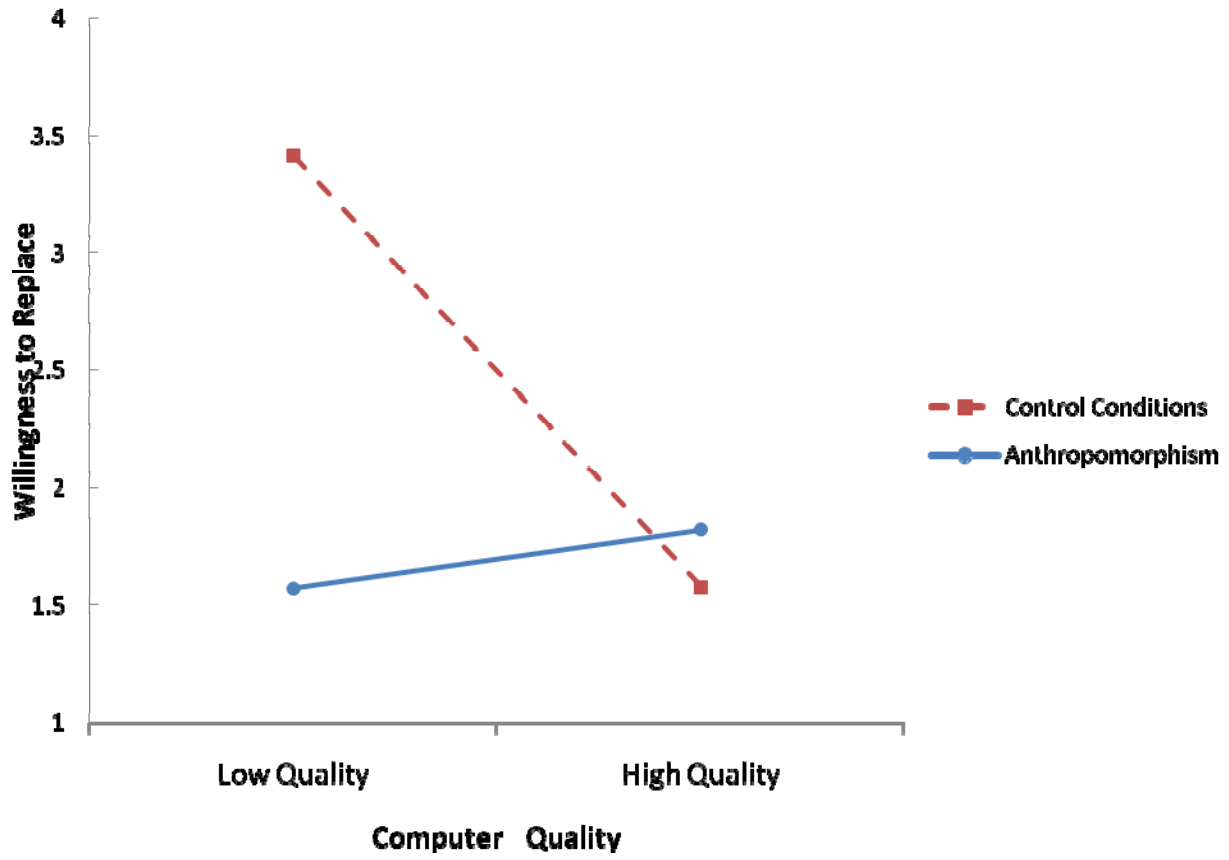


Figure 2

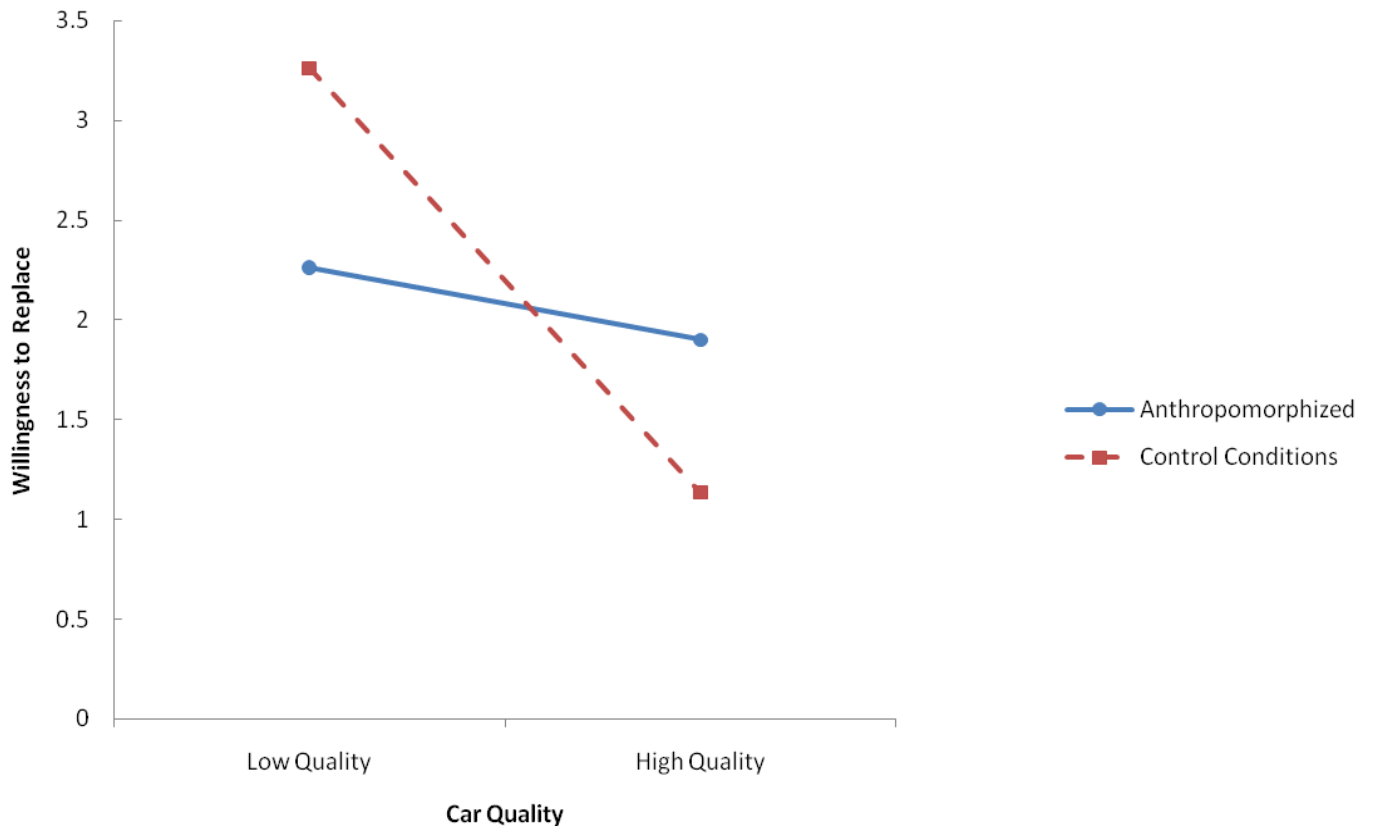


Figure 3

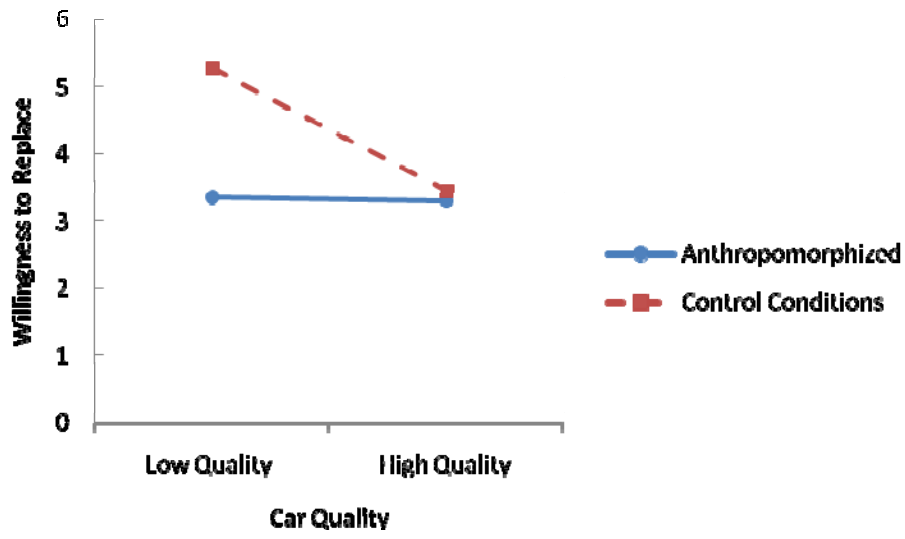


Figure 4

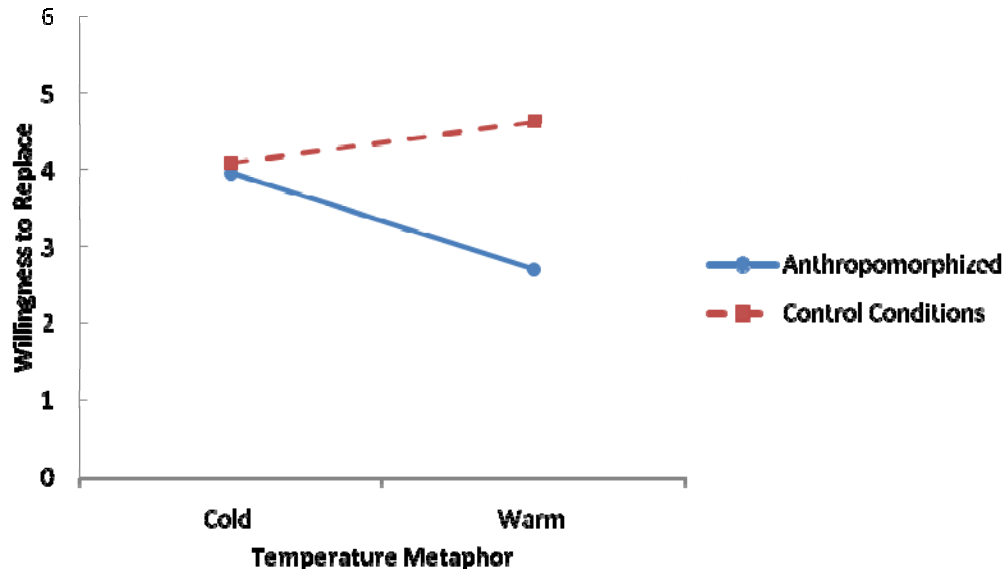


Table 1. Regression Analysis Summary for Variables Predicting Replacement Intentions

	<i>b</i>	SE <i>b</i>	β	<i>d</i>
Intercept	3.86			
Description Quality	-.91	.25	-.56***	.68
Psychological Prime	-1.03	.44	-.23*	.41
Physical Prime	-.05	.43	-.01	-
Temperature Metaphor	.54	.65	.13	-
Psychological Prime X Description Quality	.88	.35	.30*	.46
Physical Prime X Description Quality	.41	.32	.16	-
Psychological Prime X Temperature Metaphor	-1.79	.88	-.25*	.37
Physical Prime X Temperature Metaphor	-.37	.85	-.05	-
Psychological Prime X Description Quality X Temperature Metaphor	1.03	.70	.18	-
Physical Prime X Description Quality X Temperature Metaphor	-.78	.64	-.15	-

Note: $R^2 = .31$ ($N = 121, p_{\text{rep}} > .001$); * $p_{\text{rep}} < .05$, *** $p_{\text{rep}} < .001$

Author Notes

The reported research was supported by a Graduate Fellowship from the Social Sciences and Humanities Research Council of Canada to the first author. Address correspondence to Jesse Chandler (jjchndl@umich.edu) or Norbert Schwarz (nschwarz@umich.edu) at Dept. of Psychology, University of Michigan, 530 Church St, Ann Arbor, MI 48109-1043.

ⁱ This effect was significant even when not controlling for positivity of the description, $F(1,123) = 5.73, p < .02$