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Pairing People with Products: Anthropomorphizing the Object, Dehumanizing the Person

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We present the first empirical integration of anthropomorphism and dehumanization, two intrinsically linked processes representing the extent to which the concept of humanness is activated for a given target. Across several experiments, we demonstrate that pairing a person and object in an ad, while focusing respondent attention on the object, leads to its being anthropomorphized and evaluated better compared to presenting it alone. However, compared to presenting a person alone, the same pairing leads to inferior evaluations of the person through a process of dehumanization. We rule out two alternative explanations for these effects, namely the transfer of an object's qualities to the person and consumption associations, and conduct a post-test that provides additional support for our proposed activation/inhibition of humanness account. Finally, we inspect several moderators, finding that anthropomorphism only occurs with moderately and highly functional objects and dehumanization occurs irrespective of the person's gender or fame. By incorporating the literature on dehumanization, we propose new research questions to motivate future inquiry.

Keywords Anthropomorphism; Dehumanization; Branding

Marketing research recommends that managers anthropomorphize products and brands (e.g., Bonchek & France, 2016; Kervyn, Fiske, & Malone, 2012) because the tactic often improves consumers' evaluative responses (MacInnis & Folkes, 2017). Recently, there has been a turn to understanding the negative effects of anthropomorphism. For example, anthropomorphized brands can suffer disproportionately when they fail (Puzakova, Kwak, & Rocereto, 2013) and anthropomorphized products can harm consumer self-control (Hur, Koo, & Hofmann, 2015).

We extend this stream by presenting the first empirical integration of anthropomorphism and dehumanization, two processes that are intrinsically linked yet to date have been investigated separately. We show that compared to an advertisement presenting an object alone, pairing a person and an object causes the object to be anthropomorphized and evaluated better. However, compared to presenting a person alone, the same pairing dehumanizes and weakens evaluations of the person. We examine these diverging consequences and document for the first time the simultaneous positive and negative effects tied to the popular marketing tactic of engineering perceptions of humanity.

Conceptualization

Anthropomorphism entails attributing to nonhuman entities humanlike characteristics such as possessing a rational mind or the potential to experience emotions (Epley, Waytz, & Cacioppo, 2007). It can be triggered in different ways, such as by presenting objects to appear humanlike (e.g., facial features; Puzakova et al., 2013) or describing them as having human qualities (e.g., personality; Chandler & Schwarz, 2010). The cognitive mechanism underlying anthropomorphism is the elicitation of knowledge about a perceived agent (Waytz, Cacioppo, & Epley, 2010): while observing a target, representations and (supposed) facts are activated, leading the observer to reason about the target in a certain

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framework (Epley et al., 2007). When that target invokes a person, a *human schema* is activated and shifts representations from "something' to "someone" (Waytz, Cacioppo, et al., 2010; Waytz, Epley, & Cacioppo, 2010; Waytz, Gray, Epley, & Wegner, 2010; Waytz, Morewedge, et al., 2010).

Perceptions of humanness in nonhumans generally promote positive responses due to feelings of sympathy, belonging, familiarity, certainty, and comfort (Chen, Wan, & Levy, 2017; Guthrie, 1995; Waytz, Heafner, & Epley, 2014), though negative consequences are possible such as when distinctiveness motivations are implicated or products are tempting or failing (Hur et al., 2015; Puzakova & Aggarwal, 2018; Puzakova et al., 2013). However, anthropomorphism predominantly has a positive connotation (MacInnis & Folkes, 2017) and improves "long-term business success" (Aggarwal & McGill, 2007, p. 470).

Dehumanization denotes the reflection of anthropomorphism, hinging on an insufficient attribution of humanness (Waytz, Cacioppo, et al., 2010; Waytz, Epley, & Cacioppo, 2010; Waytz, Gray, Epley, & Wegner, 2010; Waytz, Morewedge, et al., 2010), and contains many nuances. For example, a person can be perceived as lacking an agentic mind if portrayed sexually (Gray, Knobe, Sheskin, Bloom, & Barrett, 2011), can be infrahumanized (i.e., lacking feelings) when perceived as a member of an out-group (Leyens et al., 2001) or seen as lacking uniquely or typically human traits (e.g., sophistication) when likened to animals or machines (Bastian, Costello, Loughnan, & Hodson, 2012; Haslam, 2006). Regardless of which feature of humanness is implicated, research converges toward the idea that the general concept of humanness is not fully activated when encountering others. For example, people attribute more humanness to themselves than others because they are more acquainted with their own mental states (Haslam, Bain, Douge, Lee, & Bastian, 2005). Similarly, there is both less and slower activation of uniquely human words and emotions when a person describes an out-group compared to an in-group (Boccato, Cortes, Demoulin, & Leyens, 2006; Vaes, Paladino, & Leyens, 2006). These results reveal conditions under which people have cognitive difficulty in activating the human concept, which is associated with a range of negative consequences such as being less interested in interacting with, or seeking a harsher punishment for, a dehumanized other (Kozak, Marsh, & Wegner, 2006; Martínez, Rodríguez-Bailón, Moya, & Vaes, 2015).

So what explains why one person will dehumanize another? Perceptions of the other as disgusting (Buckels & Trapnell, 2013), psychologically distant (Bastian & Haslam, 2011), lacking warmth, competence or status (Bastian & Haslam, 2011; Haslam & Loughnan, 2014), individualistic or superficial (Haslam, 2006), or dissimilar or "alien" to oneself (Epley & Waytz, 2009; Haslam et al., 2005; Haslam & Stratemeyer, 2016) have all been identified as provoking dehumanization. Similarly, a person is more likely to be dehumanized if viewed as instrumental or as a means to an end, which explains why patients often view physicians as emotionless "empty vessels" (Haslam & Stratemeyer 2016; Haslam, 2006). Dehumanizing another is also more likely if a person feels interpersonally insecure (Zhang, Chan, Teng, & Zhang, 2014) or if they believe themselves to be dehumanized, in which case they may undertake reciprocal dehumanization (Kteily, Hodson, & Bruneau, 2016).

While prior theorizing is clear that anthropomorphism and dehumanization are complementary processes, empirical support for this view is lacking (Bain, Vaes, & Leyens, 2013; Epley & Waytz, 2009). We integrate by examining both the activation and inhibition of humanness. We propose that consumers will anthropomorphize objects and thus evaluate them better when paired with a person (vs. appearing alone), whose presence eases the accessibility of the concept of humanness. Conversely, compared to a person appearing alone, that same pairing will harm evaluations of the person because the presence of the object will inhibit the accessibility of the concept of humanness (Figure 1).

H1: Compared to advertisements displaying an object alone, advertisements that pair an object and a person will lead to superior evaluations through higher attribution of humanness to the object (i.e., *anthropomorphism*).

H2: Compared to advertisements displaying a person alone, advertisements that pair an object and a person will lead to inferior evaluations due to lower attribution of humanness to the person (i.e., *dehumanization*).

Alternative Explanations

We consider two alternative views. First, based on research on contamination and meaning transfer (McCracken, 1989; Nemeroff & Rozin, 1989), two proximate entities may exchange properties. It is

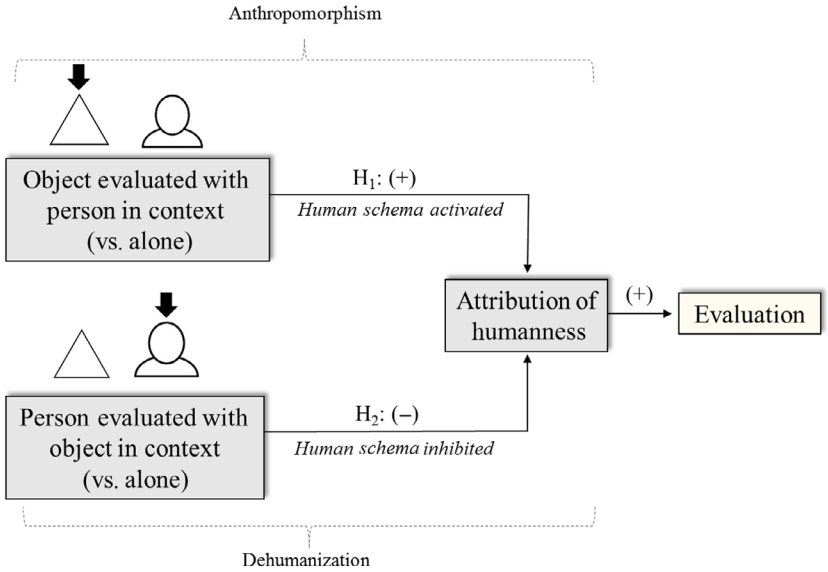


Figure 1. General model.

thus possible that by pairing an object with a person, characteristics of the former transfer to the latter and cause dehumanization.

Second, our experimental stimuli implicate consumption (e.g., brands) whose associations may promote a cost–benefit mindset or promote perceptions of people as less trusting and caring (Bauer, Wilkie, Kim, & Bodenhausen, 2012; Chen, Ng, & Rao, 2005), which has been linked to dehumanizing responses (Harris, Lee, Capestany, & Cohen, 2014; Henkel, Boegershausen, Hoegg, Aquino, & Lemmink, 2018). Thus, we examine consumption associations as a mediator of the effects on both evaluations and attributions of humanness.

In four experiments, we manipulate which target is evaluated (an object vs. a person) and the context in which the target is portrayed (object and person paired vs. alone). That is, the interaction of the target and the context is expected to impact evaluations through attributions of humanness (Figure 2). We rule out the alternative explanations of meaning transfer and consumption associations and begin to describe the domain of our effects by examining moderation by object functionality (Studies 2 & 3) and by the fame (Study 3) and gender (web appendix) of the human model. We conclude with a post-test supporting our argument that objects inhibit the activation of a human schema for a paired person.

Study 1

Study 1 tests H_1 and H_2 using a between-subjects experiment with a 2 (target: object vs. person) × 2 (context: alone vs. paired) design and *Prolific Academic* panelists. After reading a study description, respondents were randomly assigned to one of four conditions where for a minimum of five seconds they viewed one of three stimuli: (a) a picture of a branded object, (b) a picture of a woman, or (c) the object and woman paired (Table 1).

Next, they evaluated either the object (i.e., *object alone, object paired* conditions) or the person (i.e., *person alone, person paired* conditions) as well as the advertisement itself using standard attitude measures ($Eval_{Target}$ and $Eval_{Ad}$; Spears & Singh, 2004; see Methodological Details Appendix S1). We then assessed attributions of humanness (AoH) using the Mind Perception (Waytz, Cacioppo, et al., 2010; Waytz, Epley, & Cacioppo, 2010; Waytz, Gray, Epley, & Wegner, 2010; Waytz, Morewedge, et al., 2010) and Human Potentials (Kofta, Tomasz, & Tarnowska, 2013) scales. We included two attention checks (e.g., "Please select 'Not at all'"), assessed age and gender and concluded with a hypotheses-guessing probe, which in this and all other studies provided no cause to delete observations.

Results: We omitted 25 respondents for failing at least one attention check ($n = 364$; 60% female, $M_{age} = 35.1$). A factor analysis (Methodological Details Appendix S2) reveals that the Mind Perception and Human Potentials scales load onto separate but highly correlated ($r = .88$, $p < .01$) factors with moderate cross-loadings, supporting the creation of a single AoH composite. All measures are reliable (α's > .93).

Objects are perceived as more human-like when paired with a person than when alone

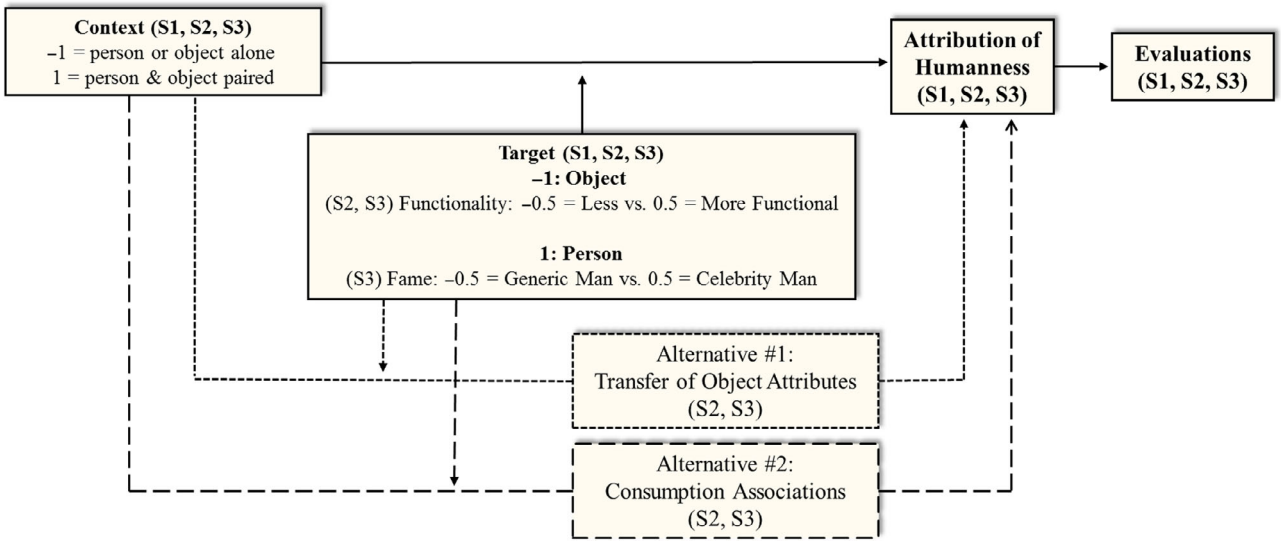


Figure 2. Summary of Studies.

Note: Principal Hypotheses (Model 8, 5,000 draws). Alternative #1: Meaning Transfer/Contamination (Model 85, 5,000 draws). Alternative #2: Consumption Associations (Model 85, 5,000 draws).

(M_{paired_object} = 1.91 vs. M_{alone_object} = 1.53, t(360) = 2.27, p < .03). The same pairing, compared to the person alone, results in lower perceptions of humanness for the person (M_{paired} = 4.71 vs. M_{alone} = 5.15, t(360) = −2.69, p < .01). As well, we find support for moderated mediation (Model 8; Hayes, 2018; Table 2). Compared to an object alone, an ad that incorporates a person improves $Eval_{Ad}$ (β = .08, CI = .02, .16) and $Eval_{Target}$ (β = .06, CI = .02, .12) through increased AoH to the object

Table 1
Study 1 Stimuli

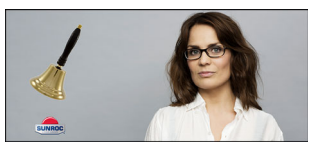
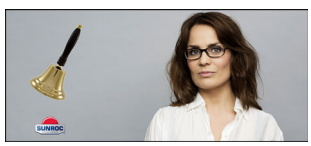
	Target	
Context	Object	Person
Alone		
Paired		

Table 2
Study 1 Results of Moderated Mediation Analysis

DV: Evaluations of	Indirect effect through AoH[a]					Direct effect			
	Object is target		Person is target			Object is target		Person is target	
	β	CI	β	CI	IMM (CI)	β	CI	β	CI
Ad	**.08**	.02, .16	**−.09**	−.16, −.03	−.17, (−.27, −.08)	−.21	−.38, −.04	−.11	−.28, .05
Target	**.06**	.02, .12	**−.07**	−.13, −.02	−.13, (−.23, −.05)	−.05	−.23, .13	−.59	−.77, −.41

Note. AoH = Attribution of humanness; Hayes Model 8 (5,000 draws, CI 95%); moderation is supported only if the IMM (index of moderated mediation) does not contain 0 (Hayes, 2018); bold items indicate a significant indirect effect.
[a]Positive scores indicate an increase, and negative scores indicate a decrease from alone to paired conditions.

(i.e., anthropomorphism). Compared to an ad portraying a person alone, a paired ad harms $Eval_{Ad}$ (β = −.09, CI = −.16, −.03) and $Eval_{Target}$ (β = −.07, CI = −.13, −.02) due to lowered AoH to the person (i.e., dehumanization). These results support the hypotheses.

Table 3
Study 2 Stimuli

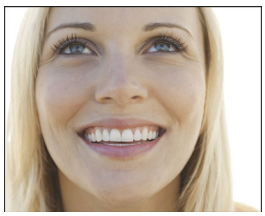
Object functionality	Context	Target	
		Object	Person
Less functional	Alone		
	Paired		
More functional	Alone		
	Paired		

Table 4
Study 2 Moderated Mediation Analysis

Moderator condition	Target	DV: Evaluations of	Indirect effect[a]				IMM (CI) through AoH	IMM (CI) through consumption associations	Direct effects	
			AoH		Consumption associations					
Object's functionality: less- bell versus more-brush	Bell is Target	Ad	**.17**	.08, .26	−.01	−.05, .00	−.13 (−.19, −.07)	.00 (−.01, .01)	−.09	−.27, .08
	Brush is Target		**.07**	.01, .15	−.01	−.04, .00			−.37	−.54, −.19
Person	Woman is Target		**−.07**	−.14, −.01	−.02	−.05, .00			.00	−.16, .17
Object's functionality: less- bell versus more-brush	Bell is Target	Target	**.16**	.08, .24	−.02	−.05, .00	−.11 (−.18, −.07)	.00 (−.02, .01)	.22	.02, .43
	Brush is Target		**.06**	.01, .13	−.02	−.05, 00			−.18	.38, .02
Person	Woman is Target		**−.07**	−.13, −.01	−.01	−.05, .00			−.28	−.47, −.08

Note. AoH = Attribution of Humanness.
Model 8 (5,000 draws, 95% CI, Helmert contrast) with two mediators (AoH and Consumption Associations); moderation is supported only if the IMM (Index of Moderated Mediation) does not contain 0 (Hayes, 2018). Bold items indicate a significant indirect effect.
[a]Positive scores indicate an increase and negative scores indicate a decrease from alone to paired conditions.

Study 2

Study 2 contemplates the two alternative explanations tied to consumption associations and meaning transfer. To operationalize the latter, which suggests qualities of an object are transmitted to a person and cause lower AoH, we focus on a core characteristic of an object—its perceived functionality (Schmitt, 2012). Evidence that a person is described as more functional when paired with an object than when appearing alone would support a meaning transfer explanation.

We use the same panel, general procedure and measures as in Study 1 but with new stimuli (Table 3). To measure functionality, we include three items (useful, practical, and functional; $\alpha = .88$). Using an independent sample ($n = 118$) from the same participant pool, we pretested whether functionality is more descriptive of an object (= 1), a person (= 7) or equally descriptive of each (= 4). The results suggest functionality better describes an object ($M = 2.92$), which is also significantly lower than the scale mid-point ($t(117) = -9.51$, $p < .01$). We use this measure to test a meaning transfer explanation.

Functionality is also a manipulated factor in Study 2. Some objects (e.g., robots vs. rocks) are more or less readily anthropomorphized (Gray, Gray, & Wegner, 2007; Guthrie, 1995), leading us to examine whether an object that is more functional may be associated with similar differences. For example, it might be intuited that a more functional object possesses greater agency or effectance potential (Epley et al., 2007), raising the possibility that a more functional object is more readily anthropomorphized. Thus, we examine object functionality as a moderator of the mediated pathway. We ran another pretest ($n = 50$) to establish that a bell ($M = 4.25$) is viewed as less functional than a paintbrush ($M = 5.68$, $p < .01$) and employ both in the study. Finally, to measure consumption associations (CA), we asked respondents whether certain thoughts came to mind when viewing the ad. Embedded within the 12 response options, most of which were distractors (e.g., health, art), were three items "buying & selling," "consumption" and "shopping" that formed the CA measure ($\alpha = .78$).

Results and Discussion

We omitted 23 respondents who failed at least one attention check ($n = 522$, 59% female, $M_{age} = 33.9$) and used Model 8 with specified contrasts (Hayes, 2018).

Activation–Inhibition Hypotheses

Replicating earlier results, when paired with a person (vs. alone) and regardless of the target's

Table 5
Study 2 Test of Alternative Explanations

Moderator condition	Target	DV	Indirect Effect[a] through CA β	CI	IMM through CA β (CI)	Indirect effect[a] through FUNCT β	CI	IMM through FUNCT β (CI)	Indirect Effect[a] through AoH β	CI	IMM through AoH β (CI)	Direct effects β	CI
Object's functionality: less (−.5) vs more (+.5)	Bell	AoH	**.06**	.01, .13	.01 (−.04, .05)	**−.05**	−.09, −.01	.04 (.01, .07)	–	–	–	.18	.00, .36
	Paintbrush		**.07**	.01, .13		**−.08**	−.14, −.03		–	–	–	.48	.29, .67
Person	Woman		**.07**	.02, .14		−.01	−.05, .02		–	–	–	−.27	−.44, −.09
Object's functionality: less (−.5) vs More (+.5)	Bell	FUNCT	–	–	–	–	–	–	**.05**	.01, .09	−.14 (−.21, .08)	−.32	−.52, −.10
	Paintbrush		–	–	–	–	–	–	**.11**	.05, .18		−.59	−.80, −.37
Person	Woman		–	–	–	–	–	–	**−.05**	−.09, −.01		−.01	−.20, .19

Note. FUNCT = functionality; CA = consumption associations; AoH = Attributions of Humanness.
Model 8 (5,000 draws, 95% CI, specified contrast, Hayes, 2018). The model examining AoH as DV includes two mediators (Consumption Associations and Functionality) while the model examining Functionality as DV includes one mediator (AoH); moderation is supported only if the IMM (Index of Moderated-Mediation) does not contain 0 (Hayes 2018). Bold items indicate a significant indirect effect
[a]Positive scores indicate an increase and negative scores indicate a decrease from alone to paired conditions.

Table 6
Study 3 Stimuli

Object functionality	Context	Target: Object	Target: Generic person	Target: Object	Target: Famous person
Less functional	Alone				
	Paired				
More functional	Alone				
	Paired				

Note. Respondents were significantly more familiar with Seth Rogan (M = 4.71) than the generic man (M = 3.75, $p < .01$); a manipulation check shows higher functionality scores for Paintbrush (alone) M = 5.22 than for Bell (alone) M = 3.78 ($p < .01$).

functionality (β = .26, CI = −.01, .54), objects score higher on AoH (Bell: M_{paired} = 2.46 vs. M_{alone} = 1.52, $t(516) = 2.01$, $p = .04$, β = .20, CI = .01, .39; Paintbrush: M_{paired} = 1.95 vs. M_{alone} = 1.55, $t(516) = 4.64$, $p < .01$, β = .47, CI = .27, .66). Conversely, AoH for the person is lower when paired than alone (M_{paired} = 4.79 vs. M_{alone} = 5.19, $t(516) = -2.12$, $p = .03$, β = −.20, CI = −.38, −.02). The index of moderated mediation supports our hypothesis ($Eval_{Ad}$ β = −.13, CI = −.19, −.07 and $Eval_{Target}$ β = −.11, CI = −.18, −.07; Table 4). For both more and less functional objects, evaluations are improved in the paired condition due to anthropomorphism but evaluations of the person suffer due to dehumanization. No evidence suggests that changes to evaluations are mediated by consumption associations (CI's straddle 0).

Alternative 1

Meaning transfer implies an exchange of properties, so pairing an object with a person should dehumanize the person while *increasing* perceptions of them as object-like (i.e., more functional). We find no evidence of this: The person paired with an object shows the same functionality (M_{paired} = 4.53) as when alone (M_{alone} = 4.64, $t(516) = -.52$, $p = .61$). We also tested (a) whether losses in humanness are mediated by gains in functionality and (b) whether gains in functionality are mediated by losses in humanness but neither view is supported (Table 5). Attributing humanness to a person is not mediated by increased functionality (β = −.01, CI = −.05, .02) and a person does not appear more functional due to decreased humanness (β = −.05, CI = −.09, −.01).

Alternative 2

The hypothesis that consumption associations cause dehumanization is not supported. Rather, while the overall index of moderated mediation is not significant (β = .01, CI = −.04, .05), greater CA is associated with *increased* AoH (β = .07, CI = .02,

Table 7
Study 3 Results of Moderated Mediation Analysis

			Indirect effect[a]							
			AoH		CA		IMM (CI)	IMM (CI)	Direct effects	
Moderator condition	Target	DV: evaluations of	β	CI	β	CI	through AoH	through CA	β	CI
Object Functionality:	Bell	Ad	**.09**	.04, .15	.02	.00, .04	**−.19** (−.25, −.13)	.00 (−.01, .01)	−.17	−.32, −.02
Less (−.5) vs.	Paintbrush		**.11**	.06, .16	.01	−.01, .03			−.28	−.44, −.13
More (+.5)										
Person's Fame:	Generic Man		**−.10**	−.15, −.06	.01	.00, .02			−.13	−.29, .02
Generic Man (−.5) vs.	Celebrity Man		**−.06**	−.12, −.01	.01	−.01, .03			−.01	−.17, .14
Celebrity Man (+.5)										
Object Functionality:	Bell	Target	**.08**	.04, .15	.01	−.01, .04	**−.17** (−.23, −.12)	.00 (−.03, .02)	.26	.12, .41
Less (−.5) vs.	Paintbrush		**.09**	.05, .15	**.03**	.01, .06			.29	.14, .44
More (+.5)										
Person's Fame:	Generic Man		**−.09**	−.14, −.05	.02	−.01, .05			−.28	−.44, −.13
Generic Man (−.5) vs.	Celebrity Man		**−.06**	−.11, −.01	.02	.00, .06			−.17	−.32, −.03
Celebrity Man (+.5)										

Note. AoH = Attribution of Humanness; CA = Consumption Associations.
Model 8 (5,000 draws, 95% CI, specified contrasts, Hayes, 2018); moderation is supported only if the IMM (Index of Moderated Mediation) does not contain 0 (Hayes, 2018). Bold items indicate a significant indirect effect (i.e. CI does not contain 0).
[a]Positive scores indicate an increase and negative scores indicate a decrease from alone to paired conditions.

Table 8
Study 3 Test of Alternative Explanations

Moderator condition	Target	DV	Indirect effect[a] through CA β	Indirect effect[a] through CA CI	IMM through CA β (CI)	Indirect effect[a] through FUNCT β	Indirect effect[a] through FUNCT CI	IMM through FUNCT β (CI)	Indirect effect[a] through AoH β	Indirect effect[a] through AoH CI	IMM through AoH β (CI)	Direct effects β	Direct effects CI
Object's	Bell	AoH	.05	.02, .08	−.00 (−.04, .03)	−.03	−.08, .02	.01 (−.02, .05)	–	–	–	**.27**	**.13, .41**
Functionality:	Paintbrush		.02	−.01, .05		−.05	−.09, −.01		–	–		**.29**	.16, .43
Less (−.5) vs. More (+.5)													
Person's Fame:	Generic Man		.03	−.01, .06		−.04	−.08, −.01		–	–		**−.27**	−.41, −.13
Less (−.5) vs.	Celebrity Man		.03	−.00, .07		−.01	−.04, .03		–	–		**−.21**	−.34, −.07
More (+.5)													
Object's	Bell	FUNCT	–	–	–	–	–	–	**.11**	.06, .17	**−.19** (−.27, −.13)	**−.24**	−.42, −.06
Functionality:	Paintbrush		–	–		–	–		**.10**	.04, .17		**−.34**	−.52, −.16
Less (−.5) vs. More (+.5)													
Person's Fame:	Generic Man		–	–		–	–		**−.11**	−.17, −.06		**−.11**	−.28, .08
Less (−.5) vs.	Celebrity Man		–	–		–	–		**−.07**	−.13, −.02		.04	−.13, .22
More (+.5)													

Note. FUNCT = Functionality; CA = Consumption Associations; AoH = Attributions of Humanness.
Model 8 (5,000 draws, 95% CI, specified contrast, Hayes, 2018). The model examining AoH as DV includes two mediators (Consumption Associations and Functionality) while the model examining Functionality as DV includes one mediator (AoH); moderation is supported only if the IMM (Index of Moderated Mediation) does not contain 0 (Hayes, 2018). Bold items indicate a significant effect
[a]Positive scores indicate an increase and negative scores indicate a decrease from alone to paired conditions.

.14), which undermines support for this alternative hypothesis.

Study 3

In advertising, it is common for brands to be promoted by celebrities because of their favorable idiosyncratic qualities. This could alter the results. For example, compared to a generic model, a celebrity may possess a range of positive associations (McCracken, 1989). When compared to a generic model, the celebrity's richer attributes might provide a protective belt against dehumanization. However, it is also plausible that both types of people have a comparable range of human qualities (e.g., free will), meaning there might be no difference between generic and celebrity models. We examine celebrity as a moderator by including pictures of two men: the celebrity Seth Rogan and a generic man who resembles Mr. Rogan (Table 6). Study 3 uses a 2 (target: object vs. person) × 2 (context: paired vs. along) × 2 (object functionality: high vs. moderate) × 2 (fame: generic vs. celebrity) between participants design. This study (n = 944, M_{age} = 35.7, 35% male) uses the same panel, method and measures as Study 2.

Results and Discussion

We replicate earlier results: regardless of the object's functionality (β = .01, CI = −.18, .22), objects score higher on AoH when paired with a person than when presented alone (Bell: M_{paired} = 2.16 vs. M_{alone} = 1.68, $t(941)$ = 3.06, $p < .01$; Paintbrush: M_{paired} = 2.07 vs. M_{alone} = 1.61, $t(941)$ = 3.36, $p < .01$). Across objects, evaluations are improved in the paired condition due to anthropomorphism and evaluations of the person suffer due to dehumanization (Table 7: Indexes of Moderated Mediation through AoH are significant: $Eval_{Ad}$ β = −.19, CI = −.25, −.13; $Eval_{Target}$ β = −.17, CI = −.22, −.12). We also find that a person's fame is not a boundary of the dehumanization effect: regardless of fame (β = −.10, CI = −.32, .10), AoH for the person is lower when paired than when presented alone (Generic: M_{paired} = 4.28 vs. M_{alone} = 4.92, $t(941)$ = −4.33, $p < .01$; Celebrity: M_{paired} = 4.52 vs. M_{alone} = 4.96, $t(941)$ = −3.08, $p < .01$). Again, consumption associations do not explain inferior evaluations of a person in the paired (vs. alone) condition (indexes of moderated mediation: $Eval_{Ad}$ β = −.01, CI = −.01, .01 and $Eval_{Target}$ β = −.01, CI = −.03, .02).

Finally, the alternative paths predicting AoH through meaning transfer and consumption associations are not supported (Table 8). Indirect effects indicate that a person's AoH is not mediated by perceptions of functionality (Generic: β = −.04, CI = −.08, −.01; Celebrity: β = −.01, CI = −.04, .03) and the overall index of moderated mediation is not significant (β = .01, CI = −.02, .05). Additionally, indirect effects suggest that a person's loss of humanness from paired to alone conditions decreases functionality and not the inverse as proposed by this alternative hypothesis (Generic: β = −.11, CI = −.17, −.06; Celebrity: β = −.07, CI = −.13, −.01).

Finally, in the appendix (Web Appendix S3 and S4), we report the results of a fourth study showing that the gender of the target does not moderate but that objects that are very low in functionality may be difficult to anthropomorphize.

Post-test

We conducted a post-test to secure more evidence that respondents are inhibited from thinking of a portrayed person as human-like. We focused on the two conditions where a person is evaluated (person alone, person paired) and created a one-factor (Context: alone vs. paired) between-subjects experiment using the two pictures from Study 1 depicting a person. Respondents were randomly assigned to view a picture and asked to describe the person in their own words. We adapted a two-item measure (Park, MacInnis, Priester, Eisingerich, & Iacobucci, 2010; α = .91) to assess the automaticity of thoughts related to that person (i.e., "my thoughts about this person were automatic, coming to mind on their own" and "my thoughts about this person came to mind naturally and instantly"). In lay terms, this assesses respondents' ease in providing feedback about the person's qualities (= *response ease*). If our inhibition account is true, respondents will struggle more in the *paired* condition than the *alone* condition. This account would be further supported with evidence that certain words are used more or less to describe the target in each condition. Prior research establishes that perceptions of a person as less warm, competent, powerful or possessing status, attractive, and psychologically proximate help explain perceptions of a person as less human-like (Bastian & Haslam, 2011; Epley & Waytz, 2009; Haslam & Loughnan, 2014). Accordingly, we coded how many responses contained descriptors interpretable as competence (e.g., "smart," "capable"),

warmth (e.g., "nice," "dear"), status or power (e.g., "a leader," "a high office/position"), attractiveness (e.g., "attractive," "pretty"), and psychological distance (e.g., "curt," "somewhat antisocial"). We also evaluated the total number of words written to ensure that writing volume does not explain differences. We collected 120 responses using *Prolific Academic* (M_{age} = 28.8, 48% female) evenly distributed across the two cells.

A MANOVA reveals that respondents wrote the same amount (M_{alone} = 23.83 words vs. M_{paired} = 23.18 words, F = .05, p = .83) but exhibited higher response ease when the woman was presented alone (M_{alone} = 4.79 vs. M_{paired} = 4.17, F = 3.83, $p < .05$). Further, compared to the paired condition, more respondents in the alone condition used words associated with competence (92% vs. 82%, χ^2 = 4.31, $p < .05$) and power/status (45% vs. 15%, χ^2 = 13.73, $p < .05$). The number of respondents who described the woman in terms of warmth was marginally higher in the alone condition (= 32%) than the together condition (= 20%, χ^2 = 2.46, $p < .09$) but there were no differences in attractiveness (37% vs. 28%, χ^2 = 1.21, p = .18) and perceived distance (17% vs. 20%, χ^2 = .15, p = .44).

These results reveal lower response ease and decreased perceptions of competence, status, and tentatively warmth when participants evaluate the person presented with an object vs. appearing alone. Theoretically, these results show evidence of inhibition and suggest that the pattern of effects documented in Studies 1-3 is attributable in part to specific perceptual changes resulting from the presence of an object that in turn lower perceptions of humanness (Bastian & Haslam, 2011; Haslam & Loughnan, 2014).

General Discussion

Epley et al. (2007) advise that anthropomorphism is the inversion of dehumanization. Our results agree: The same pairing that anthropomorphizes objects also harms the humanity of the embedded models. In fact, we contribute the first evidence that the two processes can occur with an identical stimulus. It is well established in marketing research that the activation of humanness is the process underlying anthropomorphism but the inhibition of humanness is attended to much less. In our studies, we document both a positive and a negative effect, owing to differences in the activation of human schemas, while also excluding two alternative explanations tied to meaning transfer and consumption associations. It is important to note that our choice of measuring functionality as a typically object-like trait does not necessarily exclude the possibility that more abstract traits (e.g., innovativeness) could be transferred. We also establish that dehumanization likely occurs in part because the presence of objects causes respondents to perceive people as less competent, lower in status, and not too warm, all established as important predictors of dehumanization outside a marketing context.

We examine several moderators and find the dehumanizing effect persists regardless of fame and gender. Examining other boundaries would be worthwhile. For example, research proposes different types of dehumanization (e.g., animalistic vs. mechanistic; Haslam, 2006) that might generate insight. Other features of the person might matter: We speculate, for example, that portraying sexualized models would not replicate our effects because such people are already dehumanized (Erchull, 2013) and would be incapable of anthropomorphizing a proximate object.

We also found that objects are anthropomorphized only if moderately or highly functional. This invites research on two issues. First, what qualities of objects inherently make them more or less likely to be anthropomorphized? An object's movement or physical features matter (e.g., Aggarwal & McGill, 2007; Morewedge, Preston, & Wegner, 2007), but these results seem less relevant to other objects (e.g., brands) where physical features may be less salient (e.g., Amazon). Second, the literature contains diversity in the overtness of anthropomorphism manipulations (e.g., showing brand logos with limbs) but it is less known how such manipulations interact with qualities of the object. Are there negative effects from going too far? For example, our intuition is that consumers would react poorly to efforts to anthropomorphize funeral home or birth control brands. Marketers would benefit from examining what may be a wide continuum: from objects that should never be humanized to objects needing little help from marketers because consumers naturally think of them as "humanlike."

Further, though we show that merely placing a person and object together causes anthropomorphism, our approach invites questions about ecological validity. Extant anthropomorphism tactics are often both contrived and necessary to examine theoretical pathways. Our approach is similarly contrived because we direct respondents to think about either the object or person. Because the ad itself is unchanged, the act of diverting the viewer's attention to the object or person alters reactions to

the ad itself. From an experimental standpoint, adjusting attention this way is justified but leaves unanswered what occurs when consumers see paired ads in a natural setting. Do they evaluate the humanness of both targets or does their attention gravitate toward one? The same question can be asked of other directive anthropomorphism approaches such as encouraging respondents to imagine a brand coming alive as a person (e.g., Aggarwal & McGill, 2012). That is, to what extent do consumers ascribe human characteristics to brands if not prompted to do so? These questions bear examination because it is possible that research on anthropomorphism advance as benefits various effects that are in fact artifactual and perhaps not even achievable in a practical sense. More ecologically valid research on anthropomorphism would be helpful.

Our results seem to be consistent with the view that the amount of "humanity" available for attribution across two targets is finite with allocations made in inverse proportions. Because our studies use a between-subjects design, we cannot address the issue empirically, but a promising line of inquiry is to start by understanding how much relative attention respondents pay to each of the targets in an ad that includes both a person and an object. Are allocations of humanness made in a zero-sum way (offset effect) or are there circumstances where a person may retain their "humanness" while benefitting a proximate brand (halo effect)? With celebrity endorsements, for example, our results suggest that a celebrity may be viewed as "less human" as a function of being depicted proximally to an object, which may be of concern to that celebrity's image managers. Our results suggest that depending on whether the consumers' focus is the object or person, attributions of humanness run in opposite directions, thereby helping or harming the associated ad and target. Rather than suggesting anthropomorphism is inherently good or bad, we suggest it is a double-edged sword. As the first to show simultaneous positive and negative effects of this "humanness" tactic, we hope to elicit more research that contemplates both points of view.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

Appendix S1. Measures.

Appendix S2. Attribution of humanness factor analysis.

Appendix S3. Study 4 stimulus.

Appendix S4. Summary of Study 4.

Appendix S5. Summary statistics.

Appendix S6. Summary of means by condition.

Appendix S7. Model 8 PROCESS syntax.