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Who or What to Believe: Trust and the Differential Persuasiveness of Human and Anthropomorphized Messengers

Participants in three studies read advertisements in which messages were delivered either by people or by anthropomorphized agents—specifically, “talking” products. The results indicate that people low in interpersonal trust are more persuaded by anthropomorphized messengers than by human spokespeople because low trusters are more attentive to the nature of the messenger and believe that humans, more than partial humans (i.e., anthropomorphized agents), lack goodwill. People high in interpersonal trust are less attentive about who is trying to persuade them and so respond similarly to human and anthropomorphized messengers. However, when prompted to be attentive, they are more persuaded by human spokespeople than by anthropomorphized messengers due to their belief that humans, more than partial humans, act with goodwill. Under conditions in which attentiveness is low for all consumers, high and low trusters alike are unaffected by the nature of persuasion agents. The authors discuss the implications of the findings for advertisers considering the use of anthropomorphized “spokespeople.”

Keywords: anthropomorphism, trust, attentiveness, persuasion, goodwill

Communicators often portray products, brands, and other objects as human-like spokespeople or “messengers” in persuasive appeals. This practice of imbuing nonhuman entities with human characteristics, motivation, attitudes, and behaviors is called “anthropomorphism” (Guthrie 1993). Anthropomorphized messengers, which we formally define as nonhuman entities that deliver message content across a variety of media (e.g., print, online, television), are typically imbued with various combinations of human characteristics, such as human form (e.g., human-like faces, arms, and legs) and the apparent ability to speak and to think. As a few examples, a chatty oven mitt attempts to lure consumers to Arby’s, talking automobiles promote Cars.com, the California raisins soulfully suggest a healthy snack, talking muffins describe the advantages of Pam cooking spray, and scrubbing bubbles explain on behalf of their eponymous brand that “We work

hard so you don’t have to.” The prevalence of such anthropomorphized messengers in advertising raises the question of their effect on persuasion compared with human messengers. Persuasion is the process by which a person’s attitudes, intentions, or behavior are, without duress, influenced by communications from others. The present research focuses specifically on differences in people’s levels of trust in human agents and how these differences may influence the persuasiveness of anthropomorphized messengers compared with human messengers.

In contrast to the present work, prior consumer research has focused on differences in responses to anthropomorphized products and brands compared with their nonanthropomorphized versions. For example, with respect to physical products, researchers have asked whether consumers might like anthropomorphized versions more or less than “regular object” versions (Aggarwal and McGill 2007; Landwehr, McGill, and Hermann 2011), find them more or less risky to use (Kim and McGill 2011), or replace them more or less frequently (Chandler and Schwarz 2010). With respect to brands, researchers have investigated whether anthropomorphized versions are more or less likely to prime behavior associated with the brand image than nonanthropomorphized versions (Aggarwal and McGill 2012). This approach to the investigation of anthropomorphism has typically found that people’s responses to anthropomorphized products or brands are similar to their responses to humans in the same context, which can lead to differences in judgments between anthropomorphized and

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nonanthropomorphized versions. For example, [Chandler and Schwarz \(2010\)](#) find that people are less likely to get rid of a worn-out anthropomorphized version of a product compared with a nonanthropomorphized version because doing so might seem a disloyal act with respect to an old friend.

The present investigation of anthropomorphism takes a different tack. Instead of contrasting responses produced by anthropomorphized products or brands with those produced by their nonanthropomorphized versions, we explore differences between responses to anthropomorphized messengers and human messengers. Our work speaks to advertisers wondering whether their messages will be more or less effective if they use a “talking product” instead of a human spokesperson. We find that the answer depends on audience members’ individual characteristics, particularly their faith in other people, and we offer a theoretical account for our observed differences.

Central to our investigation is the recognition that although anthropomorphized portrayals involve adding human characteristics to nonhumans (e.g., giving human-like faces and speech to muffins and oven mitts), these messengers are only partially human; that is, they are, by design, more human than simple objects but less human than real people. Thus, the use of anthropomorphized messengers may mute consumers’ rote responses to the more familiar human spokespeople found in advertising appeals precisely because anthropomorphized messengers are not quite human. In examining the persuasiveness of these less-than-human (anthropomorphized) messengers relative to fully human ones, we focus on the role of interpersonal trust—an important determinant of people’s response to human spokespeople. Interpersonal trust is the propensity to believe “the word, promise, verbal or written statement of another individual or group can be relied upon” ([Rotter 1967](#), p. 653). This judgment is often based on dispositional beliefs about the goodwill of others—that is, the extent to which others have good intentions ([Hovland, Janis, and Kelley 1953](#)). By definition, people who are low in trust generally consider human agents ill-intentioned or lacking in goodwill and thus are skeptical of the “statements or promises” made by human agents ([Rotter 1967](#), p. 653). In contrast, people high in trust believe human agents are typically well-meaning and thus tend to have more faith in others (see [Chun and Campbell 1974](#); [Rotter 1967](#); [Wright and Tedeschi 1975](#)).

Furthermore, trust influences people’s level of attention to their environment, with low trusters being particularly watchful for possible dangers in their social interactions ([Gurtman and Lion 1982](#); [Rotter 1967](#)). Attentiveness (or attention) is a state of focused awareness on a subset of the available perceptual information ([Gerrig and Zimbardo 2002](#)). We therefore define “default” levels of attentiveness as the chronic tendencies driven by people’s interpersonal trust levels. In the absence of cues that expressly heighten or lower attentiveness, low trusters default to higher levels of attentiveness to their social environment than high trusters.

Consequently, we posit that the chronically attentive low trusters will take note of the characteristics of the messenger and, in so doing, will rely on the messenger’s degree of humanness to assess goodwill. Specifically, they will judge anthropomorphized messengers as having more goodwill and thus will be more persuaded by anthropomorphized messengers than by human agents because the former are less human than the latter. In contrast, for high trusters, who tend to be less attentive, the nature of a messenger will be inconsequential to persuasion under default circumstances. However, under conditions of heightened attentiveness, high trusters will also use the messenger’s humanness as a criterion to assess goodwill. In line with their positive views about human agents, they will judge the less-human (anthropomorphized) messenger less favorably and will find it less persuasive than a human spokesperson. Finally, under conditions of lowered attentiveness, low and high trusters alike will be unaffected by the nature of the messenger. We develop these hypotheses further in the following sections, drawing on research from anthropomorphism, persuasion, and trust. We then present three studies that test our propositions. Our studies focus on the effect of anthropomorphized objects (e.g., dental floss, lamp, coffee mug) as spokespeople in persuasive appeals, leaving the study of anthropomorphized animals, brands, and abstract concepts (e.g., “Mayhem,” as used in Allstate ads) to further research.

Anthropomorphized but Not Human

Consumer researchers and psychologists have typically differentiated anthropomorphized objects from their non-anthropomorphized versions (e.g., a talking car with vaguely human facial features vs. a regular car) and found that people respond to anthropomorphized agents as they would respond to human agents under the same circumstances (see [Kim and McGill 2011](#)). Indeed, [Aggarwal and McGill \(2007\)](#) find that consumers evaluate an anthropomorphized product more positively when it possesses characteristics congruent with the corresponding human schema, provided this schema is positive. For example, participants considered a smiling (vs. frowning) car to be more congruent with the schema of a spokesperson and thus evaluated it more positively. [Landwehr, McGill, and Herrmann \(2011\)](#) show that car features designed to look like human facial features (e.g., headlights that look like eyes) are decoded as such and thus elicit similar types of emotional responses. Finally, as we noted previously, [Chandler and Schwarz \(2010\)](#) show that people are less likely to replace a possession they had anthropomorphized (vs. thought of only in object terms) and tend to base replacement decisions for anthropomorphized products on attributes deemed important in the interpersonal domain (e.g., being viewed as warm or cold) rather than on the functional attributes of the products.

This line of research has provided important insights into the effect of anthropomorphism on attitudes and persuasion by comparing anthropomorphized objects with regular objects. The main conclusion is that anthropomorphized objects are treated similarly to human agents. Thus,

in persuasion contexts in which anthropomorphized objects are used to replace human agents as spokespeople or messengers, the findings described previously would suggest that there would be no differences in people's response to anthropomorphized (vs. human) messengers. However, most anthropomorphized portrayals are only partially human and are thus viewed as possessing particular human characteristics without being entirely human (partial anthropomorphism; see Guthrie 1993). Theories of partial anthropomorphism imply that anthropomorphized agents represent a lower degree of humanness on a continuum ranging from nonhuman to human, such that they are more human than inanimate objects (or animals) but still less human than people (see Figure 1).

Indeed, Epley, Waytz, and Cacioppo (2007) describe anthropomorphism as a specialized process of inductive inference in which knowledge about humans is used to make inferences about nonhumans. This process consists of three stages: (1) the activation of knowledge about humans for inferences about nonhumans; (2) the correction process, in which anthropomorphic representations are adjusted to incorporate knowledge about nonhumans; and (3) the application of activated (and often corrected) anthropomorphic representations to judgments and behaviors. The model implies that knowledge about humans is applied to nonhumans to varying extents, which suggests there should be differences in people's responses to anthropomorphized (vs. human) messengers.

The present article explores the implications of the perception of anthropomorphized agents as less than human. Unlike previous research, which has likened anthropomorphized agents to human agents and compared anthropomorphized agents with their object versions, we compare

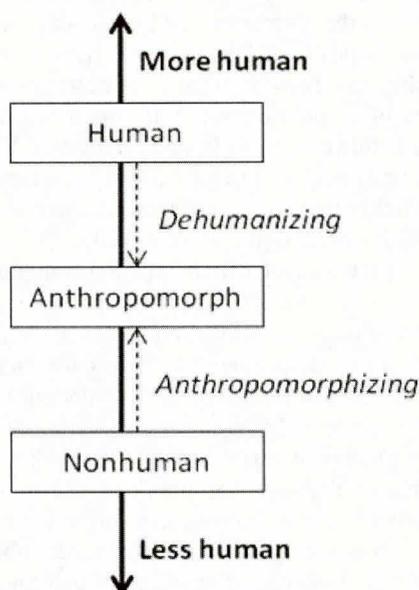
anthropomorphized agents with their human counterparts and predict differences in the way people respond to anthropomorphized (vs. human) agents. Specifically, we explore how the degree of humanness of a persuasion agent interacts with beliefs about the trustworthiness of human nature (interpersonal trust) to influence persuasion.

Humanness, Trust, and Persuasion

In the persuasion context, the perceived credibility of a message's source or spokesperson is an important cue that influences the effectiveness of an appeal. Research on this topic has shown that source credibility is a critical route to persuasion: compared with less credible spokespeople, highly credible communicators elicit greater acceptance of the positions they advocate (Sternthal, Phillips, and Dhoklakia 1978). Furthermore, credibility may comprise competence (expertness and intelligence), trustworthiness (character and honesty; see Hovland, Janis, and Kelley 1953), and—as may be especially relevant in commercial communication—goodwill, which is the “intent toward the receiver” (McCroskey and Teven 1999, p. 90) or the belief that the speaker has the receiver's interests at heart (we address additional possible aspects of credibility in Experiment 2). Although source credibility can be an objective function of the source itself (e.g., scientific website vs. personal blog), people's subjective perceptions of credibility are also critical in the persuasion process. Indeed, there are individual differences in people's tendencies to believe. For example, people vary in their tendency to be skeptical of advertising claims in particular (Obermiller and Spangenberg 1998). More generally, people also differ in their level of interpersonal trust or their expectancy that “the word, promise, verbal or written statement of another individual or group can be relied upon” (Rotter 1967, p. 653). This social learning theory view implies that personal experiences, including positive and negative reinforcements over the course of a lifetime, shape people's levels of interpersonal trust (also called “dispositional trust”) and general attitudes toward human nature (Bandura 1977; Rotter 1954). Because experiences vary widely from one person to the next, people will have differing levels of interpersonal trust.

People with high levels of interpersonal trust have an expectancy that others are reliable and well-intentioned; thus, high trusters tend to be more easily persuaded. In contrast, people with lower levels of interpersonal trust are more difficult to persuade because they expect other people to be unreliable and ill-intentioned (Chun and Campbell 1974; Rotter 1967; Wright and Tedeshi 1975). Critically, we propose that these expectancies about the reliability and intentions of other human beings will not merely transfer to the realm of anthropomorphized agents, as previous research might suggest. Instead, we propose the more nuanced notion that chronic beliefs about the quality of human agents will be adjusted and applied to a lesser extent to anthropomorphized agents because these agents are, by definition, less than human. From an interpersonal trust perspective, good (or bad) is a fundamental characteristic of

FIGURE 1
Anthropomorphized Agents on a Continuum Ranging from Nonhuman to Human



human nature. Therefore, reducing the humanness of an agent (e.g., anthropomorphized messenger) should diminish that characteristic. Specifically, for high trusters who believe that human agents are good, anthropomorphized (vs. human) agents should be “less good” and, thus, less persuasive. However, for low trusters who believe that humans are bad, anthropomorphized (vs. human) agents should be “less bad” and, thus, more persuasive.

In positing these patterns of judgment, we are emphasizing the goodwill dimension of credibility—that is, the intention toward the receiver. This assertion is supported by research on dispositional trust, which has noted the central role of beliefs about the extent to which one might be exploited by another person or otherwise taken advantage of (Jeffries 1992). Thus, although we measure various dimensions of credibility (including competence, trustworthiness, and goodwill) when we examine the underlying process in our second experiment, our expectation is that goodwill will be the only factor that mediates the effects of anthropomorphism and trust on persuasion.

Furthermore, such responses are more likely to occur when people are attentive enough to the nature of a persuasion agent to use it as a criterion in assessing goodwill. We define “default attentiveness” as a person’s chronic tendency, in line with his or her interpersonal trust level, to focus awareness on a subset of the available perceptual information (Gerrig and Zimbardo 2002). We operationalize default attentiveness as the absence of cues or experimental manipulations that expressly heighten or lower attentiveness. Because low (vs. high) trusters are more likely to attribute self-serving intentions to human agents, they tend to have a greater natural tendency to be alert and attentive to their social environment (Gurtman and Lion 1982; Rotter 1967). Therefore, under default attentiveness circumstances, low trusters should notice the degree of humanness of a persuasion agent and should be more persuaded by anthropomorphized (vs. human) agents. High trusters, in contrast, given their broad-based faith in others, would typically not attend to differences in messenger type and should respond similarly to anthropomorphized and human agents. Furthermore, perceptions of messenger goodwill will mediate the relationship between messenger humanness and persuasion at lower levels of trust (moderated mediation). Under conditions of heightened attentiveness, we predict that people high in trust will respond to the nature of the persuasion agent and will be less persuaded by anthropomorphized (vs. human) agents, whereas people with lower levels of trust will continue to be more persuaded by anthropomorphized (vs. human) agents. Finally, under conditions of lowered attentiveness, the nature of the persuasion agent should become less focal to all people, regardless of their levels of interpersonal trust: low and high trusters alike should respond similarly to anthropomorphized and human agents.

In the present research, we manipulate low and high attentiveness through the personal relevance of the message. Personally relevant messages tend to have a high degree of connection with recipients’ own lives and correspond to high levels of involvement with the message

(Krugman 1965; Sherif and Hovland 1961). Involvement is a motivational state that in turn affects the degree of attentiveness (Celsi and Olson 1988). According to the Elaboration Likelihood Model of persuasion (Petty, Cacioppo, and Goldman 1981), when a persuasive appeal is low in personal relevance, people are less motivated to process information related to the appeal (i.e., less involved), and thus, they are less attentive. In contrast, when a persuasive appeal is high in personal relevance, people are more motivated to process information related to the appeal (i.e., more involved), and thus, they are more attentive.

Furthermore, Petty and Cacioppo (1984, p. 671) suggest that in high-involvement situations, “source information does not serve as a simple acceptance or rejection cue, but may be considered along with all other available information in the subject’s attempt to evaluate the true merits of the arguments and position advocated.” When individual differences in interpersonal trust are considered, source factors such as message spokespeople should be particularly relevant in evaluating the information provided in a persuasion attempt. Indeed, interpersonal trust determines how people respond to social agents when there is no other basis for trust (Rotter 1967). Thus, low and high trusters alike should be more attentive to the nature of the persuasion agent when a message is high in personal relevance but less attentive when the message is irrelevant to them. We summarize our hypotheses as follows:

- H₁: Under default attentiveness conditions, low trusters are more persuaded by anthropomorphized (vs. human) messengers, whereas high trusters respond similarly to anthropomorphized (vs. human) messengers.
- H₂: The effect of trust and messenger type on persuasion is mediated by perceptions of messenger goodwill (moderated mediation).
- H₃: Under heightened attentiveness conditions, high trusters are less persuaded by anthropomorphized (vs. human) messengers, whereas low trusters are more persuaded by anthropomorphized (vs. human) messengers.
- H₄: Under lowered attentiveness conditions, low and high trusters alike respond similarly to anthropomorphized (vs. human) messengers.

Overview of Research

We report three experiments testing whether interpersonal trust and attentiveness influence the persuasiveness of anthropomorphized messengers compared with human messengers. The first two experiments investigate the relationships between trust, messenger type, and persuasion at default levels of attentiveness—that is, in the absence of experimental manipulations to heighten or lower attentiveness. In Experiment 1, we test whether interpersonal trust levels moderate the persuasiveness of anthropomorphized and human messengers (H₁). Experiment 2 tests H₁ using a different manipulation of messenger type and investigates the mediating role of messenger goodwill in the effect of messenger type on persuasion at varying levels of trust (moderated mediation; H₂). Finally, Experiment 3 investigates the moderating role of attentiveness in the relation-

ships between trust, messenger type, and persuasion (H_3 and H_4).

In all experiments, participants were recruited online for the generic purpose of “reviewing a message and answering some questions.” Conducting our experiments online enabled us to reproduce real-world conditions as closely as possible because many persuasive appeals are viewed online. In addition, online studies tend to be completed in participants’ natural environments, rather than at a university’s research laboratory. Thus, we expected experimental contexts in which we did not manipulate attentiveness to have minimal effects on participants’ default attentiveness levels. Furthermore, drawing on our working definition of persuasion as the induction of a change in attitude, intentions, and/or behavior, we measured persuasion by assessing participants’ attitudes and behavioral intentions. Finally, we measured trust using Rotter’s (1967) interpersonal trust scale at the end of each experiment as part of a presumably separate survey on participants’ “opinions about general issues.” The 25-item Likert-type scale was most suitable to our investigation because it captures trust in different situations involving various types of human agents. Most items deal with the trustworthiness of human agents—as determined by whether these agents have self-serving intentions—and the need to be attentive in social settings. Scale items include, for example, “In these competitive times one has to be alert or someone is likely to take advantage of you,” “Most elected officials are really sincere in their campaign promises,” and “In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy” (1 = “strongly disagree,” and 5 = “strongly agree”). Across our studies, the 25 items formed a reliable scale ($.74 < \alpha < .8$).

Experiment 1: The Moderating Role of Trust

In Experiment 1, we examine whether, at default levels of attentiveness (i.e., no manipulation of this construct), low trusters would be more persuaded by an anthropomorphized messenger than by a human one, whereas high trusters would respond similarly to anthropomorphized and human messengers (H_1). Participants with different levels of interpersonal trust evaluated a dental floss brand after reading an online advertisement delivered by either an anthropomorphized product or a human agent. In this experiment, the anthropomorphized messenger was also the attitude object of the message (i.e., dental floss) acting as its own spokesperson, a common practice in advertising. Moreover, the human messenger was implicit, which is also a common practice whereby readers assume a human source in the absence of an explicit spokesperson. At default levels of attentiveness, we predicted that participants with low levels of trust would be more persuaded by the message from the anthropomorphized (vs. human) messenger, but participants high in trust would respond similarly to both types of agents.

Participants and Procedure

Participants. Fifty-seven participants (36 women) in a large city in the U.S. Midwest took part in the experiment online for a chance to win a monetary prize through a raffle. Participants were recruited through the research laboratory of a local university. We excluded one participant from the analysis for taking an unusually long time to complete the study (more than one hour, which was well over three standard deviations of mean completion times). We report the analysis of data for the remaining 56 participants here.

Design and procedure. This experiment employed a two-factor (interpersonal trust, messenger type) between-subjects design, with interpersonal trust as a measured continuous variable and messenger type manipulated (anthropomorphized vs. human agent). Participants read a message about a fictitious brand of dental floss (Max Floss). In the anthropomorphized-messenger condition, Max Floss dental floss addressed participants directly in the first person. In the implicit-human-messenger condition, a third-person message described Max Floss in object terms. Both messages featured a blue dental floss case, but in the anthropomorphized-messenger condition, the case was subtly altered to look as if it had a faintly smiling face (see Appendix A).

A pretest confirmed the differential humanness of these two types of messengers. We asked participants to indicate the source of the message (“What/who delivered the message?”). As we expected, participants who read the message delivered by the anthropomorphized messenger were more likely to describe the message source in object terms (e.g., Max Floss, floss, dental floss). However, participants who read the message from the implicit human messenger were more likely to indicate a human source for the message (e.g., dentist, salesperson, advertiser) ($\chi^2(1, 28) = 10.16, p = .001$). These findings also provide support for our assumption that a human source is typically implied in the absence of an explicit messenger.

We measured persuasion by assessing participants’ attitudes and behavioral intentions regarding Max Floss. Specifically, we measured their (1) impressions of the product (1 = “very bad,” and 7 = “very good”), (2) liking of the product (1 = “dislike extremely,” and 7 = “like extremely”), (3) thoughts about the effectiveness of the product (1 = “very ineffective,” and 7 = “very effective”), (4) degree of confidence that Max Floss would work (1 = “very doubtful,” and 7 = “very confident”), (5) likelihood to buy the product (1 = “very unlikely,” and 7 = “very likely”), and (6) willingness to pay for the product (1 = “less than \$1,” 2 = “\$1 to 1.99,” 3 = “\$2 to 2.99,” 4 = “\$3 to 3.99,” 5 = “\$4 to 4.99,” 6 = “\$5 to 5.99,” and 7 = “more than \$5.99”).

Results

Interpersonal trust scores ($\alpha = .74$) ranged from 41 to 82 (lower scores indicate lower levels of trust; $M = 67.39, SD = 8.54, Mdn = 68$). We standardized and averaged the ratings of favorableness, liking, effectiveness, confidence, likelihood to buy, and willingness to pay to form a persuasion index ($\alpha = .90$). We ran a regression of this index on (1) interpersonal

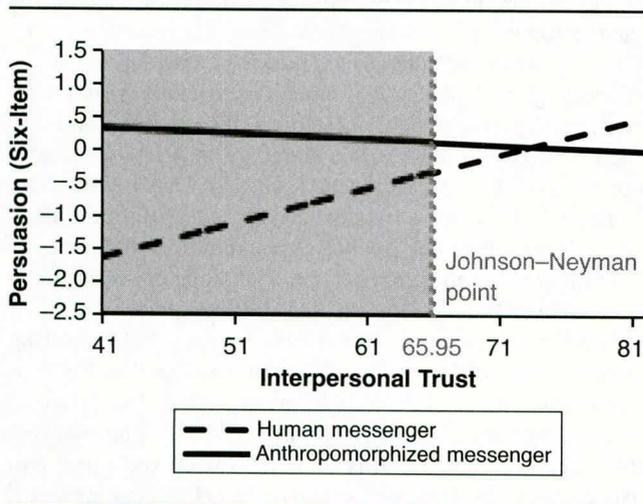
trust, (2) a dummy variable for messenger type (1 = anthropomorphized, 0 = human), and (3) their interaction. We found a main effect of messenger type ($\beta = 3.97, t(52) = 2.37, p < .05$) and a main effect of interpersonal trust ($\beta = 4.44, t(52) = 2.36, p < .05$). Participants' evaluations of the product were more positive in the anthropomorphized (vs. human) messenger condition, and participants with higher levels of trust evaluated the product more positively.

As we expected, we also found a two-way interaction of messenger type \times interpersonal trust on persuasion ($\beta = -3.56, t(52) = -2.22, p < .05$). We graph this interaction in Figure 2 using the Johnson–Neyman technique, or floodlight analysis, for identifying regions in the range of the moderator variable (interpersonal trust) in which the effect of the independent variable (messenger type) on the dependent variable (persuasion) is significant (Hayes and Matthes 2009; Johnson and Neyman 1936; Spiller et al. 2013). The Johnson–Neyman point for $p < .05$ for the interpersonal trust moderator occurred at a value of 65.95, which is .17 standard deviations below the mean of interpersonal trust. This result indicates that the anthropomorphized messenger was significantly more persuasive than the human messenger for all values of interpersonal trust below 65.95. In addition, there were no significant differences between the anthropomorphized and human messenger conditions above the Johnson–Neyman point.

Discussion

This first experiment supports our hypothesis about the moderating role of interpersonal trust in the persuasiveness of agents with varying degrees of humanness at default levels of attentiveness (H_1). We found that low trusters are more persuaded by anthropomorphized (vs. human) messengers, whereas high trusters respond similarly to both types of agents. We argue that these effects occur because, at default levels of attentiveness, low trusters view anthropomorphized messengers as having more goodwill than human messengers, whereas high trusters do not differentiate the two.

FIGURE 2
Two-Way Interaction of Messenger Type \times Trust on Persuasion (Experiment 1)



In Experiment 2, we test the mediating role of perceptions of messenger goodwill on the effect of trust and messenger type on persuasion while addressing several limitations of Experiment 1. First, in the present experiment, the anthropomorphized messenger (Max Floss) was also the object of the message, which made it impossible to distinguish attitudes toward the messenger and attitudes toward the product. Furthermore, this design led to the use of two different messages in the anthropomorphized and human conditions: first-person versus third-person messages, respectively. Therefore, to separate participants' attitudes toward the messenger (goodwill) from their attitudes toward the object of the message (persuasion) and examine the relationship between these two constructs, we designed the next experiment with anthropomorphized messengers distinct from the attitude object under evaluation. This design also enabled us to use identical third-person messages in all conditions.

Second, the human messenger in Experiment 1 was not explicitly identified in the message, although a pretest supported the notion that participants assumed the message to have come from a person. In the next study, we further address this issue by using an explicit human messenger visually "present" in the message, thus allowing for a clearer comparison between the influences of human and anthropomorphized messengers. Finally, it is possible that, despite their ubiquity in advertising, messages delivered by anthropomorphized agents are still viewed as odd or novel, which might make such messages more engaging and might account—at least in part—for some of the observed patterns of results. To address this possibility, in the next study we assess perceptions of how odd and engaging participants perceived the message to be.

Experiment 2: Mediation by Messenger Goodwill

In Experiment 2, we set out to explore the mediating role of messenger goodwill on the effect of messenger type and trust on persuasion (H_1 and H_2). Participants varying in interpersonal trust evaluated the "A-shape" light-emitting diode (LED) lightbulb (by Philips) after reading an online advertisement delivered by either anthropomorphized messengers or a person—all pictured in the message. Specifically, participants rated their attitudes and behavioral intentions toward the product and evaluated the messengers and the message. The anthropomorphized messengers in this experiment (lamps) were different from the object of the message (lightbulb), and all messengers discussed the lightbulb in the third person. This design enabled us to separate participants' impressions of the messenger from their impressions of the attitude object and to control for any unintended effect of the message style (i.e., first- vs. third-person message). We predicted that participants' interpersonal trust levels would moderate their responses to the messengers. Specifically, we expected low trusters to be more persuaded by the anthropomorphized (vs. human) agent, whereas high trusters would respond similarly to both types of messengers. We also predicted that percep-

tions of the messenger's goodwill would mediate this relationship at lower levels of trust (moderated mediation).

Participants and Procedure

Pretest. In a between-subjects pretest, participants ($N = 79$) based in the United States and recruited online on Amazon Mechanical Turk viewed messages (identical to the ones used in the main experiment described subsequently) about the benefits of the A-shape LED lightbulb. Depending on the condition, the spokesperson was an anthropomorphized agent or a human spokesperson pictured on the left-hand side of the copy. We designed two anthropomorphized-messenger conditions in an attempt to vary the degree of humanness of the anthropomorphized messenger. In one condition, the anthropomorphized messenger was a generic table lamp with the shade featuring two small dots to make it look vaguely like a face, using the same minimalist type of anthropomorphizing as in Experiment 1. In the other anthropomorphized-messenger condition, we designed a picture in which the same lamp had eyes as well as arms and was meant to look more humanized than the anthropomorphized messenger without arms. Finally, the human messenger's picture featured a smiling man (see Appendix B).

After viewing the message, participants indicated the extent to which the messenger was "more like an object or more like a person" (1 = "more like an object," and 7 = "more like a person"). Then, we assessed the degree to which participants perceived the messengers as having the ability to think and act independently using a subset of questions adapted from Gray, Gray, and Wegner's (2007) measures of mind perception. We asked participants to "think of the messenger as if it were alive and animated" and indicate the extent to which this messenger would be capable of (1) thinking; (2) understanding how others are feeling; (3) telling right from wrong and trying to do the right thing; (4) making plans and working toward goals; and (5) exercising self-restraint over desires, emotions, or impulses (1 = "not at all," and 7 = "very much").

We combined participants' answers to the aforementioned questions to form a degree-of-humanness index ($\alpha = .92$). An analysis of variance of this measure on messenger type revealed differences in perceptions of messenger humanness ($F(2, 76) = 3.25, p < .05$). Specifically, participants perceived the anthropomorphized messenger without arms ($M = 3.79, SD = 1.55$) as less human than the male spokesperson ($M = 4.92, SD = 1.91; F(1, 76) = 6.5, p < .05$). However, there was no difference in humanness perception between the anthropomorphized messenger with arms ($M = 4.35, SD = 1.38$) and the anthropomorphized messenger without arms ($F(1, 76) = 1.57, n.s.$) or between the anthropomorphized messenger with arms and the human agent ($F(1, 76) = 1.56, n.s.$).

Despite our failure to achieve clear differentiation in the degree of humanness of the anthropomorphized messenger with arms compared with the two other conditions, we included this condition in the main experiment to explore gradations of anthropomorphism. Looking ahead to the results, we note that we did not observe the predicted inter-

action of trust \times anthropomorphism on persuasion in comparing the anthropomorphized messenger with arms with the human messenger or the anthropomorphized messenger without arms—as would be expected given the inconclusive manipulation of anthropomorphism. We discuss this null result further in the "General Discussion" section. To simplify presentation of a complex study, we use the main text of our "Results" subsection to report only those findings pertaining to the anthropomorphized-without-arms and human conditions. Detailed results for the anthropomorphized-with-arms condition appear in the footnotes.

Participants. Two hundred forty-four participants (105 women) based in the United States completed the main experiment online for monetary compensation. Participants were recruited through Amazon Mechanical Turk. As in Experiment 1, we excluded 4 participants from the analysis whose completion times were well above three standard deviations of mean completion times for this online experiment. We report the analysis of data from the remaining 240 participants.

Design and procedure. This experiment employed a two-factor (interpersonal trust, messenger type) between-subjects design in which interpersonal trust was a measured continuous variable and messenger type was manipulated (anthropomorphized without arms vs. anthropomorphized with arms vs. human). We measured persuasion by assessing participants' attitudes and behavioral intentions regarding the LED bulbs. Specifically, after participants read the message, we measured their (1) impressions of the product (1 = "bad," and 7 = "good"), (2) liking of the product (1 = "dislike," and 7 = "like"), (3) willingness to pay for the product (sliding scale from \$0 to \$30), and (4) intentions to switch to LED lightbulbs (1 = "very unlikely," and 7 = "very likely").

To test our proposed underlying mechanism, we then assessed participants' perceptions of the messenger's credibility in terms of the three aspects described by McCroskey and Teven (1999)—that is, goodwill, competence, and trustworthiness as well as two additional aspects described in the literature, attractiveness and general goodness (e.g., Dholakia and Sternthal 1977; Harmon and Coney 1982). We assessed perceived goodwill by measuring participants' beliefs that the messenger is warm (1 = "cold," and 7 = "warm"), caring (1 = "does not care about me," and 7 = "cares about me"), friendly (1 = "unfriendly," and 7 = "friendly"), not self-centered (reverse coded; 1 = "not self-centered," and 7 = "self-centered"), and has their interests at heart (1 = "does not have my interest[s] at heart," and 7 = "has my interests at heart"); we assessed competence by measuring the messenger's perceived intelligence (1 = "unintelligent," and 7 = "intelligent"), competence (1 = "incompetent," and 7 = "competent"), and expertise (1 = "inexpert," and 7 = "expert"); and we assessed trustworthiness by measuring honesty (1 = "dishonest," and 7 = "honest"), ethicality (1 = "unethical," and 7 = "ethical"), genuineness (1 = "phony," and 7 = "genuine"), and trustworthiness (1 = "untrustworthy," and 7 = "trustworthy"). We assessed the other two aspects with single items: attractiveness (1 = "unattractive,"

and 7 = “attractive”) and general goodness (1 = “bad,” and 7 = “good”). This breadth of measures enables us to pinpoint the specific aspect of credibility underlying our results, which we hypothesize to be goodwill, and to rule out the possibility that the effect of messenger type and trust on persuasion stems from a generalized “halo” effect. All aforementioned items were presented in random order. Finally, because LED lightbulbs still represent a minority of the types of lightbulbs used by households in the United States (KRC Research for OSRAM Sylvania 2012), we included a question to gauge participants’ degree of familiarity with LED lightbulbs (1 = “unfamiliar,” and 7 = “familiar”).

Next, we measured participants’ attitudes about the message by asking them in random order the extent to which they found the message (1) interesting (1 = “uninteresting,” and 7 = “interesting”), (2) entertaining (1 = “boring,” and 7 = “entertaining”), (3) unusual (1 = “usual,” and 7 = “unusual”), (4) atypical (1 = “typical,” and 7 = “atypical”), and (5) effective (1 = “ineffective,” and 7 = “effective”). The first four items were meant to assess whether the message delivered by the anthropomorphized (vs. human) agent was somehow more captivating as a result of its oddness. The fifth item was meant to separate perceptions of message oddness from perceptions of message persuasiveness/effectiveness.

Results

Interpersonal trust scores ($\alpha = .86$) ranged from 35 to 99 ($M = 65.43$, $SD = 10.78$, $Mdn = 66$). As mentioned previously, to simplify presentation of a complex study with numerous measures, we use the main text of this subsection to report only findings pertaining to the anthropomorphized-without-arms and human-messenger conditions. The analysis model appropriately includes all conditions, and detailed results for the anthropomorphized-with-arms condition are included in the footnotes. For simplicity’s sake, hereinafter, we refer to the anthropomorphized-without-arms messenger simply as “anthropomorphized messenger.”

Persuasion. We averaged ratings of favorableness, liking, and intentions to switch to LED lightbulbs to form a persuasion index ($\alpha = .76$). We excluded the willingness-to-pay question from this index because the index formed a much less reliable scale when the willingness-to-pay measure was included ($\alpha = .3$). We suspect that willingness to pay did not follow the same pattern as the other three variables for two reasons. First, LED lightbulbs are much more expensive than other lightbulbs (\$20–\$80 for one LED bulb vs. less than \$1 for an incandescent lightbulb or \$4–\$5 for compact fluorescent lightbulbs). Second, because of the relative novelty of LED lightbulbs, most participants were not familiar with the high price range of this type of product. Indeed, in our sample the majority of participants were not familiar with this product ($M = 3.015$, $SD = 1.945$, $Mdn = 2$, mode = 1) and thus were most likely to be unable to state meaningful willingness-to-pay figures.

To test our hypothesis about the effect of trust and messenger type on persuasion (H_1), we then ran a regression of the three-item persuasion index on (1) interpersonal trust, (2) two dummy variables for messenger type, and (3) the

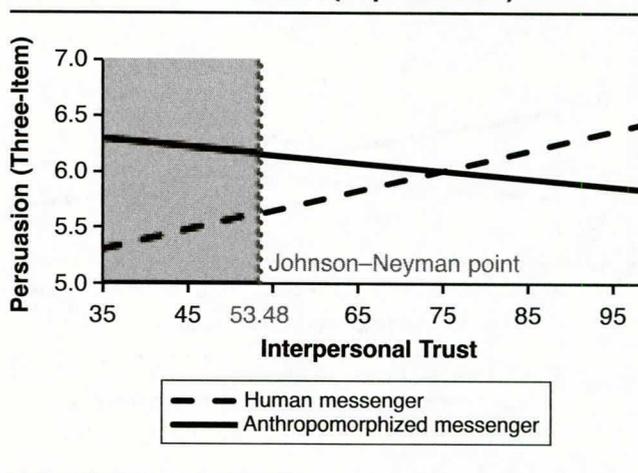
two-way interactions of interpersonal trust \times each of these dummy variables. As we expected, a comparison of the anthropomorphized and the human conditions showed a main effect of messenger type ($\beta = .182$, $t(234) = 2.26$, $p < .05$) and an interaction of messenger type \times trust ($\beta = -.165$, $t(234) = -2.018$, $p < .05$).¹

To explore this interaction, we conducted a floodlight analysis to identify regions in the range of the moderator (interpersonal trust) in which the effect of the independent variable (messenger type) on the dependent variable (persuasion) is significant. The Johnson–Neyman point for $p < .05$ for the interpersonal trust moderator occurred at a value of 53.48, or 1.11 standard deviations below the mean of interpersonal trust. This result indicated that the anthropomorphized messenger was significantly more persuasive than the human messenger for all values of interpersonal trust below 53.48. In addition, there were no significant differences between the anthropomorphized and the human conditions above the Johnson–Neyman point (see Figure 3).

Messenger credibility. We combined the various measures of credibility to form indices of goodwill ($\alpha = .75$), competence ($\alpha = .90$), and trustworthiness ($\alpha = .92$)—following the combinations of items proposed by McCroskey and Tevens (1999)—and tested whether trust moderated the assessment of the messengers along the five dimensions related to credibility: goodwill, competence, trustworthiness, attractiveness, and general goodness. As we describe in detail next, only goodwill showed an effect of messenger type and interpersonal trust, suggesting that interpersonal trust does not produce generalized shifts in the perception

¹For the analysis of persuasion, there were no significant differences between the anthropomorphized-with-arms condition and the other two conditions. Specifically, comparison of the anthropomorphized-with-arms and the anthropomorphized-without-arms conditions showed no main effects and no interaction ($t_s < 1$). Similarly, a comparison of the anthropomorphized-with-arms and human conditions showed only a marginal main effect of messenger type ($\beta = -.821$, $t(234) = -1.72$, $p = .086$) and no interaction ($\beta = -.123$, $t(234) = -1.50$, n.s.).

FIGURE 3
Two-Way Interaction of Messenger Type \times Trust on Persuasion (Experiment 2)



of messengers with varying degrees of humanness but, rather, has a more focused influence on perceptions of the messenger's goodwill.

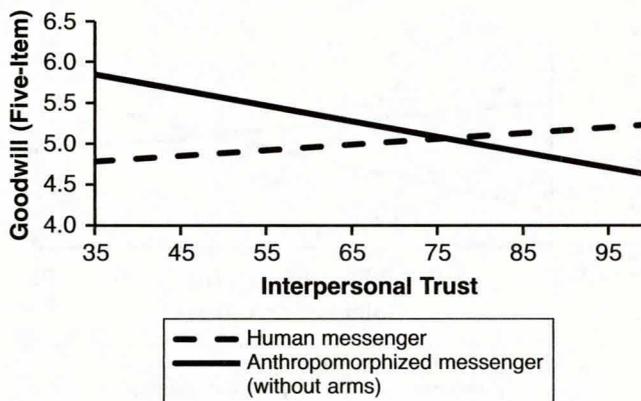
To analyze the effect of messenger type and trust on perceptions of messenger goodwill, we ran a regression of goodwill on (1) interpersonal trust, (2) two dummy variables for messenger type, and (3) the two-way interactions of interpersonal trust \times each of these dummy variables. As we expected, a comparison of the anthropomorphized and human conditions showed a main effect of messenger type ($\beta = .221, t(234) = 2.12, p < .05$) and a marginal interaction of messenger type \times trust ($\beta = -.191, t(234) = -1.81, p = .072$). A graph of these results in Figure 4 suggests a pattern similar to that observed for the persuasion index: at lower levels of trust, the anthropomorphized agent is viewed as having more goodwill than the human agent.²

Moderated mediation analysis. To test our proposed underlying mechanism (H_2), we explored the mediating role of perceived goodwill in the effect of messenger type (anthropomorphized vs. human) on persuasion at different levels of the interpersonal trust moderator using the bootstrap test of the indirect effect $(a_1 + a_3W) \times b$ (moderated mediation), where a_1 represents the effect of messenger type on perceptions of messenger goodwill, a_3 represents the effect of the interaction term on perception of messenger goodwill, W represents the value of the moderator (interpersonal trust), and b represents the effect of goodwill on persuasion (Preacher and Hayes 2004; Zhao, Lynch, and Chen 2010). We found that at one standard deviation below the mean of interpersonal trust, the mean conditional indirect effect from the bootstrap analysis was positive and sig-

²For the analysis of goodwill, there were no significant differences between the anthropomorphized-with-arms condition and the other two conditions. A comparison of the anthropomorphized-with-arms and the anthropomorphized-without-arms conditions showed a marginal main effect ($\beta = -.165, t(234) = -1.71, p = .088$) and a marginal interaction ($\beta = -.168, t(234) = 1.74, p = .083$). A comparison of the anthropomorphized-with-arms and the human conditions showed no main effects and no interaction ($ts < 1$).

FIGURE 4

Two-Way Interaction of Messenger Type \times Trust on Goodwill (Experiment 2)



nificant [$(a_1 + a_3W) \times b = .2489$], with a 95% confidence interval excluding zero (.0279, .5376). Similarly, at the mean of interpersonal trust, the mean conditional indirect effect from the bootstrap analysis was positive and significant [$(a_1 + a_3W) \times b = .1317$], with a 95% confidence interval excluding zero (.0040, .2856). However, at one standard deviation above the mean of interpersonal trust, the mean conditional indirect effect from the bootstrap analysis was not significant. Moreover, the direct effect of messenger type on goodwill was not significant ($t < 1$). Thus, there was a moderated mediation of perceptions of messenger goodwill on the relationship between messenger type and persuasion, such that goodwill perceptions mediated this relationship only at lower levels of trust—that is, the nature of the messenger mattered only at lower levels of trust.

Message oddness and effectiveness. We combined participants' ratings of message unusualness, typicality, interestingness, and entertainment value to form an oddness index ($\alpha = .74$). We ran a regression of goodwill on (1) interpersonal trust, (2) two dummy variables for messenger type, and (3) the two-way interactions of interpersonal trust \times each of these dummy variables. A comparison of the anthropomorphized and human messengers showed only a marginal main effect of messenger type ($\beta = .235, t(234) = 1.69, p = .092$) and no interaction of messenger type \times trust ($\beta = -.210, t(234) = -1.49, n.s.$).³ These results suggest that the effect of trust and messenger type on persuasion is unlikely to be mediated by perceptions that one message is odder or more captivating than the other.

Next, we regressed participants' rating of message effectiveness on (1) interpersonal trust, (2) two dummy variables for messenger type, and (3) the two-way interactions of interpersonal trust \times each of these dummy variables. As we expected, a comparison of the anthropomorphized and human messengers showed a main effect of messenger type ($\beta = .281, t(234) = 2.15, p < .05$) and a marginal interaction of messenger type \times trust ($\beta = -.260, t(234) = -2.28, p < .05$). These patterns of results were similar to that of the persuasion index.⁴

Discussion

The results of this experiment replicate the findings of Experiment 1 in a different context (H_1), confirm our

³For the analysis of oddness, there were no differences between the anthropomorphized-with-arms condition and the other two conditions. A comparison of the anthropomorphized-with-arms and the anthropomorphized-without-arms messengers showed no main effects and no interaction ($ts < 1$). Similarly, a comparison of the anthropomorphized-with-arms and human messengers showed no main effects ($\beta = .213, t(234) = 1.54, n.s.$) and no interaction ($\beta = -.187, t(234) = -1.32, n.s.$).

⁴For the analysis of effectiveness, there were no differences between the anthropomorphized-with-arms condition and the other two conditions. A comparison of the anthropomorphized-with-arms and the anthropomorphized-without-arms conditions showed no main effects and no interaction ($ts < 1$). Similarly, a comparison of the anthropomorphized-with-arms and human messengers showed a marginal main effect of messenger type ($\beta = .199, t(234) = 1.78, p = .076$) and no interaction ($\beta = -.185, t(234) = -1.62, n.s.$).

hypothesis about the mediating role of messenger goodwill (H_2), and rule out several alternative explanations. Unlike Experiment 1, this experiment used an explicit human messenger and an anthropomorphized messenger distinct from the object of the message. This design enabled us to test our hypotheses using identical third-person messages in all conditions. We were also able to separate participants' judgment of the messengers from that of the attitude object and, thus, to document the moderated mediation by messenger goodwill of the relationships between trust, messenger type, and persuasion. Then, by measuring additional dimensions of credibility, we showed that interpersonal trust does not produce generalized changes in the perceptions of messengers with varying degrees of humanness (halo effect) but, rather, has a more specific influence on perceptions of the messengers' goodwill. Finally, we ruled out the possibility that the documented patterns of persuasion stemmed from perceptions that messages delivered by anthropomorphized agents are odder, more novel, or more captivating than those from human messengers.

So far, we have examined the moderating role of trust on the relationship between messenger type and persuasion under default levels of attentiveness—that is, in the absence of cues (e.g., experimental manipulations) to heighten or lower attentiveness. We argue that under such circumstances, asymmetric attentiveness leads to the asymmetric responses we have observed from low and high trusters: low trusters tend to be more attentive in their social interactions than high trusters, which makes them more responsive to the nature of persuasion agents (anthropomorphized vs. human). It follows that under circumstances of heightened attentiveness, high trusters should also become more responsive to messenger type, and—because they believe humans are good—anything less than human should be “less good.” It also follows that under conditions of low attentiveness, low trusters and high trusters alike should become less responsive to the nature of the persuasion agent. In the next experiment, we manipulate attentiveness to test these last elements of our hypotheses (H_3 and H_4).

Experiment 3: The Moderating Role of Attentiveness

Experiment 3 examines the moderating role of attentiveness (H_3 and H_4). Participants with different levels of interpersonal trust evaluated a coffee brand after reading an online advertisement delivered by an anthropomorphized coffee mug or a human spokesperson. In this experiment, we attempted to override the default levels of attentiveness of prior studies. Specifically, we elicited heightened attentiveness in some participants by increasing the personal relevance of the message and decreased attentiveness in other participants by making the message irrelevant. Research has shown that the personal relevance of a message to a recipient has an important influence on persuasion. Specifically, as personal relevance increases, people become more motivated to process information related to a persuasive appeal (i.e., more involved) and thus more attentive to relevant cues, including source factors such as messenger type (see

Burnkrant and Sawyer 1983; Celsi and Olson 1988; Petty and Cacioppo 1984, 1986).

We predicted that under heightened attentiveness (high personal relevance), people high in trust would attend to the nature of the messenger and so would be less persuaded by anthropomorphized (vs. human) agents given their greater faith in (actual) human beings. Furthermore, we expected people low in trust to continue to be more persuaded by anthropomorphized (vs. human) agents. However, under lowered attentiveness (low personal relevance), people should respond similarly to anthropomorphized and human agents, regardless of their interpersonal trust levels.

Participants and Procedure

Participants. One hundred eighty-six students (111 women) residing in a large metropolitan area in the U.S. Midwest took part in the experiment online for a chance to win a monetary prize through a raffle. Participants were recruited through the research laboratories of a local university. We excluded 3 participants from the analysis because their completion times were well above three standard deviations from mean completion times. We report the analysis of data from the remaining 183 participants.

Design and procedure. This experiment employed a three-factor (interpersonal trust, messenger type, and attentiveness) between-subjects design in which interpersonal trust was a measured continuous variable and messenger type and attentiveness were manipulated. Participants read a message about a premium ground coffee brand called Café Direct. We manipulated attentiveness through the personal relevance of the message (see Campbell and Kirmani 2000; Petty and Cacioppo 1979). Specifically, in the introductory materials presented at the beginning of the experiment, participants in the high-attentiveness condition read that “Café Direct is planning to start offering its products in [the participants' city], including coffee shops and stores around university campuses in various [the participants' city] neighborhoods.” Furthermore, they learned that “as part of the raffle for this study,” they would get to choose among different brands of gourmet coffee at the end of the survey. In contrast, participants in the low-attentiveness condition read the following information: “The premium coffee brand Café Direct is planning to start offering its products [outside participants' regional area]” and that the raffle for the study involved gourmet chocolate.

We manipulated messenger type using a similar procedure as in Experiment 2. In the anthropomorphized-messenger condition, the message was delivered by a plain white coffee mug with two dots for eyes and a plain line for a smiling mouth. In the human-messenger condition, the spokesperson was a man, also smiling. These two messengers were pictured in black and white on the left-hand side of the message (see Appendix C). A between-subjects pretest ($N = 48$) confirmed the different levels of humanness of these two types of messengers. We asked participants to indicate whether the messenger was more like an object or more like a person (1 = “more like an object,” and 7 = “more like a person”). As we expected, participants rated the anthropomorphized coffee

mug ($M = 3.42$, $SD = 2.17$) as less human than the male spokesperson ($M = 4.96$, $SD = 2.03$; $t(46) = -1.54$, $p < .05$).

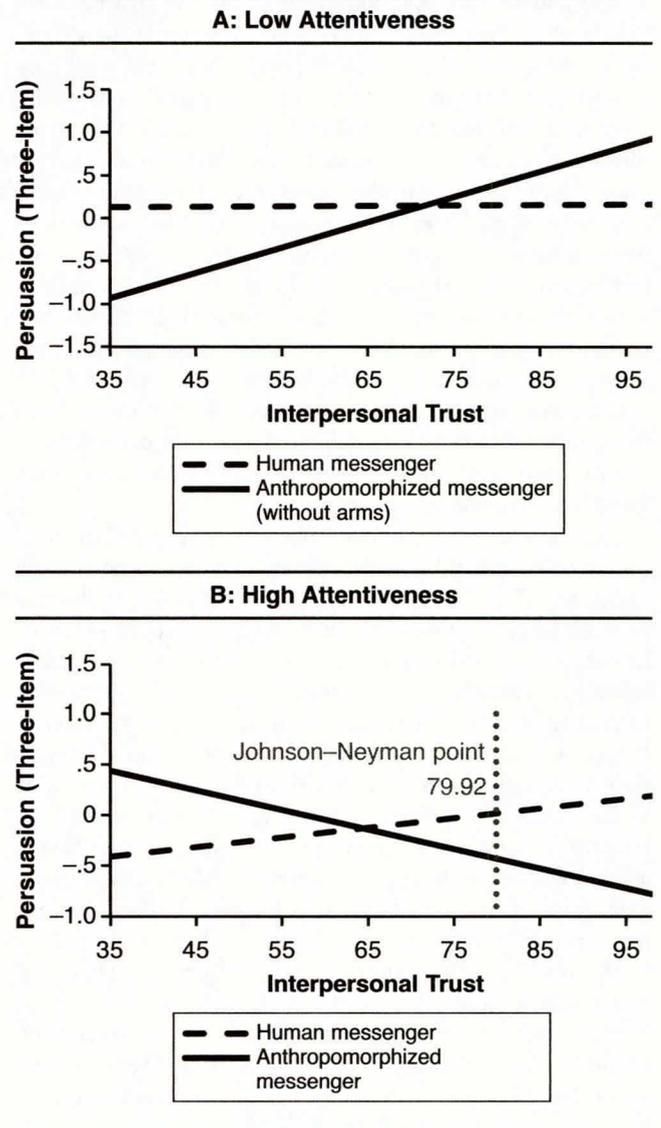
We measured persuasion through attitudes and behavioral intentions regarding Café Direct. Specifically, we measured participants' (1) impressions of Café Direct (1 = "bad," and 7 = "good"), (2) liking of the product (1 = "dislike," and 7 = "like"), and (3) willingness to pay for one pound of Café Direct ground coffee (sliding scale from \$0 to \$12). After some filler questions, we presented participants with a presumably separate survey about general issues. The questions in this survey assessed interpersonal trust (Rotter 1967).

Results and Discussion

Interpersonal trust scores ($\alpha = .81$) ranged from 35 to 98 ($M = 68.18$, $SD = 10.62$, $Mdn = 70$). We standardized and averaged the ratings of favorableness, liking, and willingness to pay to form a persuasion index ($\alpha = .74$). We ran a regression of this index on (1) messenger type (1 = anthropomorphized, 0 = human), (2) interpersonal trust, (3) attentiveness (low = 0, high = 1), (4) the two-way interaction of messenger type \times interpersonal trust, (5) the two-way interaction of messenger type \times attentiveness, (6) the two-way interaction of trust \times attentiveness, and (7) the three-way interaction of messenger type \times trust \times attentiveness. We found a marginal main effect of messenger type ($\beta = -1.76$, $t(175) = -1.81$, $p = .072$), a marginal two-way interaction of messenger type \times trust ($\beta = 1.68$, $t(175) = 1.72$, $p = .086$), and a two-way interaction of messenger type \times attentiveness ($\beta = 2.28$, $t(175) = 2.53$, $p < .05$).

As we expected, we also found a three-way interaction of messenger type \times interpersonal trust \times attentiveness on persuasion ($\beta = -2.26$, $t(175) = -2.57$, $p < .05$). We graph this interaction using the Johnson–Neyman technique for identifying regions in the range of the moderator variables (interpersonal trust and attentiveness) in which the effect of the independent variable (messenger type) on the dependent variable (persuasion) is significant. In the low-attentiveness condition, there was no region of significance, which indicates, as we predicted, that interpersonal trust did not influence participants' responses to the anthropomorphized versus human messengers (Figure 5, Panel A). In the high-attentiveness condition, the Johnson–Neyman point for $p < .05$ for the interpersonal trust moderator occurred at a value of 79.92, or 1.11 standard deviations above the mean of interpersonal trust. This result indicates, as we predicted, that when conditions favor a high level of attentiveness, the human messenger was significantly more persuasive than the anthropomorphized messenger for high-trust participants (i.e., for all values of interpersonal trust above 79.92; Figure 5, Panel B). Finally, the results followed the predicted pattern at lower levels of trust (greater persuasiveness of anthropomorphized vs. human messenger), but these differences were not statistically significant below the Johnson–Neyman point. We further address this unexpected result in the "General Discussion" section.

FIGURE 5
Three-Way Interaction of Messenger Type \times Trust \times Attentiveness on Persuasion (Experiment 3)



General Discussion

In three studies, we observed the moderating role of interpersonal trust and attentiveness on the persuasiveness of anthropomorphized and human agents. We had argued that under default conditions—that is, conditions in which there is no explicit cue to the requisite attention for processing an advertisement—low and high trusters would differ in their degree of attentiveness to messenger type. We expected that people high in trust would not notice the nature of the messenger and so would respond similarly to a human or anthropomorphized messenger. In contrast, we posited that people low in trust would be chronically wary, so that in the absence of cues that they can let their guard down, they would attend to messenger characteristics and thus would be more persuaded by the anthropomorphized (vs. human) messenger. Experiments 1 and 2 provide support for these hypotheses.

We posited further that under conditions signaling that a very low level of attentiveness is required because the message is wholly irrelevant to recipients, people high and low in trust would no longer differ in their level of attentiveness. People high in trust would again be unlikely to notice the nature of the messenger and so would not be influenced by it, whereas those low in trust could drop their guard and so too would be equally influenced by the anthropomorphized and human messengers. The results of Experiment 3 are consistent with this hypothesis and thereby reveal a boundary condition for the differential effect of human and anthropomorphized messengers. We also posited that when conditions foster a very high level of attentiveness, people high in trust would at last notice the nature of the messenger and be influenced by it. Given their high level of faith in people's goodwill, we expected high-trust participants to be more persuaded by the human than the anthropomorphized messenger, consistent with the results of Experiment 3.

However, Experiment 3 did produce an unexpected result. We expected participants low in trust to attend to and be influenced by the nature of the messenger when conditions fostered a high level of attentiveness. Given their belief that people lack goodwill, we had expected low-trust participants to be more persuaded by the anthropomorphized messenger than the human messenger, as they were in the prior two studies (at default levels of attentiveness). Although the pattern of results is consistent with this view, the results were not significant, indicating equal persuasiveness for the human and anthropomorphized agents. We note two possible explanations for this effect. One is chance: the difference is reliable but the sample failed to reveal it. The other is that the heightened attentiveness may have caused at least some low-trust participants to scrutinize the message even more closely and to consider not just the nature of the messenger but also the creator of the messenger. Consequently, they may have applied their perceived lack of goodwill to that presumably human creator, which lowered the persuasiveness of the message. Indeed, our predictions assumed that low trusters' attentiveness levels were already at an extremely high level, such that experimental manipulations meant to heighten attentiveness would have no discernable effect on low trusters. However, the results of Experiment 3 introduce the possibility that low trusters' attentiveness can be heightened even further, making them even more suspicious.

Practical Implications

This observation raises a practical concern that under certain circumstances, consumers might judge the use of anthropomorphized messengers as manipulative or gimmicky, especially if the human creator(s) of the appeal is revealed. Although most of our experiments mentioned the name of the company behind the advertised product (e.g., Café Direct, Philips), participants' responses, aside from those in the high-attentiveness condition of Experiment 3, showed no indication of taking into account the "person behind the curtain." It is possible that making a company's name more salient on a message (e.g., adding a highly visible logo or statement such as "This message is paid for by

Café Direct") might shift participants' focus away from the most immediate persuasion agent and activate other dimensions of persuasion knowledge, such as knowledge about the company's history and practices (see the Persuasion Knowledge Model; Friestad and Wright 1994).

More generally, our findings suggest that marketers hoping to increase the persuasiveness of their communications through the use of anthropomorphized spokespeople should pay close attention to trust and factors that may influence the attentiveness of their target audiences. Under many commonly occurring (i.e., default attentiveness) conditions, anthropomorphized messengers may increase persuasion among those consumers most prone to skepticism (low trusters), without hindering persuasion for high-trust consumers. Such an influence might be particularly important for life-saving health messages and other public service announcements, which unfortunately might not be perceived as personally relevant. However, under conditions of heightened attentiveness, we document a reversal of this pattern for high trusters, for whom anthropomorphized (vs. human) messengers become less persuasive. Thus, communicators would be well advised to carefully consider the use of anthropomorphized agents for messages or issues that audiences might deem especially relevant. Moreover, it might be useful for marketers to assess, through primary or secondary research, the trust levels of their target audiences. Indeed, research has identified several demographic characteristics of high- and low-trust people. For example, Rotter (1967) finds that youngest children (in terms of birth order), lower-socioeconomic-status people, atheists, and agnostics tend to be lower in trust. Beyond these practical implications, our findings have theoretical implications for research on anthropomorphism, persuasion, and dehumanization.

Theoretical Implications and Further Research

As we noted in the introduction, prior research on anthropomorphism has typically compared people's responses to anthropomorphized agents with their responses to objects (e.g., evaluations of an anthropomorphized car compared with a nonanthropomorphized car) and interpreted the difference between these responses as evidence that people's responses to anthropomorphized agents mirror their responses to context-relevant human agents (e.g., Chandler and Schwarz 2010; Landwehr, McGill, and Herrmann 2011). In contrast, the present research begins with the premise that anthropomorphized agents are perceived as only partially human and compares people's responses to anthropomorphized agents with their responses to human agents. Our findings suggest that people's responses to anthropomorphized agents are often opposite to their dispositional responses to human agents because of the lower perceived humanness of the former compared with the latter; that is, contrary to prior assumptions, responses to anthropomorphized agents are often positive for those who mistrust people and negative for people who put great stock in other humans.

We explored the effect of lowered humanness on persuasion by adding some "human" features to objects such as dental floss and lamps (e.g., smiles, eyes, "speech") and

the degree of anthropomorphism in our studies might be perceived as low to moderate—enough for participants to discern but not so high that they would view the entity as very nearly human. Prior research has suggested, however, that as anthropomorphism becomes more extreme, people may respond quite negatively to the “uncanny” similarity to actual humans (e.g., Mori 1970, 2005). Furthermore, low-trust participants might believe a highly anthropomorphized entity to lack goodwill (just like real people) and so might be no more persuaded by such messengers. Indeed, ratings on the anthropomorphism measure in Experiment 2 for the anthropomorphized messenger with arms (which was meant to be more humanized than the anthropomorphized messenger without arms) were not significantly different than those for the human spokesperson. In this case, we did not observe the interaction of trust and anthropomorphism on persuasion when we compared the anthropomorphized-with-arms condition with the human-messenger condition. These findings indicate that our results may be restricted to a range of anthropomorphism, an issue that could be explored in further research. For now, we advise advertisers to measure perceived anthropomorphism to ensure that the entity is clearly perceived as less than human.

Future studies may also delve into the effects of anthropomorphizing various types of entities (e.g., objects vs. animals vs. abstract concepts vs. forces of nature) in various ways. For example, Aristotle distinguishes moral agents (who can do right or wrong) and moral patients (who can have right or wrong done to them). Recent research has shown that an anthropomorphized social cause such as a lightbulb begging to be turned off to conserve energy (thus, a moral patient) elicits more compliance than nonanthropomorphized social causes (Ahn, Kim, and Aggarwal 2013). In light of these findings, further research could explore the role of trust on responses to anthropomorphized moral agents (as we have done here) compared with anthropomorphized moral patients. We speculate that whereas trust seems important when dealing with moral agents (who can harm us), the construct should be less relevant when dealing with moral patients (whom we can harm). In addition, the present research relied on relatively neutral anthropomorphized agents who did not present any overt cues to trustworthiness (e.g., halos, devil horns). The influence of anthropomorphism and the interaction with interpersonal trust might differ for agents who are depicted as being particularly good or bad.

Our research also suggests that scales intended to measure individual differences in social attitudes (e.g., interpersonal trust) may help predict people’s responses to entities perceived as less than human (e.g., anthropomorphized agents). Although we focused our efforts on individual differences in trust, it is possible that other differences in the ways people perceive and interact socially would produce similar effects. For example, previous research has found that chronically lonely people are more likely to anthropomorphize pets to satisfy their need for social connection (Epley, Akalis, et al. 2008; Epley, Waytz, et al. 2008). In line with our contention that anthropomorphized and human agents do not elicit the same types of reactions, another interpretation for these findings could be that for socially disconnected people, anthropomorphized agents do not elicit the same degrees of negativity (e.g., fear of rejection) as humans. Therefore, lonely people might view anthropomorphized pets or objects as more capable of providing social connectedness than real people and thus might actually prefer the “company” of these substitute social agents to that of humans.

The present research emphasizes differences in the perceived goodwill of anthropomorphized and human messengers. However, anthropomorphized messengers might also differ from humans on other dimensions such as novelty, interestingness, attractiveness, charm, humor, and likeability. Such differences raise the possibility of a peripheral route to persuasion for humanized entities and suggest the operation of affective processes in the differential persuasiveness of anthropomorphized and human messengers, which could be explored in further research.

Finally, our conception of anthropomorphism as corresponding to a lower degree of humanness raises important questions about the persuasion consequences of situations in which human agents partially lose humanness (dehumanization). Although anthropomorphism and dehumanization literature streams have evolved separately, we believe they are closely related. Anthropomorphism and dehumanization may be described as opposing forces operating on the same nonhuman-to-human continuum, pushing entities in different directions (see Figure 1). Whereas humanizing makes nonhuman entities (e.g., objects, animals) more human-like, dehumanizing makes human beings more object-, automaton-, or animal-like (Loughnan, Haslam, and Kashima 2009). Future studies might explore the consequences of conceiving of service personnel or persuasion agents in robot, object, or animal terms.

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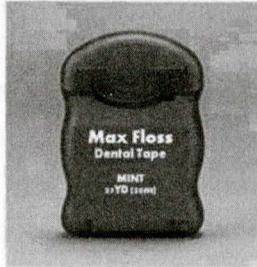
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APPENDIX A
Messages About Max Floss (Experiment 1)

A: Anthropomorphized Messenger

**Introducing a
Great Ally...**



Did you know that you miss nearly 40% of your tooth surface when you brush without flossing? Flossing daily is essential to good oral hygiene.

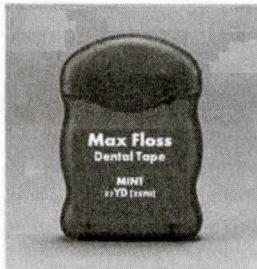
That's where I come in...

I am Max Floss®, smooth, yet strong with a light coating of natural wax for improved grip. My silky texture allows me to slide between teeth and just below the gum line to remove tough plaque, while gently massaging gums. I promise to deliver deep cleaning and comfort with a cool blast of mint flavor every time you floss.

I am soft on gums but tough on plaque. I am your best ally for a healthy, beautiful smile.

B: Human Messenger

**Introducing a
Great Tool...**



Did you know that you miss nearly 40% of your tooth surface when you brush without flossing? Flossing daily is essential to good oral hygiene.

That's where Max Floss® Dental Tape comes in...

Max Floss® is a smooth, yet strong dental floss with a light coating of natural wax for improved grip. The silky texture easily slides between teeth and just below the gum line to remove tough plaque, while gently stimulating gums. Use Max Floss® for deep cleaning and comfort with a cool blast of mint flavor every time you floss.

Soft on gum but tough on plaque, Max Floss® is your best tool for a healthy, beautiful smile.

APPENDIX B

Messages About A-Shape Lightbulb (Experiment 2)

A: Anthropomorphized Without Arms



Hey there! I am here to tell you about a bright idea: the **A Shape LED light bulb** by Phillips. Check out the cool features of this amazing bulb:

Similar shape and size as standard incandescent

This bulb is an easy switch from standard incandescent bulbs and is ideal for use in table lamps, floor lamps, pendant and ceiling fixtures.

Provides light similar to natural daylight

This LED light bulb produces light similar to natural daylight, displaying the true colors within your home. It also works with most dimmers to create your desired ambience with smooth dimming to 10% of full light levels.

Lasts 15-20 years and reduces energy costs!

The A Shape LED light bulb costs more than conventional 60 Watt incandescent light bulbs, but you will reduce the hassle of frequently replacing your light bulbs. You will save \$134.75 in energy costs when you switch to this 8 Watt LED light bulb... Now, that's a bright idea.



B: Anthropomorphized with Arms



Hey there! I am here to tell you about a bright idea: the **A Shape LED light bulb** by Phillips. Check out the cool features of this amazing bulb:

Similar shape and size as standard incandescent

This bulb is an easy switch from standard incandescent bulbs and is ideal for use in table lamps, floor lamps, pendant and ceiling fixtures.

Provides light similar to natural daylight

This LED light bulb produces light similar to natural daylight, displaying the true colors within your home. It also works with most dimmers to create your desired ambience with smooth dimming to 10% of full light levels.

Lasts 15-20 years and reduces energy costs!

The A Shape LED light bulb costs more than conventional 60 Watt incandescent light bulbs, but you will reduce the hassle of frequently replacing your light bulbs. You will save \$134.75 in energy costs when you switch to this 8 Watt LED light bulb... Now, that's a bright idea.



C: Human Messenger



Hey there!! I am here to tell you about a bright idea: the **A Shape LED light bulb** by Phillips. Check out the cool features of this amazing bulb:

Similar shape and size as standard incandescent

This bulb is an easy switch from standard incandescent bulbs and is ideal for use in table lamps, floor lamps, pendant and ceiling fixtures.

Provides light similar to natural daylight

This LED light bulb produces light similar to natural daylight, displaying the true colors within your home. It also works with most dimmers to create your desired ambience with smooth dimming to 10% of full light levels.

Lasts 15-20 years and reduces energy costs!

The A Shape LED light bulb costs more than conventional 60 Watt incandescent light bulbs, but you will reduce the hassle of frequently replacing your light bulbs. You will save \$134.75 in energy costs when you switch to this 8 Watt LED light bulb... Now, that's a bright idea.



APPENDIX C

Messages About Café Direct (Experiment 3)

A: Anthropomorphized Messenger



Hello! I am with CaféDirect, and I invite you to...

Discover our Difference: CaféDirect is a pioneering coffee company with a unique business model. More than twenty years ago we set out to prove that business can be a force for good: we were one of the first coffee brands to carry the Fair-trade label.

Explore our Range: From the rich, intense African coffees to the sweet, subtle coffees from Latin America, there is a taste to suit everyone. CaféDirect offers a distinctive gourmet coffee with a unique taste profile of exquisite flavors and aromas. With Café Direct, you can explore a world of taste with our range of 100% Fair-trade drinks.

Taste the difference. Brew a cup today.

B: Human Messenger



Hello! I am with CaféDirect, and I invite you to...

Discover our Difference: CaféDirect is a pioneering coffee company with a unique business model. More than twenty years ago we set out to prove that business can be a force for good: we were one of the first coffee brands to carry the Fair-trade label.

Explore our Range: From the rich, intense African coffees to the sweet, subtle coffees from Latin America, there is a taste to suit everyone. CaféDirect offers a distinctive gourmet coffee with a unique taste profile of exquisite flavors and aromas. With Café Direct, you can explore a world of taste with our range of 100% Fair-trade drinks.

Taste the difference. Brew a cup today.

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