A Meaningful Embrace: Contingent Effects of Embodied Cues of Affection

Abstract

Can a mere gesture lead to intimate product bonding? In this research, we find that affectionate gestures (e.g. hugging, stroking) can serve as routes to object attachment. We suggest that the mere execution of an affectionate gesture can generate emotional attachment, which translates into enhanced product attitudes. However, this effect is contingent on the existence of facilitating conditions via the presence of humanlike characteristics in the target object of the affectionate gesture.

Keywords: embodiment, contextual implication model, intimacy, attachment, product attitudes

It is not uncommon for individuals to physically interact with products in an affectionate manner. Children hug their teddy bears. A gambler may kiss a pair of dice, hoping for a lucky roll. One may tenderly stroke the steering wheel of a beloved car. Such examples represent affectionate physical actions that, although targeted towards inanimate objects, still carry a positive valence, which is embodied in the gesture itself. The question we explore is whether such positive meaning can be transferred towards a product by the mere execution of the physical action. We propose that this is indeed the case. That is, physical gestures, even when void of intentions, can shape our subsequent emotions, beliefs and/or attitudes.

Previous research has demonstrated that physical interactions with products influence attitudes towards them. People prefer objects that they have touched (Peck & Shu, 2009) and dislike objects touched by others (Peck & Wiggins, 2006). Touch also influences product attitudes through resulting changes in mood (Argo, Dahl, & Morales, 2006) or through the transfer of tactile evaluations of a product to evaluations of its other attributes (Krishna & Morrin, 2008). Such findings are supportive of embodied perspectives of psychology, which hold that higher order cognitions and emotions are based in, or scaffolded upon, more primitive perceptual systems (Barasalou, 1999; Williams, Huang, & Bargh, 2009). This research proposes a contingent framework of when physical gestures that encompass meaning allow higher-order effects to manifest.

We explore one unique form of physical interaction: affectionate gestures. In our framework, we define affectionate gestures as those that typically stem from a disposition or state of mind driven by a feeling of fondness, as well as attachment, for a person (The American Heritage Dictionary, 2000). The term “affectionate” distinguishes them from mere affiliative gestures (e.g. handshakes, smiles), which are polite and meant to foster social cohesion, but for

which neither fondness nor emotional attachment are typically a prerequisite (Sroufe & Waters, 1977). In our studies, we operationalize affectionate gestures with behaviors such as hugging or stroking, which are common ways in which people physically demonstrate affection.

This paper investigates the notion that the evaluative implications of embodied cues of affection may depend on their interpretation within a given context. In our proposed framework, we suggest that the mere execution of an affectionate gesture towards an object can generate emotional attachment, which translates into enhanced product evaluation and purchase intentions. However, because affectionate exchanges are pro-human in nature, certain contextual prerequisites may be necessary to facilitate consumers' thinking of an object in human terms and induce meaningful responses (Chandler & Schwarz, 2010). This implies that the target of the gesture must be consistent with one's understanding of the "human schema" or one's mental representation of what particular characteristics are reserved for human beings (Aggarwal & McGill, 2007); and that emotional attachment may be difficult to generate if the target of the affectionate gesture does not exhibit any humanlike traits.

In sum, this research argues that gestures which both embody positive meaning (as affectionate gestures do) and are facilitated by congruency with the stimuli (e.g. via the existence of humanlike traits) will lead to enhanced product attitudes and purchase intentions. This paper adds to a cumulative body of knowledge that investigates the intersection between gesture and target characteristics in determining boundary conditions for embodiment effects, and allows us to differentiate between the embodied meaning of the gesture and its evaluative implications. Existing embodied accounts often conflate the automatic activation of concepts with the automatic application of accessible concepts to downstream choice and behavior, leaving little room for processes that are crucial to the impact of other accessible information (Schwarz &

Clore, 2007; Higgins 1996). The present paper moves research on embodiment from its current emphasis on existence proofs (as contended by Meier, Schnall, Schwarz, & Bargh, 2012) to a more nuanced understanding of how and when context determines whether embodied cues are relevant to consumers' evaluations and behavior. Across three studies we demonstrate that embodied affectionate cues may enhance positive feelings toward objects, but these effects only occur when people execute the gesture toward a target imbued with humanlike characteristics. That is, we describe the consequences of embodied affectionate gestures, explore the mechanism behind such consumer responses, and examine boundary conditions for the phenomenon.

Embodied Gestures

Much of the literature on embodiment suggests that some gestures are so closely linked to certain thoughts and emotions that the mere execution of the gesture has a consequent impact on an individual's thinking or feeling (Barsalou, 1999; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005). There are already multiple examples in the literature of these effects. Early research demonstrated that the motor action of nodding one's head embodies the notion of "agreement," and thus produced positive affect in participants (Wells & Petty, 1980). A different stream of research examined the ability of body postures, such as sitting up straight, to induce feelings of confidence, pride and self-efficacy (Briñol, Petty, & Wagner, 2009; Roberts & Arefi-Afshar, 2007). Further, Cacioppo, Priester, and Berntson (1993) introduced the existence of an "approach-must-equal-pleasure" heuristic, in which embodied cognitions rising from bodily approach to an object lead to more favorable (or less unfavorable) evaluations of the target object (see also Labroo & Nielsen, 2010). Thus, the existing literature has documented the ability of body gestures to trigger feelings and thoughts of agreement, pride, and pleasure, among others.

In this paper, we focus on feelings of attachment and bonding towards products that may arise from embodied gestures of affection, such as hugging or stroking.

Affectionate Gestures as Antecedents of Emotional Attachment

Emotional attachment with a product is usually the result of a perceived connection or a sense of shared past history with the object (Schultz, Kleine, & Kernan, 1989), and often originates from dynamic long-term relationships between consumers and products (Thomson, MacInnis, & Park, 2005). Attachment formation is not deliberate but arises from the associations developed through the consumption experience (Kleine, Kleine, & Allen, 1995).

Attachment theory suggests that the establishment of an emotional bond with an object predicts the nature of an individual's behavior towards it (Wallendorf & Arnould, 1988; Ball & Tasaki 1992; Bowlby, 1979). However, the reverse has also been established in intra-human interactions. Physical proximity and intimate interactions have been shown to provide the interpersonal foundation for the development of secure attachment bonds (Collins, 2004; Hertenstein, Verkamp, Kerestes, & Holmes, 2006). Considering the bidirectional relationship between movements and concepts established by the embodiment literature, we propose the reverse may be true for consumer-object relationships as well. That is, basic affectionate gestures, which are a type of behavior that may arise as a consequence of human attachment, may lead to higher order emotional outcomes such as consumer-object attachment.

Furthermore, attachment has been shown to precede attitude (Schultz et al., 1989) and to predict consumers' willingness to make monetary sacrifices in order to obtain and keep objects (Thomson et al., 2005). Thus, the execution of affectionate gestures towards a product, via the establishment of emotional attachment, may lead to improved product evaluations and purchase

intentions. However, this effect may be contingent on the existence of facilitating conditions which allow the perceptual meaning of the gesture to translate into evaluative outcomes.

Contingent Effects of Embodied Cues of Affection

Our contingent framework suggests that although affectionate gestures may always represent an embodied cue with positive meaning per se, their evaluative outcome may differ depending on the context of interpretation.

We posit that embodied cues of affection are contingent on context. Past research has proposed different variations of a contingent-process model supporting the idea that evaluative transfer may be contingent on appropriate and facilitating contextual conditions: Riskind (1984) noted the phenomenon, Higgins (1996) discussed it as a broad cognitive principle, and Tamir et al. (2004) re-packaged it as specific to gestures. Evidence of applicability and context dependence in the embodiment literature include Chandler and Schwarz' work (2009), which demonstrated that culture-specific body movements, such as extending the middle finger, influenced the interpretation of ambiguously aggressive behaviors as hostile, but did not influence unrelated trait judgments; and Schubert's work (2004), which showed that making a fist activated (only in men) the concept of power, hope for power and assertive judgments.

Our framework proposes the need for a "match" between the embodied cue of affection and the context of application. This notion of congruency is of particular importance to the understanding of how embodied cues of affection affect product attitudes since the phenomenon of consumer-object attachment requires the application of traditional human-to-human theory to a human-to-object context (Aggarwal & McGill, 2007; Chandler & Schwarz, 2010; Kim & McGill, 2011). Although in principle any object is susceptible to being humanized, research

shows that people are significantly more likely to spontaneously anthropomorphize objects that exhibit humanlike physical features such as hands (Woodward, 1999), eyes (Haley & Fessler, 2005; Jipson & Gelman, 2007), and human-body shape (Aggarwal & McGill, 2007).

As a consequence, the effect of embodied cues of affection on evaluative outcomes should be more likely to manifest if the target stimuli hold features that are congruent with a human schema (i.e., individuals' set of beliefs about the elements that define "humanness," Arnheim, 1969). In other words, the activation of the human schema influences what information and behavior is deemed relevant and appropriate for the target (Aggarwal & McGill, 2007; Epley et al. 2007; Jones, Smith, & Landau, 1991). Thus, humanlike (i.e. anthropomorphic) traits act as "facilitating conditions" (Strack, Martin, & Stepper, 1988; Sigall & Johnson, 2006) that do not necessarily enhance the ability to enact the physical gesture but allow for the gesture to be performed with meaning.

Finally, just as target-specific features can act as facilitating agents for the application of expressive cues into evaluative outcomes, so can individual-level factors. Research has suggested that lonely people are more likely to be socially anxious, hold a prevention focus in their social interactions, and engage in social monitoring in search for successful interactions, which allow them to regain social acceptance (Cacioppo & Hawkley, 2005; Gardner, Pickett, Jefferies, & Knowles, 2005). Relatedly, a broad stream of research in the field of consumer-object relations suggests that people often attach to objects in an attempt to compensate for interpersonal deficits (Kleine et al., 1995; Epley, Akalis, Waytz, & Cacioppo, 2008; Lastovika & Sirianni, 2011). Based on these findings, we propose that lonely people will have a higher tendency to attach to anthropomorphic objects. However, they will only do so when product interactions represent successful social exchanges. Supporting this idea, recent work by Claus

and Warlop (2010) demonstrated that individuals with lower social efficacy had lower a priori expectations towards an anthropomorphic object, but that an unexpected successful interaction with the object (e.g. product sampling) relieved people's feelings of social inefficacy and improved product performance expectations. Similarly, Chen, Wan and Levy (2013) showed that social exclusion increased consumer preference for anthropomorphized products but only when they had a soft, caring (vs. tough) personality.

This suggests that for people who feel lonely (and are hence more wary of both humans and anthropomorphic products), it is especially important that product interactions with anthropomorphic objects represent positive exchanges. In our framework, the execution of an affectionate gesture towards a product with humanlike traits represents such a successful exchange in itself. That is, feelings of loneliness will increase the value of affectionate cues, although still requiring gesture-target congruity. On the other hand, consumers that do not experience lonely feelings may not be as sensitive to embodied cues of affection as antecedents to attachment and improved product attitude.

In sum, our theoretical framework (see Figure 1) proposes that only gestures that embody positive meaning and are congruent with the stimuli will lead to enhanced product attitudes and purchase intentions. Further, the effect will be moderated by a consumer's feelings of loneliness since lonely individuals have a greater need to attach via successful social interactions. Thus, we propose that:

H1: When an object is imbued with anthropomorphic traits, the execution of gestures that are affectionate (versus non-affectionate) in nature towards the object will lead to improved

product attitudes. When anthropomorphic traits are absent, affectionate gestures will have no effect on product attitudes.

H2: Feelings of loneliness will moderate the effect described in H1, such that consumers high in loneliness will show the described pattern of effects, but consumers low in loneliness will not.

H3: For consumers high in loneliness, emotional attachment will mediate the effect of affectionate gestures on improved product attitudes when an object is imbued with anthropomorphic traits.

These hypotheses are tested in three empirical studies. Study 1 tested H1 by examining the contingent effect of embodied affectionate cues on purchase intention. We demonstrate that the effect of affectionate gesturing (i.e. hugging) only materialized when the target object featured anthropomorphic traits (via a human face on the product package). Study 1 also served to rule out two alternative explanations: 1) a mere bodily-approach explanation, and 2) a demand effects explanation. Study 2 tested H2 by manipulating participants' loneliness levels to establish the role of this individual-level dimension as a moderator in our framework. Study 3 provided an additional test of H1 by examining the contingent effect of affectionate gestures in a different product category (clocks) and introducing an alternative affectionate gesture (stroking). This study also tests H3 by investigating the meditational role of emotional attachment on improved product attitudes. We present these three studies next.

STUDY 1: THE CONTINGENT EFFECT OF AFFECTIONATE GESTURES

The purpose of study 1 was to provide initial evidence for the contingent effect of embodied affectionate gestures. Specifically, we examined the ability of the execution of an affectionate gesture (a hug) to increase purchase intentions of a product (paper towel), but only when anthropomorphic traits (via a face on the product package) were present. In addition, we sought to rule out two alternative explanations. First, we wished to rule out the alternative explanation that improved purchase intentions are merely driven by bodily approach (as documented by Cacioppo, Priester, and Berntson, 1993; Labroo & Nielsen, 2010). One might argue that because a hugging gesture involves bringing the target object close to one's body, it is this mere approach that increases purchase intentions. Secondly, we sought to rule out a demand-effects alternative explanation. One might argue that in the hugging condition, participants may be cognitively aware that the instructions they are given represent a hug, and thus this mere conceptual activation may drive enhanced purchase intentions (as opposed to it stemming nonconsciously from the embodied gesture). The inclusion of two additional experimental conditions allows us to rule out these alternative explanations, as described in the experimental procedure below.

Method

One hundred and eighty undergraduate students participated in our laboratory study in exchange for course credit. The study employed a 4 (Gesture: control vs. hug vs. approach vs. correction) x 2 (Anthropomorphic traits: absent vs. present) between-subjects design. Anthropomorphic traits were manipulated via the presence or absence of a human face on the product's packaging (See Appendix 1 for pictures of the stimuli. For the sake of external validity, we chose existing products in the marketplace, and attempted to minimize potential

confounds by selecting products with similar colors of packaging in both conditions. However, one limitation with these stimuli is that the packaging with a face is a major brand while the no face packaging is a store brand. We overcome this limitation in study 3 by using unbranded manipulations of anthropomorphic traits.).

To provide a natural testing context and believable cover story, participants were told that because consumers often have to carry products between different locations, product manufacturers wished to know how consumers feel when carrying products, and that accordingly, participants in the study would be asked to carry a product (paper towel) around the laboratory to see if the product was easy to carry. Gesture was manipulated by varying the visual instructions of how participants should carry the paper towel. In the control condition, the picture indicated simply holding the paper towel in one's hands, while the picture in the hug condition indicated wrapping one's arms around the product (hence representing an embrace; see Appendix 2 for the pictures used in manipulation instructions). In addition to the control and hug conditions, we also added an "approach" condition, which represented bodily approach without representing an affectionate gesture (the product was brought close to the body, but not embraced; see Appendix 2). We also included a "correction" condition, in which subjects were explicitly told that their bodily interaction represented a hug (procedure borrowed from Labroo & Nielsen, 2010). If a demand-effects explanation had merit, then we would expect both the hug and correction conditions to lead to significantly improved purchase intentions as compared to the control condition. On the other hand, if, as we argue, the improved purchase intentions nonconsciously stem from the embodied gesture, then we would expect purchase intentions to be improved only in the "hug" condition (in which the gesture was described in implicit terms, without semantic activation). After completing the instructions above, respondents then indicated

their purchase intention toward the product ("I would buy this product") and other descriptive measures.

Results & Discussion

Purchase Intention. Results of a 4 (Gesture: control vs. hug vs. approach vs. correction) x 2 (Anthropomorphic traits: absent vs. present) ANOVA revealed no significant main effects of gesture ($F(3, 172) = .53$, $p > .66$) or anthropomorphic traits ($F(1, 172) = .22$, $p > .64$) on purchase intention. However as predicted, the interaction of gesture x anthropomorphic traits was indeed significant ($F(1, 172) = 2.66$, $p = .05$, $\eta_p^2 = .04$). To test our proposed hypotheses, we conducted a series of planned comparisons (a graph and table of the means are displayed in Figures 2 and 3 respectively). We first sought to test the effect of the affectionate gesture, and thus compared the control condition to the hug condition. In comparing the control and hug conditions, the gesture x anthropomorphic traits interaction was significant ($F(1, 172) = 4.61$, $p < .05$), and the planned contrasts confirmed our predictions in H1: the physical affectionate gesture representing a hug only translated into significantly increased purchase intention when the paper towel featured anthropomorphic traits via a face on the packaging ($M_{Control} = 4.27$, $SD_{Control} = 1.35$ vs. $M_{Hug} = 5.17$, $SD_{Hug} = 1.12$; $F(1, 172) = 4.09$, $p < .05$), whereas there was no difference between the two gesture conditions when anthropomorphic traits were absent ($M_{Control} = 4.45$, $SD_{Control} = 1.60$ vs. $M_{Hug} = 4.00$, $SD_{Hug} = 2.05$; $F(1, 172) = 1.04$, $p > .31$).

Ruling out the bodily approach explanation. In comparing the approach condition (which represented mere bodily approach without symbolizing affection) to the hug condition, the gesture x anthropomorphic traits interaction was significant ($F(1, 172) = 3.79$, $p = .05$). An analysis of planned contrasts confirmed a meaningful difference between the approach and hug

conditions. In the presence of anthropomorphic product traits, the hug gesture directionally demonstrated improved purchase intentions over the approach condition, although this contrast did not reach significance ($M_{Approach}$ = 4.73, $SD_{Approach}$ = 1.46 vs. M_{Hug} = 5.17, SD_{Hug} = 1.12; F(1, 172) = 1.03, p = .31). In the absence of anthropomorphic product traits, the approach gesture led to a marginally significant improvement in purchase intentions over the hug gesture ($M_{Approach}$ = 4.74, $SD_{Approach}$ = 1.22 vs. M_{Hug} = 4.00, SD_{Hug} = 2.05; F(1, 172) = 2.95, p = .09). This indicates that affectionate gestures suffered compared to bodily approach when the target object lacked anthropomorphic traits, since there was a lack of congruency between the gesture and the target object.

Ruling out demand effects. In comparing the hug condition to the correction condition, we identified a significant gesture x anthropomorphic traits interaction on purchase intentions (F(1, 172) = 7.06, p < .01). An analysis of relevant contrasts confirmed our predictions: in the presence of anthropomorphic traits, the affectionate gesture led to higher purchase intentions when the affectionate gesture was implicit (hug condition) than when it was explicit (correction condition) ($M_{Correction}$ = 4.20, $SD_{Correction}$ = 1.61 vs. M_{Hug} = 5.17, SD_{Hug} = 1.12; F(1, 172) = 4.60, p < .05). However, there was no difference between the two gesture conditions when anthropomorphic traits were absent ($M_{Correction}$ = 4.75, $SD_{Correction}$ = 1.52 vs. M_{Hug} = 4.00, SD_{Hug} = 2.05; F(1, 172) = 2.51, p > .11). These findings indeed rule out the alternative explanation that increased purchase intentions were driven by demand effects, suggesting instead that the process by which affectionate gestures improve purchase intentions via anthropomorphism is likely nonconscious since highlighting the nature of the interaction completely attenuates the effect.

In summary, study 1 results provide evidence for H1 by demonstrating the contingent effect of embodied affectionate cues on purchase intention. Only when the target object was

imbued with anthropomorphic characteristics did the affectionate gesture (hug) improve purchase intentions as compared to the control condition, and this contrast is the main driving force behind the observed interaction. In the absence of anthropomorphic cues, the affectionate gesture showed no effect. In other words, the affectionate gesture requires the presence of anthropomorphic traits in order to be effective (and hence represents a contingent effect). On the other hand, we find that consistent with past literature (Cacioppo, Priester, and Berntson, 1993; Labroo & Nielsen, 2010), approach always improves purchase intention as compared to the control condition (regardless of anthropomorphic product traits). Together, these results demonstrate that while the presence of anthropomorphic traits are required to qualify the transfer of the affectionate gesture (hug) to improved purchase intentions, such target-specific features were irrelevant to the gesture that merely entailed bodily approach. Further, results suggest that the lack of anthropomorphic cues can actually have a detrimental effect when performed gestures are affectionate in nature. These results represent a fundamental difference between bodily approach and the execution of an affectionate gesture. Lastly, and again consistent with past literature on embodied cues (e.g. Labroo & Nielsen, 2010), explicitly informing individuals of the gesture's meaning weakens the effect, demonstrating that the contingent embodied affection effect is likely non-conscious in nature.

STUDY 2: THE MODERATING ROLE OF LONELINESS

In our first study, we demonstrate that affectionate gesturing can positively impact product attitudes. However, the affectionate gesture only translated into improved attitudes for products imbued with anthropomorphic traits, providing empirical support for H1. Study 2 analyses the potential moderating role of loneliness in our proposed process by manipulating an

individual's *state-level* of loneliness. We hypothesized that differences in state-level loneliness should robustly moderate the likelihood of our embodied affection effect manifesting, and thus provide an indicative test of H2. Specifically, we predicted that the embodied affection effect would be more likely to manifest in those individuals induced to feel lonely.

Method

Two hundred and seventy seven undergraduate students participated in our laboratory study in exchange for course credit. The study took the form of a 2 (Gesture: control vs. hug) x 2 (Anthropomorphic traits: absent vs. present) x 2 (Loneliness: low vs. high) between-subjects design.

To manipulate participants' state of loneliness, we adapted a procedure from Wildschut, Sedikides, Arndt, & Routledge (2006; study 4). In the procedure, participants were asked to complete a survey in which they indicated the extent to which they agreed or disagreed with 10 items from a loneliness scale (adapted from Russell, Peplau, & Cutrona, 1980, $\alpha = .95$). In the low loneliness condition, the items were worded in a manner meant to elicit disagreement. This was accomplished by beginning each statement with the words "I always," (i.e. "I always feel alone."). On the other hand, those participants in the high loneliness condition read statements that were phrased to encourage agreement. Accordingly, these statements started with the words, "I sometimes," (i.e. "I sometimes feel isolated from others,"). As per the protocol in Wildschut et al. 2006, we wanted to ensure that the different wording of the two versions of loneliness tests did indeed lead to different degrees of agreement with the statements. ANOVA results suggested that this was indeed the case, with a significant main effect of loneliness condition on the score of the test ($F(1, 275) = 12.17$, $p < .01$, $\eta_p^2 = = 0.04$). As predicted, in the low loneliness

condition, participants scored lower on the scale items than participants in the high loneliness condition (M_{Low} = 2.70, SD_{Low} = 1.34 vs. M_{High} = 3.29, SD_{High} = 1.45). To reinforce the strength of the loneliness manipulation, after allegedly submitting their responses, participants were told their surveys would be scored and they would receive feedback. Participants in the low loneliness condition were told that they ranked in the 12th percentile of the loneliness distribution, and accordingly, compared to other university students, they scored, "very low on loneliness." Participants in the high loneliness condition were told they ranked in the 62nd percentile of the loneliness distribution and accordingly, compared to other university students, they scored, "above average on loneliness." Finally, to strengthen the manipulation even further, participants were then asked to open-endedly explain the reasons behind their loneliness score.

Participants then presumably moved on to participate in a "separate, unrelated" study, in which they would be asked to evaluate how easy it was to carry a product (paper towel). This procedure was identical to the procedure in study 1, except that we only retained two of the gesture conditions (control and hug). The anthropomorphic traits manipulation was also identical to that in study 1. After completing the instructions, participants then completed items to measure their attitude towards the paper towel. While study 1 only looked at purchase intentions, we incorporated a more comprehensive set of items to create a product attitude construct in study 2 as suggested during the review process, including items from scales in the existing literature. Product Attitude was constructed using seven different items including four Likert-scaled items: "I would buy this paper towel," "I like this paper towel," "I like the way this paper towel feels," and "It would be easy to use this paper towel;" and three bipolar items (adapted from Shimp, Stuart, & Engle, 1991): "Please evaluate the paper towel on the following dimensions: "Poor Quality (1)/Low Quality (7)," "Boring (1)/Interesting (7);" and "Unpleasant (1)/Pleasant (7),"" α

= .87). An additional attitude-based measure of product fit was also collected ("This paper towel is a good fit for my personal needs and preferences,"), which we did not include in the purchase intention construct to maintain consistency across studies. However, the same analysis including this extra item generated a similar pattern of results (analysis results can be provided upon request).

Results & Discussion

Product Attitude. ANOVA revealed no significant main effects of gesture ($F(1, 269) = 2.50$, $p > .11$), anthropomorphic traits ($F(1, 269) = 3.14$, $p > .07$), or loneliness $F(1, 269) = 1.11$, $p > .29$); nor any significant two-way interactions of gesture x anthropomorphic traits ($F(1, 269) = 1.15$ $p > .28$), gesture x loneliness ($F(1, 269) = .80$, $p > .37$), or anthropomorphic traits x loneliness ($F(1, 269) = 1.32$, $p > .25$) on product attitude. However, consistent with our predictions, results revealed a significant three-way interaction of gesture x anthropomorphic traits x loneliness on product attitude ($F(1, 269) = 4.15$, $p < .05$, $\eta_p^2 = 0.02$). As hypothesized, in the low loneliness condition, the interaction of gesture x anthropomorphic traits on product attitude was not significant ($F(1, 269) = .41$, $p > .52$). However, in the high loneliness condition, the interaction of gesture x anthropomorphic traits on product attitude was significant ($F(1, 269) = 4.86$, $p < .05$). An analysis of contrasts found that in the high loneliness condition, as predicted, when the target lacked anthropomorphic traits, there was no difference in product attitude between the two gesture conditions ($M_{Control} = 4.49$, $SD_{Control} = 1.12$ vs. $M_{Hug} = 4.41$, $SD_{Hug} = .93$; $F(1, 269) = .10$, $p > .75$), but when anthropomorphic traits were present, product attitude was improved when participants executed the affectionate gesture ($M_{Control} = 4.18$, $SD_{Control} = 1.10$ vs. $M_{Hug} = 4.87$, $SD_{Hug} = 1.06$; $F(1, 269) = 7.89$, $p < .01$). However, for those individuals in the low

loneliness condition, gesturing had no impact regardless of whether anthropomorphic traits were present ($M_{Control}$ = 4.81, $SD_{Control}$ = .96 vs. M_{Hug} = 4.78, SD_{Hug} = .97; $F(1, 269) = .02$, $p > .89$) or absent ($M_{Control}$ = 4.33, $SD_{Control}$ = 1.00 vs. M_{Hug} = 4.54, SD_{Hug} = 1.00; $F(1, 269) = .64$, $p > .42$) in the target. The resulting pattern of means is displayed in Figure 4.

Thus, the effect of affectionate gestures on product attitude does not materialize under conditions when participants are reminded of companionship, but the effect does indeed emerge when participants are induced to feel lonely. Notably, this effect on participants in the high loneliness condition seems to be driven by lowered evaluations in the control condition (no hug) when the object had anthropomorphic traits. This suggests that for people who feel lonely (and are hence more wary of anthropomorphic products; Claus and Warlop, 2010), it is especially important that product interactions with anthropomorphized objects represent positive exchanges, and the execution of an affectionate gesture seems to effectively symbolize such a positive exchange. Thus this study supports H2, and suggests that individual level factors may also act as inhibiting/facilitating conditions for the manifestation of an embodied affection effect.

STUDY 3: THE MEDIATIONAL ROLE OF EMOTIONAL ATTACHMENT

The purpose of study 3 was to provide further support for H1 using a different product category (clocks) and a different affectionate gesture (strokes). This study also tests our comprehensive model (Figure 1) by investigating the role of emotional attachment as a mediator of the embodied affection effect (H3) while incorporating the moderating impact of loneliness as a dispositional factor.

Study 3

Two hundred and two undergraduate students participated in our laboratory study in exchange for course credit. Sixteen participants were flagged by the experimenter for not following instructions (e.g. not performing the gesture) and were thus excluded from our remaining analysis, resulting in one hundred and eighty six active observations. The study took the form of a 2 (Gesture: control vs. stroke) x 2 (Anthropomorphic traits: absent vs. present) between-subjects design. This data was collected in two batches (in March and November 2013) but collection time did not have an effect on our dependent variable. ANOVA results produced no significant main effect of batch on product attitude ($F(1, 178) = .47$, $p > .49$), nor any significant interaction of batch x gesture x anthropomorphic traits on product attitude ($F(1, 178) = .53$, $p > .46$). Thus, we collapsed the data into one single analysis.

In the control condition, participants were told to, "Place your hand on top of the clock's surface for a few moments, as pictured below," and a picture was provided to indicate the gesture. In the stroke condition, participants were told to, "Slide your hand on the clock's surface from left to right for a few moments, as pictured below," and a picture illustrated the instructed gesture (the illustration mimicked a stroking motion). Further, the clock's display was manipulated in order to create conditions which either supplied or lacked anthropomorphic traits. Thus, in the present condition, the clock display featured the addition of two cartoon eyes, whereas the absent condition did not include this addition (see Appendix 3 for pictures or the stimuli). After completing the gesturing instructions, participants then completed items to measure their attitudes and emotional attachment towards the clock. We again used the more comprehensive measure of product attitude used in study 2 (except for two category-specific items – e.g. "I like the way this paper towel feels"). Specifically, product attitude was measured

via a five item scale (two Likert-scaled items: “I would buy this clock,” and “I like this clock;” and three bipolar items (from Shimp et al. (1991): “Please evaluate this clock on the following dimensions”: "Poor Quality (1)/Low Quality (7)," "Boring (1)/Interesting (7);” and "Unpleasant (1)/Pleasant (7)," $\alpha = .81$). Emotional attachment was measured via a 10-item scale (from Thomson et al. 2005: “How do the following adjectives describe your feelings about the clock: “Attached,” “Affectionate,” “Connected,” “Friendly,” “Loved,” “Peaceful,” “Passionate,” “Delighted,” “Captivated,” “Bonded,” $\alpha = .96$). Participants indicated how lonely they felt using a 3-item scale adapted from Hughes, Waite, Hawkley, & Cacioppo, 2004 ($\alpha = .84$).

Results & Discussion

Product Attitude. An ANOVA revealed no significant main effects of gesture ($F(1, 182) = .13$, $p > .71$) or anthropomorphic traits ($F(1, 182) = .09$, $p > .75$) on product attitude. However again as predicted, results demonstrated a significant interaction of gesture x anthropomorphic traits on product attitude ($F(1, 182) = 4.92$, $p < .05$, $\eta_p^2 = .03$). Further, an analysis of contrasts supported our hypothesized predictions. In the absence of anthropomorphic traits in the target (no face on the clock display), participants showed no difference in their attitudes resulting from the different gestures ($M_{Control} = 3.61$, $SD_{Control} = 1.21$ vs. $M_{Stroke} = 3.31$, $SD_{Stroke} = 1.13$; $F(1, 182) = 1.63$, $p > .20$). When anthropomorphic traits were present (via a face on the clock display), participants showed a pattern of directionally improved attitudes towards the clock when it was stroked, which was marginally significant ($M_{Control} = 3.30$, $SD_{Control} = 1.03$ vs. $M_{Stroke} = 3.72$, $SD_{Stroke} = 1.08$; $F(1, 182) = 3.52$, $p = .06$). The resulting pattern of means is displayed in Figure 5. These results suggest that the presence of anthropomorphic traits acted as facilitating

conditions for the transfer of the affectionate gesture (stroke) into improved product attitudes, adding again support for H1.

Loneliness. Because we measured individual-level loneliness on a continuous scale, we conducted a regression analysis (using Model 3 of the PROCESS SPSS macro as suggested by Hayes, 2013) to determine the moderating influence of loneliness on product attitude. Results revealed no significant main effects of gesture ($t(178) = -.07$, $p > .94$), anthropomorphic traits ($t(178) = .87$, $p > .38$), or loneliness $t(178) = .60$, $p > .55$); nor any significant two-way interactions of gesture x anthropomorphic traits ($t(178) = .23$ $p > .81$), gesture x loneliness ($t(178) = -.34$, $p > .73$), or anthropomorphic traits x loneliness ($t(178) = -1.39$, $p > .16$); nor a significant three-way interaction of gesture x anthropomorphic traits x loneliness ($t(178) = .54$, $p > .58$) on product attitude. However, analysis results of the conditional interaction of gesture x anthropomorphic traits on product attitude at plus and minus one standard deviation from the mean level of loneliness indicated that for participants at below-average levels of loneliness, there was no significant gesture x anthropomorphic traits interaction on product attitude ($\beta = .58$, $t = 1.24$, $p > .21$), but for participants at above-average levels of loneliness, there was a significant gesture x anthropomorphic traits interaction on product attitude ($\beta = .94$, $t = 2.01$, $p < .05$). The resulting table of means is displayed in Figure 6. For those participants high in loneliness, an analysis of contrasts replicated the pattern found overall: in the presence of anthropomorphic traits, the affectionate gesture led to directionally improved attitudes towards the clock, which was marginally significant ($M_{\text{Control}} = 3.05$ vs. $M_{\text{Stroke}} = 3.60$; $\beta = .55$, $t = 1.72$, $p = .08$). This pattern of means again suggests that the conditional effect of affectionate gestures on product attitude is more likely to materialize for individuals who are high in dispositional loneliness.

Emotional Attachment. We also tested whether feelings of emotional attachment did indeed mediate the conditional effect of gesturing on product attitudes. Accordingly, we applied a moderated mediation bootstrap procedure (Model 12 of the PROCESS SPSS macro; Hayes, 2013). We expected that the indirect effect of gesture x anthropomorphic traits on product attitude through emotional attachment would be significant at above-average levels of loneliness, but not significant for those individuals at below-average levels of loneliness. Upon specifying 5000 bootstrap resamples, the analysis confirmed a conditional indirect effect: in the absence of anthropomorphic traits, the indirect effect of gesture on product attitude through emotional attachment was not significant at high (β= .01, SE = .15, 95% CI = -.29 to .28) or low (β= -.02, SE = .16, 95% CI = -.36 to .26) levels of loneliness, but when in the presence of anthropomorphic traits, the indirect effect of gesture on product attitude through emotional attachment was indeed significant for those individuals at above-average levels of loneliness (β= .29, SE = .14, 95% CI = .03 to .59), but not significant for those at below-average levels of loneliness (β= .28, SE = .17, 95% CI = -.04 to .62). In other words, when facilitating conditions were present (via the presence of anthropomorphic traits in the target), emotional attachment explained the impact of the affectionate gesture on improved product attitude for those individuals with high levels of loneliness, providing evidence for H3.

Replication. We replicated study 3 using the same gesture as in study 1 -2 (hug) but yet a different product category- books. One hundred and forty six undergraduate students participated but 12 participants were flagged for not following instructions and were excluded from analysis, resulting in one hundred and thirty four active observations. The experimental design was a 2 (Gesture: control vs. hug) x 2 (Anthropomorphic traits: absent vs. present) x 2 (Cover Story: carrying vs. interacting) between subjects design. The stimuli used were books, which either had

or lacked anthropomorphic traits on the cover (see Appendix 3 for experimental stimuli; full detailed results available upon request). We employed two different cover stories to induce the affectionate gesture. ANOVA results produced no significant main effects of cover story, thus, we collapsed the data concluding interchangeability of the manipulation instructions. ANOVA results revealed no significant main effects of gesture ($F(1, 129) = .58$, $p > .44$) or anthropomorphic traits ($F(1, 129) = .42$, $p > .51$) on product attitude but, consistent with our theorizing, demonstrated a significant interaction of gesture x anthropomorphic traits on product attitude ($F(1, 129) = 3.79$, $p = .05$, $\eta_p^2 = .02$). In this case, the analysis of contrasts generated two marginal results: when anthropomorphic traits were present, participants directionally preferred the book when it was hugged ($M_{Control} = 2.63$, $SD_{Control} = 1.03$ vs. $M_{Hug} = 3.21$, $SD_{Hug} = 1.14$; $F(1, 129) = 3.49$, $p = .06$). For those participants high in loneliness (plus one standard deviation), the conditional interaction of gesture x book cover on product attitude was also marginal ($\beta = 1.17$, $t = 1.87$, $p = .06$). However, when we applied a moderated mediation bootstrap procedure to establish the meditational role of emotional attachment, we replicated the expected result: only for individuals at above-average levels of loneliness and when the book cover featured a face, was the indirect effect of gesture on product attitude through emotional attachment significant ($\beta = .61$, SE = .34, 95% CI = .06 to 1.43). Thus, this additional data supports the robustness of our full model.

General Discussion

Is there a bidirectional relationship between affectionate product interactions and product attachment? That is, can affectionate gestures, even when void of intention, shape our subsequent emotions, beliefs and/or attitudes towards products? Results of three empirical studies provide

support for the notion that only gestures that embody positive meaning and are congruent with the target stimuli will result in enhanced product attitudes. Study 1 demonstrated the effect of affectionate gesturing (i.e. hugging) on purchase intentions, but only when the target object featured anthropomorphic traits. In study 2, we established the moderating role of an individual's feelings of loneliness, thus demonstrating that individual-level variables can also act as facilitating/inhibiting conditions for the manifestation of an embodied affection effect. Finally, study 3 provided additional evidence for the contingent effect of affectionate gestures via an alternative affectionate gesture (i.e. stroking) and in a different product category, and documented the meditational role of emotional attachment on improved product attitudes.

Our framework demonstrates that the mere execution of an affectionate gesture with an object can indeed enhance positive feelings towards it, but the effect is contingent on the presence of facilitating conditions. Such conditions ensure that the gesture is not merely executed, but rather is performed with meaning. We document the role of both anthropomorphic product traits and individual-level loneliness in supplying such facilitating circumstances, allowing us to provide a more nuanced explanation of the embodiment process. Consistent with past literature on embodied cues (e.g. Labroo & Nielsen, 2010), explicitly informing individuals of the gesture's meaning weakens the effect, demonstrating that the contingent embodied affection effect is likely non-conscious in nature. However, the embodied consequences of affectionate gestures are shown to be different from those of mere approach because they are contingent on the gesture being congruent with both the features of the object and the consumer's dispositional/situational characteristics so as to be meaningful enough to generate attachment. Further, mere approach movements have been shown to impact object evaluations (e.g. Cacioppo, Priester, and Berntson, 1993; Labroo & Nielsen, 2010), but not necessarily

involve emotional attachment, which we explore in this paper. In addition, results also suggest that the lack of anthropomorphic cues can actually have a detrimental effect when performed gestures are affectionate in nature. This suggests a fundamental difference between bodily approach and the execution of an affectionate gesture.

Theoretical Implications

Our framework contributes to literature on embodiment and attachment in a number of ways. Recent embodied perspectives include assumptions about how embodied concepts affect choice and behavior, often assuming that their influence is automatic, without specifically testing these effects (Meier et al., 2012). Thus some embodied accounts do not disentangle the automatic activation of concepts from the automatic application of accessible concepts to downstream choice and behavior (Schwarz & Clore, 2007; Higgins, 1996). By integrating past literature proposing a contingent-process model (Riskind, 1984; Higgins, 1996; Tamir et al., 2004), we not only demonstrate an embodied affection phenomena, but also establish important boundary conditions for the effect. Specifically, we explore how target congruency (i.e. via anthropomorphic product traits) and consumer characteristics (i.e. loneliness and its corresponding sociality motivation) meaningfully interact with physical displays of affection. In doing so, we nudge embodiment research from its current emphasis on existence proofs to a more complex, context-dependent understanding of how and when embodied cues are relevant to consumers' evaluations and behavior.

Our findings suggest that, since affectionate gestures are usually reserved for interactions with humans, the target must be consistent with one's understanding of the "human schema" for the positive evaluative transfer to materialize. Interestingly, just as visual humanlike traits in the

target may act as "facilitating conditions" (Strack, Martin, & Stepper, 1988) leading to the interpretation of an affectionate gesture as a positive embodied cue, the lack of humanlike traits might represent "inhibiting conditions" (Sigall & Johnson, 2006) leading to negative evaluations. That is, a lack of human-schema activation (and resulting target-gesture incongruency) may result in worsened evaluations and purchase intentions, as we found to be the case in study 1 when comparing hug vs. approach conditions. Interestingly, modality congruency may also play a role: that is, because the affectionate gestures executed are physical in nature, the stimulus may need to physically look or feel human (and not just conceptually invoke humanness) in order for the positive evaluative transfer to manifest. In this paper, we mainly rely on human faces as cues of humanness. There are likely other product traits that can activate the human-schema (e.g. brand personality, Aaker, 1997) but might be too abstract to provoke responses from physical gesturing activity.

Managerial Implications

Our research provides several meaningful practical implications. First, because product attachment has a well-documented impact on purchase intention, product usage, and product evaluation (Schultz et al., 1989; Thomson et al., 2005), marketers and researchers have a clear incentive to discover the antecedents to such attachment. Our research suggests one route to facilitating consumer-product attachment: encouraging consumers to physically interact with anthropomorphizable products in an affectionate manner. In fact, some product manufacturers and marketers seem to have already put this strategy in practice. For example, advertisements for the "Swiffer Wet Jet" depict housewives dancing with their mops (Sanders, 2003). Some marketers even promote affectionate gestures via the naming of their products (e.g. a British

manufacturer named its signature bean bag "Big Hug"). In addition, manufacturers of technological devices seem to have realized the importance of physical sensations and gesturing in developing and/or maintaining feelings of affection. For example, Nokia has developed technology in its mobile phones that allow users to squeeze the phone to send "virtual hugs" (via vibration feedback) to the receiver (Subbaraman 2012). While this is meant as a way to physically demonstrate intra-personal affection, these consumer-object physical interactions may also inadvertently create closer bonds to the devices themselves. Thus, manufacturers might encourage these tactile exchanges as a means to foster closer consumer-object relationships.

Importantly, anthropomorphic product traits represent a crucial prerequisite for the manifestation of our documented embodied affection phenomenon. Many companies already make humanization a determining factor of physical product design. For example, car manufacturers often design car grilles to resemble a human face (Welsh, 2006). Similarly, marketers have given names and faces to objects such as vacuum cleaners (e.g. "Numatic Henry," Guthrie, 2010). In this paper, we identify a meaningful function of anthropomorphic product design. That is, the presence of anthropomorphic traits in a product makes it more likely that consumers will develop positive attitudes as a result of affectionate physical interactions.

Future Research

Our framework documents what we believe to be the first evidence of an embodied affection phenomenon. Thus, there are many interesting avenues to expand work in this research stream. For example, we have examined so far the effect of affectionate gestures, which is only one type of physical consumer-product interaction- an inherently positive one. However, in reality, individuals also often interact with products in humanlike ways which are not positively-

valenced. For example, it is not uncommon for individuals to yell at their computers or hit a television or other malfunctioning appliance. We would expect these consumer-object interactions to negatively impact product attitudes, although this negative transfer may still require target-gesture congruency via anthropomorphic product traits. Another potentially interesting variable to explore is the valence of the anthropomorphic traits in target stimuli, which we would expect to play a role. Not all the humans are equally desirable, and therefore there may be certain anthropomorphic traits (e.g. unattractive facial features) that may generate less positive reactions. Hence, we do no claim that all types of increased humanization will lead to positive outcomes.

Finally, an alternative direction for future research might explore consumer-object exchanges beyond physical gesturing. For example, speaking represents an exchange that, though not haptic in nature, is still usually reserved for intra-human interactions. Voice-activated products (e.g. iPhone's Siri, Dragon Go TV App) have become quite prevalent in the marketplace, and a recent article in the New York Times suggests that speaking to products can lead to object attachment (Singer, 2012). In fact, some experts even suggest it might be beneficial to remind people they are talking to machines, in order to make them more conscious of the non-human nature of the exchange (Singer, 2012). It would be interesting to explore how such non-tactile exchanges might interact with target traits in influencing consumption behavior.

The antecedents, consequences, and boundary conditions of embodied affectionate gestures represent underexplored territory, and a fruitful area for investigation. Our research represents a step in this direction, but the wealth of theoretical and managerial implications leave doors wide open for further exploration.

APPENDIX 1

STIMULI FROM STUDY 1

APPENDIX 2

INSTRUCTIONS FOR STUDY 1

Control: Approach: Hug and Correction:

APPENDIX 3

STIMULI FROM STUDY 3

STIMULI FROM REPLICATION OF STUDY 3

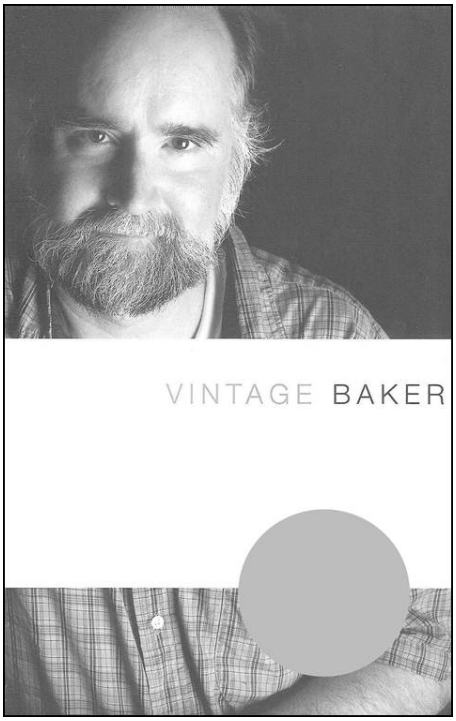

FIGURE 1

PROPOSED MODEL

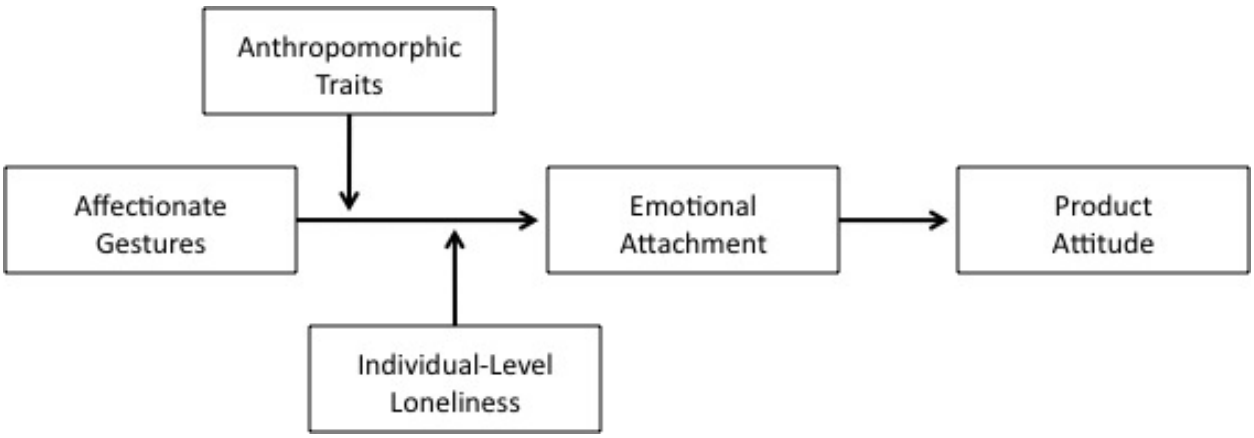

FIGURE 2

MEAN PURCHASE INTENTION BY CONDITION- STUDY 1

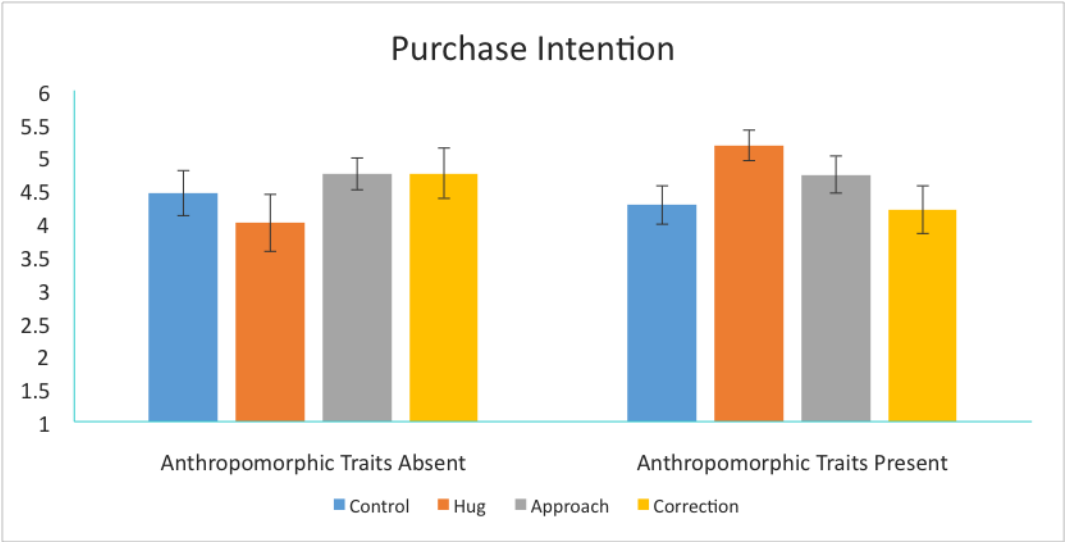

FIGURE 3

MEAN PURCHASE INTENTION BY CONDITION- STUDY 1

	Anthropomorphic Traits			
	Absent		Present	
	M	SD	M	SD
Control	4.45	1.60	4.27	1.35
Hug	4.00	2.05	5.17	1.12
Approach	4.74	1.22	4.73	1.46
Correction	4.75	1.52	4.20	1.61

FIGURE 4

MEAN PRODUCT ATTITUDE BY CONDITION- STUDY 2

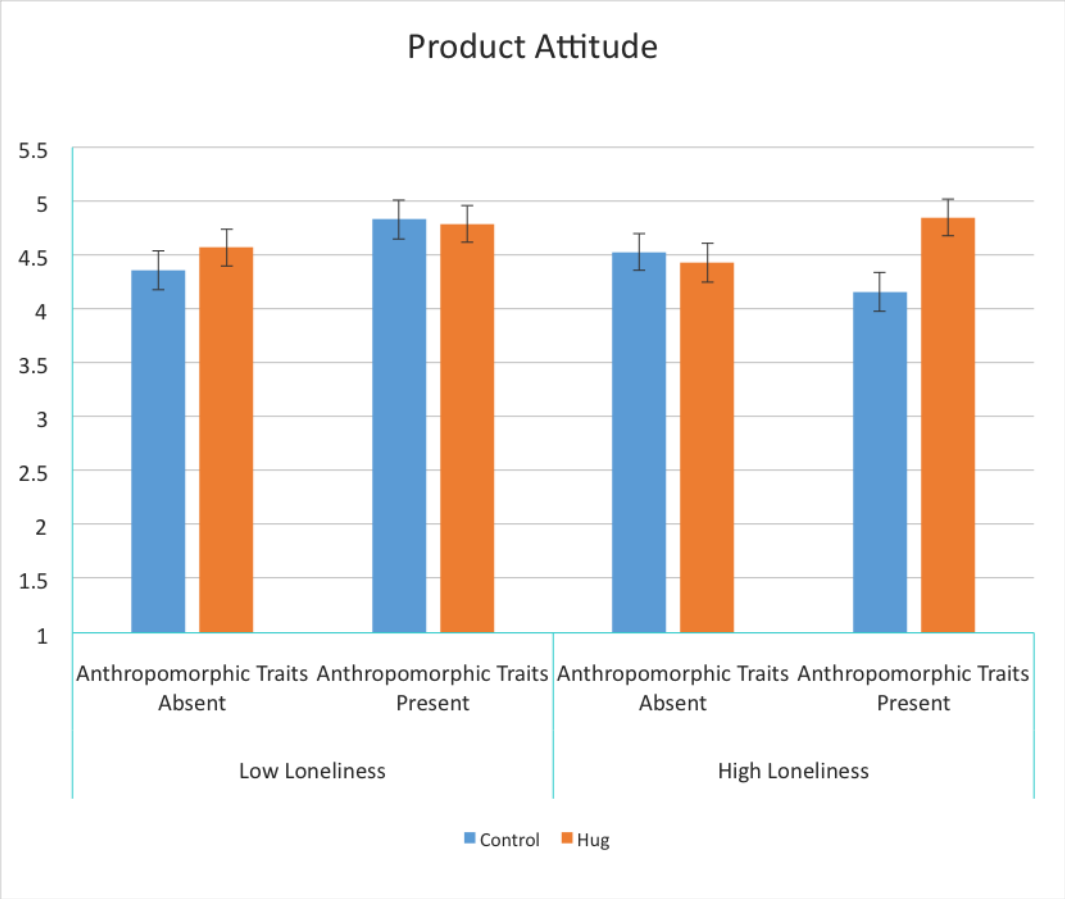

FIGURE 5

MEAN PRODUCT ATTITUDE BY CONDITION- STUDY 3

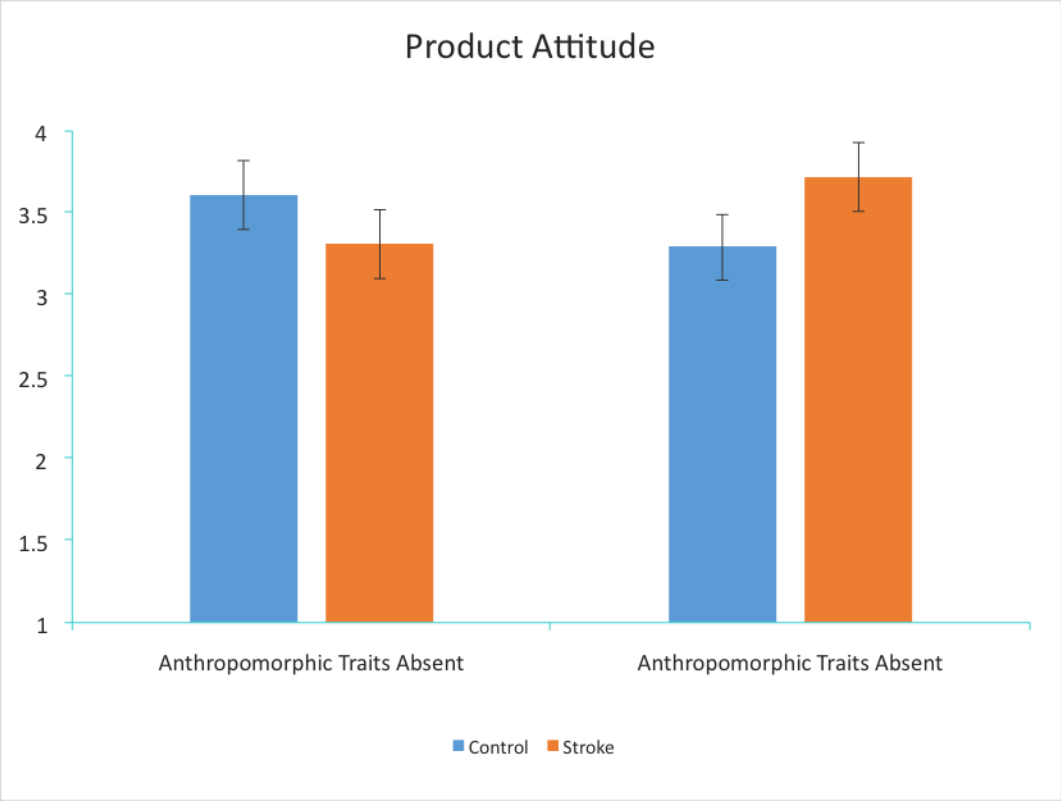

FIGURE 6

MEAN PRODUCT ATTITUDE BY CONDITION- STUDY 3

	Low Loneliness		High Loneliness	
	Anthropomorphic Traits Absent	Anthropomorphic Traits Present	Anthropomorphic Traits Absent	Anthropomorphic Traits Present
Control	3.50	3.50	3.72	3.05
Hug	3.29	3.86	3.33	3.60

References

Arnheim, R. (1969). *Visual thinking*. Berkeley: University of California Press.

Aaker, J. (1997). Dimensions of brand personality. *Journal of Marketing Research*, *34*, 347-356.

Aggarwal, P., & Mcgill, A. (2007). Is that car smiling at me? Schema congruity as a basis for evaluating anthropomorphized products. *Journal of Consumer Research, 34*, 468-479.

Argo, J. J., Dahl, D. W., & Morales, A. C. (2006). Consumer contamination: How consumers react to products touched by others. *Journal of Marketing*, *70*(April), 81-94.

Ball, A., & Tasaki, L. H. (1992). The role and measurement of attachment in consumer behavior. *Journal of Consumer Psychology, 1*(2), 155-172.

Barsalou, L. W. (1999). Perceptual symbol systems. *Behavioral And Brain Sciences, 22*(4), 577-660.

Bowlby, J. (1979). *The making and breaking of affectional bonds.* New York: Brunner-Routledge.

Briñol, P., Petty, R. E., & Wagner, B. (2009). Body posture effects on self-evaluation: A self-validation approach. *European Journal of Social Psychology*, 39, 1053-1064.

Cacioppo, J. T., & Hawkley, L. C. (2005). People Thinking About People: The Vicious Cycle of Being a Social Outcast in One's Own Mind. In K. D. Williams, J. P. Forgas, W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 91-108). New York, NY US: Psychology Press.

Cacioppo, J. T., Priester, J. R., & Berntson, G. G. (1993). Rudimentary determinants of attitudes. II: Arm flexion and extension have differential effects on attitudes. *Journal of Personality and Social Psychology, 65,* 5-17.

Chandler, J., & Schwarz, N. (2009). How extending your middle finger affects your perception of others: Learned movements influence concept accessibility. *Journal of Experimental Social Psychology, 45*, 123-128.

Chandler, J., & Schwarz, N. (2010). Use does not wear ragged the fabric of friendship: Thinking of objects as alive makes people less willing to replace them. *Journal of Consumer Psychology, 20,* 138-145.

Chen, R., Wan, E., & Levy, E. (2013). Is She My New Friend? The Effect of Social Exclusion on Consumer Preference for Anthropomorphized Products. *Association for Consumer Research*, Chicago, IL.

Claus, B., & Warlop, L. (2010). Once bitten, twice shy: Attitudes towards humans spill over to anthropomorphizable products. *Association for Consumer Research*, Jacksonville, FL.

Collins, N. L. (2004). An attachment theory perspective on closeness and intimacy. In D. J. Mashek & A. Aron (Eds.), *Handbook of closeness and intimacy*. Mahwah, NJ: Lauren Erlbaum Associates, NJ.

Epley, N., Akalis, S., Waytz, A., & Cacioppo, J. (2008). Creating social connection through inferential reproduction: Loneliness and perceived agency in gadgets, gods, and greyhounds. *Psychological Science, 19*(2)*,* 114-120.

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three factor theory of anthropomorphism. *Psychological Review, 114*, 864-886.

Gardner, W. L., Pickett, C. L., Jefferis, V., & Knowles, M. (2005). On the Outside Looking In: Loneliness and Social Monitoring. *Personality and Social Psychology Bulletin, 31*(11), 1549-1560.

Guthrie, J. (2010, Jul 02). Bowlered over. *Financial Times*.

Haley, K. J., & Fessler, D. (2005). Nobody's watching? Subtle cues affect generosity in an anonymous economic game. *Evolution & Human Behavior, 26*, 245-256.

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis*. New York: Guilford Press.

Hertenstein, M. J., Verkamp, J, M., Kerestes, A. M., & Holmes, R. M. (2006). The communicative functions of touch in humans, nonhuman primates, and rats: A review and synthesis of the empirical research, *Genetic, Social, and General Psychology Monographs, 132*(1), 5-94.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles*. New York: Guilford Press, 133-168.

Hughes, M. E., Waite, L. J., Hawkley, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Research on Aging, 26*, 655-672.

Jain, Buchanan, & Maheswaran (2000). Comparative Versus Noncomparative Advertising: The Moderating Impact of Prepurchase Attribute Verifiability. *Journal of Consumer Psychology*, 9(4), 201-211.

Jipson, J. L., & Gelman, S. A. (2007). Robots and rodents: Children's inferences about living and nonliving kinds. *Child Development, 78,* 1675-1688.

Jones, S. S., Smith, L. B., & Landau, B. (1991). Object properties and knowledge in early lexical learning. *Child Development, 62*(3), 499-516.

Kardes, F.R. (1988). Spontaneous inference processes in advertising: The effects of conclusion omission and involvement on persuasion. *Journal of Consumer Research, 15*, 225–233.

Keppel, G. (1991). *Design and Analysis*. Englewood Cliffs, NJ: Prentice Hall.

Kim, S., & McGill, A. L. (2011). Gaming with Mr. Slot or gaming the slot machine? Power, anthropomorphism, and risk perception. *Journal of Consumer Research, 38*(1), 94-107.

Kleine, S. S., Kleine, R. E., & Allen, C. T. (1995). How is a possession "me" or "not me"? Characterizing types and an antecedent of material possession attachment. *Journal of Consumer Research*, *22*, 327-343.

Krishna, A., & Morrin, M. (2008). Does touch affect taste? The perceptual transfer of product container haptic cues. *Journal of Consumer Research, 34*(6), 807-818.

Labroo, A. A., & Nielsen, J. (2010). Half the thrill is in the chase: Twisted inferences from embodied cognitions and brand evaluation. *Journal of Consumer Research, 37*(June), 143–57.

Lastovicka, J. L., & Sirianni, N. J. (2011). Truly, madly, deeply: Consumers in the throes of material possession love. *Journal of Consumer Research, 38*(2), 323-341.

Meier, B. P., Schnall, S., Schwarz, N., & Bargh, J. A. (2012). Embodiment in social psychology. *Topics in Cognitive Science, 4*(4), 705-716.

Niedenthal, P. M., Barsalou, L. W., Winkielman, P., Krauth-Gruber, S., & Ric, F. (2005). Embodiment in Attitudes, Social Perception, and Emotion. *Personality and Social Psychology Review, 9*(3), 184-211.

Peck, J., & Shu, S. B. (2009). The effect of mere touch on perceived ownership. *Journal of Consumer Research*, *36*(Oct), 434-447.

Peck, J., & Wiggins, J. (2006). It just feels good: Consumers' affective response to touch and its influence on persuasion. *Journal of Marketing*, *70*(Oct), 56-69.

Riskind, J. H. (1984). They stoop to conquer: Guiding and self-regulatory functions of physical posture after success and failure. *Journal of Personality and Social Psychology*, *47*(3), 479-493.

Roberts, T-A. & Arefi-Afshar, Y. (2007). Not all who stand tall are proud: Gender differences in the proprioceptive effects of upright posture. *Cognition and Emotion, 21,* 714-727.

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, 39, 472–480.

Sanders, L. (2003, August 18). Devo whips it for P&G Swiffer. *Advertising Age*.

Schubert, T. W. (2004). The power in your hand: Gender differences in bodily feedback from making a fist. *Personality and Social Psychology Bulletin*, *30*(6), 757-769.

Schultz, S. E., Kleine, R. E., & Kernan, J. B. (1989). These are a few of my favorite things-Toward an explication of attachment as a consumer behavior construct. *Advances in Consumer Research*, *16*, 359-366.

Schwarz, N., & Clore, G. L. (2007). Feelings and phenomenal experiences. In E. T. Higgins & A. Kruglanski (Eds.), *Social psychology: Handbook of basic principles.* New York: Guilford.

Shimp, T.A., Stuart , E.W. & Engle, R.W. (1991). A program of classical conditioning experiments testing variations in the conditioned stimulus and contents. *Journal of Consumer Research*, *18*, 1-12.

Sigall, H. & Johnson, M. (2006). The relationship between facial contact with a pillow and mood. *Journal of Applied Social Psychology, 36,* 505–526.

Singer, N. (2012, April 1). The human Voice, as game changer. *The New York Times*.

Sroufe, L., & Waters, E. (1977). Attachment as an organizational construct. *Child Development, 48*(4), 1184-1199.

Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of personality and social psychology, 54(5)*, 768-777.

Subbaraman, N. (2012, Oct 15). Squeeze Your Phone, and Send a Loved One a Hug. *MIT Technology Review.*

Tamir, M., Robinson, M. D., Clore, G. L., Martin, L. L., & Whitaker, D. J. (2004). Are we puppets on a string? The contextual meaning of unconscious expressive cues. *Personality And Social Psychology Bulletin, 30*(2), 237-249.

The American Heritage Dictionary of the English Language (2000). New York: Houghton Mifflin Company.

Thomson, M., MacInnis, D. J., & Park, C. W. (2005). The ties that bind: Measuring the strength of consumers' emotional attachment to brands. *Journal of Consumer Psychology, 15,* 77-91.

Wallendorf, M., & Arnould, E. J. (1988). 'My favorite things': A cross-cultural inquiry into object attachment, possessiveness, and social linkage. *Journal of Consumer Research, 14*(4), 531-547.

Wells, G. L., & Petty, R. E. (1980). The effects of head movement on persuasion: Compatibility and incompatibility of responses. *Basic and Applied Social Psychology,* 1, 219-230.

Welsh, J. (2006, March 10). Automobiles: Why cars got angry- Seeing demonic grins, glaring eyes? Auto makers add edge to car `faces'; Say goodbye to the wide-eyed neon. *The Wall Street Journal*, W1.

Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nosalgia: Content, triggers, functions. *Journal of Personality and Social Psychology, 91*, 975–993.

Williams, L. E., Huang, J. Y., & Bargh, J. A. (2009). The scaffolded mind: Higher mental processes are grounded in early experience of the physical world. *European Journal of Social Psychology, 39*, 1257-1267.

Woodward, A. (1999). Infants' ability to distinguish between purposeful and nonpurposeful behaviors. *Infant Behavior and Development, 22*, 145-160.