Exploring the roots of dehumanization: The role of animal—human similarity in promoting immigrant humanization

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Abstract

Little is known about the origins of dehumanization or the mechanisms through which dehumanization impacts outgroup prejudice. We address these issues by measuring and manipulating animal–human similarity perceptions in a human intergroup context. As predicted, beliefs that animals and humans are relatively similar were associated with greater immigrant humanization, which in turn predicted more favorable immigrant attitudes (Study 1). Those higher in Social Dominance Orientation (SDO) or lower in Universal Orientation particularly rejected animal–human similarity beliefs, partially explaining their increased tendency to dehumanize and reject immigrants. In Study 2, perceptions of animal–human similarity were experimentally induced through editorials highlighting similarities between humans and other animals or emphasizing the human–animal divide. Emphasizing animals as similar to humans (versus humans as similar to animals, or the human–animal divide) resulted in greater immigrant humanization (even among highly prejudiced people). This humanization process facilitated more re-categorization (i.e., inclusive intergroup representations between immigrants and Canadians) and increased immigrant empathy, both of which predicted less prejudicial attitudes toward immigrants. Implications for research, theory, and interventions for dehumanization and prejudice are considered.

Keywords

animal–human similarity, dehumanization, immigrants, prejudice, social dominance orientation

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> Auschwitz begins whenever someone looks at a slaughterhouse and thinks: they're only animals.
>
> (Adorno, 1995, as cited in Patterson, 2002, p. 53)

Historically, marginalized outgroups have been portrayed as "animal-like", such as depictions of blacks as apes, Jews as vermin, and American Indians as savages. Little, however, is known about the origins of such dehumanizing representations or potential mechanisms for reducing outgroup dehumanization. As noted in the introductory quotation, Adorno opined that intergroup hostilities, particularly those characterized by dehumanization,

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may ultimately be fueled by humanity's disregard for non-human animals. Following this reasoning, we empirically test the assumption that categorizations emphasizing differences between humans and non-human animals lay the foundation for human outgroup dehumanization. If this relation can be established, subsequent efforts to encourage perceptions that animals are similar to humans may lessen the "derogative value" of animalistic outgroup representations and thus reduce dehumanization. In Study 1, we explore whether greater beliefs about animal–human similarity predict more favorable outgroup attitudes through increased outgroup humanization (i.e., decreased dehumanization). In Study 2, perceptions of animal–human similarity are experimentally induced in an attempt to improve outgroup attitudes by promoting greater outgroup humanization. Several mediators are also examined as potential mechanisms through which dehumanization influences intergroup attitudes.

Dehumanization

Dehumanization is evidenced when outgroup members are perceived as relatively more "animal-like" or "less than human" and thus fundamentally different from and "inferior" to one's ingroup (Haslam, 2006; Leyens et al., 2000).[1] Such representations presumably justify the exclusion of outgroups from moral consideration, facilitating inhumane acts of discrimination such as genocide and/or slavery (Bandura, 2002; Bar-Tal, 2000; Opotow, 1990; Schwartz & Sturch, 1989). Portrayals of outgroups as "subhumans" who are less capable of experiencing emotions and/or pain render the outgroup less deserving of compassion and respect (Bandura, 2002; Opotow, 1990) in the same way that nonhuman animals are morally excluded for the purposes of exploitation by humans (Opotow, 1993). In support of such reasoning, white participants who unconsciously harbor cognitive representations of blacks as "ape-like" are more accepting of violence toward black crime suspects (Goff, Eberhardt, Williams, & Jackson, 2008). Relatedly, Esses, Veenvliet, Hodson, and Mihic (2008, Study 2) demonstrated that dehumanization of refugees predicted greater feelings of contempt and less admiration for refugees, ultimately leading to less support for refugees and pro-refugee public policies. Additionally, Zebel, Zimmermann, Viki, and Doosje (2008, Study 1) found that dehumanizing representations characterized by the attribution of fewer "human-related" words (e.g., humanity, citizen) and more "animal-related" words (e.g., feral, creature) to the outgroup predicted less support for outgroup reparation policies.

Current theorizing increasingly recognizes that dehumanization can occur in the absence of extreme intergroup hostility and can take subtle forms (Leyens et al., 2000, 2001). For instance, people typically perceive equivalent levels of primary emotions (e.g., happiness, fear) that are common to humans and non-human animals in both ingroups and outgroups, but attribute fewer uniquely human emotions (e.g., compassion, remorse) to outgroups (Leyens et al., 2000, 2001). Differential attribution of primary and secondary emotions to ingroups and outgroups typically occurs regardless of the emotion valence. Less attribution of uniquely human emotions to outgroup members has been associated with decreased help for outgroup victims (Cuddy, Rock, & Norton, 2007) and lower levels of intergroup forgiveness (Tam et al., 2008). Like emotions, some personality traits are also perceived as relatively unique to humans. According to Gosling and John (1999), traits associated with Conscientiousness (e.g., self-disciplined vs. careless) and Openness (e.g., complex vs. conventional) are generally considered unique to humans because they require greater cognitive ability (see also Gosling, 2001; Haslam, Bain, Douge, Lee, & Bastian, 2005). Drawing on this operationalization, Hodson and Costello (2007) found that the attribution of less uniquely human traits to immigrants predicted more negative immigrant attitudes.

Perceived animal–human similarity

Although outgroups are clearly dehumanized, with dehumanization exacerbating unfavorable intergroup attitudes (e.g., Esses et al., 2008; Hodson &

Costello, 2007), little is known about mechanisms for reducing dehumanization. In the present investigation, we emphasize the importance of isolating and targeting the origins or "roots" of dehumanization. The hierarchical divide between humans and animals may have originally advanced the oppression of people perceived as animal-like. As theorized by Patterson (2002, p. 26), "if animals are already defined as lower-life fated for exploitation and slaughter, the designation of lesser humans as animals paved the way for their subjugation and destruction". If outgroup dehumanization begins with heightened disregard for "inferior" animals, perhaps we can cut the dehumanization process off at its roots by narrowing the human–animal divide. We propose that perceptions of greater *animal–human similarity* may avail as an important unexamined predictor of outgroup (de) humanization. Given that dehumanization designates the outgroup to an "inferior" status associated with non-human animals, holding perceptions that non-human animals are similar to humans (ingroups and outgroups collectively) may undermine the ability to dehumanize and necessitate closer human intergroup associations.

People are generally more empathetic towards similar versus dissimilar others (e.g., Krebs, 1975), providing more help to same-race others (Gaertner & Bickman, 1971). Encouragingly, inclusive intergroup representations (i.e., "us" vs. "them") can be activated by emphasizing intergroup similarities (Gaertner & Dovidio, 2000), which in turn lead to reduced intergroup bias and discrimination (Dovidio, Gaertner, Isen, & Lowrance, 1995). At the inter-species level, people report greater empathy and concern for non-human animals perceived as more similar to humans (Hills, 1995; Plous, 1993), with animal–human similarity beliefs predicting increased support for animal rights (Plous, 1991; Wuensch, Poteat, & Jernigan, 1991). Surprisingly little research examines animal–human similarity, particularly as it pertains to outgroup dehumanization. In Study 1, we examine whether heightened perceptions of animal–human similarity attenuate prejudice toward immigrants by removing the legitimacy of outgroup dehumanization.

Although our proposition has intuitive appeal given that manipulations of human intergroup similarity reduce negative outgroup biases (Gaertner & Dovidio, 2000), perceptions of animal–human similarity may contribute to outgroup prejudice. Terror Management Theory (TMT: Solomon, Greenberg, & Pyszczynski, 1991), for instance, posits that animal-nature reminders are threatening because they heighten personal mortality salience. Indeed, animal-nature reminders have been used to induce "threat" in TMT research (see Beatson & Halloran, 2007). It is well established in the intergroup relations literature that threats to the ingroup's status or wellbeing contribute to negative outgroup attitudes (see Riek, Mania, & Gaertner, 2006; Stephan, Ybarra, & Rios Morrison, 2009). Therefore, perceived animal–human similarity could provoke prejudiced outgroup attitudes, if such similarities inadvertently induce threat by connoting a decrease in human status, worth, or wellbeing.

These potentially conflicting theoretical predictions for the effects of animal–human similarities on (de)humanization and outgroup attitudes can perhaps be reconciled by considering how such similarities are framed: whether perceiving *animals as similar to humans*, or *humans as similar to animals*. We propose that greater outgroup humanization would be associated with perceptions that animals are similar to humans ("animals are like us") compared to more psychologically threatening perceptions that humans are similar to animals ("we are like animals"). The goal of Study 1 is to establish whether animal–human similarity perceptions in general are associated with decreased bias through greater humanization, as we suspect. In Study 2, we directly tease apart the divergent theoretical predictions for animal–human similarity perceptions by varying how animal–human similarity is conceptualized (i.e., animals are similar to humans vs. humans are similar to animals).

Ideological orientations as predictors of animal–human similarity

An additional goal of Study 1 is to explore individual differences predicting the natural tendency

to see humans and non-human animals as similar or distinct. Social Dominance Theory (Sidanius & Pratto, 1999) posits that intergroup bias and conflict result from evolved preferences for social hierarchies and group dominance. Higher levels of social dominance orientation (SDO) capture a greater endorsement of social inequality and preference for societies characterized by intergroup hierarchies (Pratto, Sidanius, Stallworth, & Malle, 1994). People higher in SDO view the world as a "competitive jungle" (Duckitt, 2006; Duckitt, Wagner, du Plessis, & Birum, 2002), with intergroup interactions perceived as zero-sum competitions over finite resources (Esses, Hodson, & Dovidio, 2003). Consequently, SDO is associated with prejudice toward a variety of outgroups, particularly subordinate and competitive outgroups (Duckitt, 2006) such as immigrants (e.g., Esses et al., 2003; Esses, Jackson, & Armstrong, 1998). Intriguingly, higher SDOs are also more likely to endorse and engage in the exploitation of non-human animals (Hyers, 2006). The SDO construct also predicts negative immigrant/refugee attitudes, in part, through heightened dehumanizing perceptions (Esses et al., 2008; Hodson & Costello, 2007). Because people higher in SDO endorse animal exploitation and support hierarchical human relations, they may be naturally inclined to show exaggerated perceptions that humans are distinct from other animals. We predict that the increased tendency for high SDOs to dehumanize outgroups may be rooted in exaggerated beliefs about the human–animal divide.

Universal Orientation is defined as an inclusive ideological orientation of *non-prejudice* (not simply low prejudice) that reflects one's personal values and global worldviews (Phillips & Ziller, 1997). People higher in Universal Orientation refrain from engaging in social categorization and selectively focus on and accentuate interpersonal and intergroup commonalities, resulting in a greater self–other integration (Phillips & Ziller, 1997). Universal Orientation is positively associated with empathy, social-equality, and appreciation for diversity, and negatively associated with anti-black prejudice (Phillips & Ziller, 1997), authoritarianism, and SDO (Nicol & Boies, 2006). Although conceptually similar to intergroup re-categorization (see Gaertner & Dovidio, 2000), Universal Orientation is an individual difference variable tapping a broad philosophy or ideology that emphasizes the personal importance of perceiving similarities (vs. differences) between people and groups in general. Re-categorization (i.e., inclusive intergroup representations), on the other hand, is a specific intergroup categorization process activated by contextual manipulations at the intergroup level, proximally predicting specific intergroup attitudes. The association between Universal Orientation and outgroup (de)humanization remains unexamined; we posit that those higher in Universal Orientation will naturally perceive humans as relatively similar to other animals, resulting in greater outgroup humanization.

Overview of Study 1 predictions

Central to our theoretical reasoning, we expect that heightened animal–human similarity perceptions will predict lower levels of immigrant prejudice through increased outgroup humanization (Hypothesis 1). Given that SDO can exert direct effects on immigrant attitudes/perceptions (e.g., Esses & Hodson, 2006; Hodson & Costello, 2007), increased SDO was expected to directly predict less immigrant humanization and greater immigrant prejudice. However, SDO was also expected to indirectly predict decreased immigrant humanization via perceptions that humans are relatively distinct from non-human animals (Hypothesis 2). Conversely, Universal Orientation was expected to predict greater immigrant humanization via beliefs that humans are similar to other animals (Hypothesis 3).

Method

Participants Undergraduate psychology students from a Canadian university participated for course credit. Non-Canadians (n = 19) were excluded from analyses given the focus on immigrant attitudes, leaving 70 participants (53 women,

17 men, M_{age}= 19.30, *SD* = 1.51). Of these participants, 94.3% identified as white/Caucasian.

Measures

Immigrant (de)humanization Respondents identified the extent to which 24 personality traits (based on Haslam et al., 2005) apply to Canadians and immigrants (1 = *trait does not apply to group*, to 5 = *trait strongly applies to group*). Following Hodson and Costello (2007), composite variables involving uniquely human traits (Openness and Conscientiousness) and non-uniquely human traits (Neuroticism and Agreeableness) were created for each social group. Conceptually similar to Leyens and colleagues (2001), respondents also indicated the extent to which Canadians and immigrants experience 12 secondary (uniquely human) or primary (non-uniquely human) emotions (1 = *not at all*, to 5 = *very much so*). Ratings involved three positive primary emotions (excitement, joy, pleasure), three negative primary emotions (fear, sadness, rage), three positive secondary emotions (friendliness, compassion, hope), and three negative secondary emotions (guilt, remorse, shame) based on Paladino and colleagues (2002). Uniquely human and non-uniquely human emotion composite variables were created for each group collapsing across emotion valence.[2] Using these two measures, dehumanization/humanization of immigrants can be indicated by low/high attribution of uniquely human personality traits or emotions to this target group.

Animal–human similarity Participants responded to 10 items tapping perceptions of human and non-human animal similarity (Templer, Connelly, Bassman, & Hart, 2006; Wuensch et al., 1991). A sample item reads: "Humans are not the only creatures who have thoughts; some non-human animals can think too" (1 = *disagree strongly*, to 5 = *agree strongly*).

Immigrant prejudice Participants completed the seven-item Modern Racism Scale (MRS: McConahay, Hardee, & Batts, 1981) modified to measure attitudes toward immigrants. A sample item reads: "Immigrants are getting too demanding in their push for equal rights" (0 = *strongly disagree*, to 4 = *strongly agree*).

Ideological orientations The following ideological variables represent general predispositions rather than variables linked to specific outgroups or contexts. SDO was assessed using the 16-item SDO scale (Pratto et al., 1994). A sample item reads: "Superior groups should dominate inferior groups" (1 = *do not agree at all*, to 7 = *strongly agree*). The 20-item Universal Orientation Scale (Phillips & Ziller, 1997) was employed; a sample item reads: "At one level of thinking we are all of a kind" (1 = *does not describe me well*, to 5 = *describes me well*).

Results and discussion

Preliminary analyses and descriptive statistics As expected, participants attributed fewer uniquely human traits to immigrants (M = 3.44, SD = .64) than Canadians (M = 3.84, SD = .44), $t(69) = -4.61$, $p < .001$, $d = -.73$. In contrast, no difference in attribution of non-uniquely human traits to immigrants (M = 3.24, SD = .29) or Canadians (M = 3.22, SD = .26) emerged, $t(69) = .49$, $p = .625$, d = .07. Similarly, participants attributed fewer uniquely human emotions to immigrants (M = 3.87, SD = .66) than Canadians (M = 4.03, SD = .54), $t(69) = -2.56$, $p = .013$, $d = -.27$. Unexpectedly, immigrants were also attributed more non-uniquely human emotions (M = 4.01, SD = .63) than Canadians (M = 3.89, SD = .66), $t(69) = 2.41$, $p = .019$, $d = .19$. Overall, a tendency to dehumanize immigrants emerged. We use measures of uniquely human traits or emotions attributed to immigrants to represent the degree of perceived humanity attributed to the immigrant outgroup.

Correlation patterns and descriptive statistics were largely as expected (see Table 1). Greater perceptions of animal–human similarity were associated with lower immigrant prejudice and increased immigrant humanization (both trait- and emotion-based). Both measures of immigrant humanization were also associated with lower immigrant prejudice. Higher SDO or lower Universal Orientation were associated with decreased animal–human similarity beliefs,

Table 1. Descriptives and correlations among key variables (Study 1)

	M	*SD*	1.	2.	3.	4.	5.	6.
1. SDO (1–7)	2.55	1.07	.93	–.45***	–.43***	–.47***	–.36**	.61***
2. Universal Orientation (1–5)	3.40	.39		.75	.38**	.32**	.34**	–.44***
3. Animal–human similarity (1–5)	3.50	.64			.79	.45***	.25*	–.43***
4. Immigrant humanization—traits (1–5)	3.44	.64				.83	.62***	–.54***
5. Immigrant humanization—emotions (1–5)	3.87	.66					.83	–.44***
6. Immigrant prejudice (0–4)	1.55	.76						.86

Note: $N = 70$. SDO= social dominance orientation. Humanization (traits or emotions) = higher scores reflect the attribution of more uniquely human traits or emotions to immigrants. Values in diagonal represent scale reliabilities. Values in parentheses represent scale range.
* $p < .05$; ** $p < .01$; *** $p < .001$.

decreased immigrant humanization (both trait- and emotion-based), and heightened immigrant prejudice.

Examination of the humanization model

Recall that increased animal-human similarity was expected to predict lower immigrant prejudice via greater immigrant humanization (H1), and heightened animal–human similarity perceptions were expected to mediate the relation between lower SDO (H2) or higher Universal Orientation (H3) and greater immigrant humanization. This model was tested separately for each humanization measure (traits or emotions) using AMOS 16 software and maximum likelihood estimation allowing for associations between SDO and Universal Orientation. Bootstrapping procedures ($N = 2000$) were employed to obtain significance levels for indirect effects. Recommended model fit criteria (Hu & Bentler, 1999; Kline, 2005) include non-significant χ^2 values, comparative fit index (CFI) values > .95, root-mean-square-error of approximation (RMSEA) values < .06, and standard root-mean-squared residual (SRMR) values < .08.

The predicted model testing trait-based humanization (see Figure 1) demonstrated good fit to the data, $\chi^2(2) = 2.47$, $p = .291$, CFI = .995, RMSEA = .058, SRMR = .035, accounting for 47% of the variability in immigrant prejudice. Consistent with H1, the negative relation between animal–human similarity and immigrant prejudice ($r = -.43$, $p < .001$, Table 1) was entirely indirect via greater immigrant humanization (see Figure 1 and Table 2 for a summary of indirect effects). The direct effect of animal–human similarity on immigrant attitudes was not significant in the model ($p = .226$). Overall, heightened beliefs in animal–human similarity predicted increased immigrant humanization, which subsequently led to diminished immigrant prejudice. In Figure 1, SDO exerted significant direct and indirect effects on both immigrant humanization and immigrant prejudice. As predicted (H2), the indirect effect of SDO on immigrant humanization occurred through decreased beliefs that non-human animals are similar to humans (see Table 2). Consistent with expectations, heightened Universal Orientation indirectly predicted greater immigrant humanization via heightened perceptions that non-human animals are similar to humans (H3), but this indirect effect was marginally significant within the model.[3] A separate model testing emotion-based humanization, similar to that in Figure 1, did not result in a significant path from animal–human similarity to humanization.[4]

Overall, the data showed a strong fit to the proposed model in Figure 1 using trait-based

Table 2. Standardized total and indirect effects for models in Figures 1 (Study 1) and 3 (Study 2)

		Total Effect	Indirect Effect	% Indirect
Study 1				
Predictor	Criterion			
Animal–human similarity	Immigrant prejudice	−.10*	−.10*	100
Social Dominance Orientation	Immigrant prejudice	.60***	.15**	25
Social Dominance Orientation	Humanization—traits	−.44**	−.10*	23
Universal Orientation	Immigrant prejudice	−.02	−.02	100
Universal Orientation	Humanization—traits	.07+	.07+	100
Study 2				
Predictor	Criterion			
Animal-to-human similarity contrast	Immigrant prejudice	−.29***	−.16***	55
Humanization—traits	Immigrant prejudice	−.27***	.09**	33
Humanization—emotions	Immigrant prejudice	−.31***	.13**	42

Note: Total and indirect *p*-values derived from bootstrapping procedures.
+ $p < .08$; * $p < .05$; ** $p < .01$; *** $p < .001$.

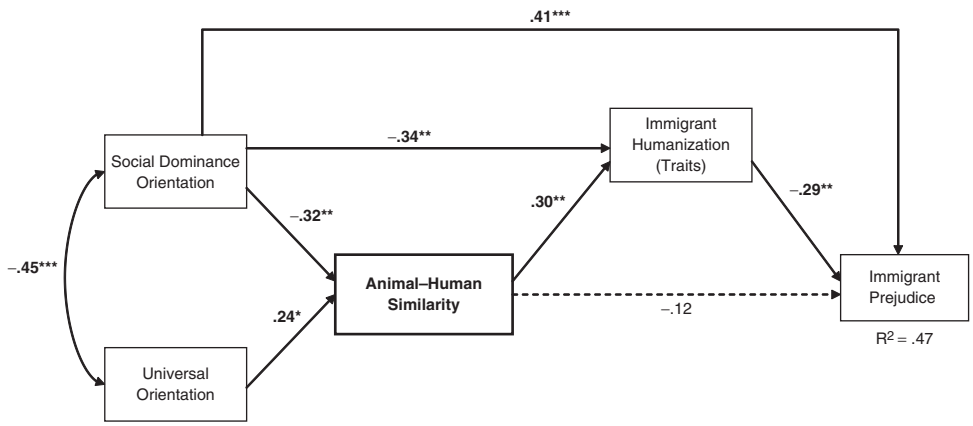

Figure 1. Humanization model (Study 1). Immigrant humanization (traits): higher scores reflect attribution of more uniquely human traits to immigrants.
Notes: $N = 70$. *$p < .05$; ** $p < .01$; *** $p < .001$. Dashed line = non-significant path.

humanization. In Study 2 we examine the proposed causal relation between animal–human similarity and immigrant attitudes via humanization by experimentally manipulating animal–human similarity. In addition, we consider the implications of framing animal–human similarity in terms of non-human animals being similar to humans or humans being similar to other animals.

Table 3. Hypothesized 2 (Editorial Contrast: Animal-Human Similarities vs. Differences) × 2 (Editorial Framing: Animals Contrasted to Humans vs. Humans Contrasted to Animals) interactions for immigrant humanization (Study 2)

	Editorial framing	
Editorial contrast	Animal-to-human	Human-to-animal
Animal–human similarities	1) Animals are human-like (+)	2) Humans are animal-like (–)
Animal–human differences	3) Animals are inferior (–)	4) Humans are superior (–)

Note: (+) = predicted increase in immigrant humanization; (–) = predicted decrease in immigrant humanization. Predictions for immigrant prejudice run in the opposite direction.

Study 2

The findings from Study 1 suggest that animal–human similarity is associated with more favorable immigrant attitudes via immigrant humanization, consistent with re-categorization principles (Gaertner & Dovidio, 2000). These results, however, are seemingly inconsistent with TMT and intergroup threat-based predictions that animal–nature reminders are distressing and might promote outgroup derogating processes. In Study 2 we experimentally manipulate animal–human similarity perceptions through editorials highlighting either the similarities between humans and non-human animals or the human–animal divide. This experimental design allows us to experimentally test the correlational assumptions in Study 1, and to control how participants are induced to conceive of similarities between humans and animals.

Guided by social-categorization principles and the premise that dehumanization originates from an exaggerated human–animal divide, highlighting similarity between humans and animals should theoretically decrease outgroup prejudice via greater humanization, consistent with Study 1. That is, inductions to psychologically draw non-human animals and (all) humans closer (i.e., interspecies re-categorization) will necessitate closer psychological human intergroup associations (i.e., human intergroup re-categorization), particularly if the human outgroup is normally dehumanized. Conversely, threat-based approaches to prejudice (Riek et al., 2006) suggest that animal–human similarities may be considered threatening in ways that exacerbate prejudices, when such similarities degrade the status of humans. These potentially conflicting theoretical predictions for the effects of animal–human similarity on (de)humanization and outgroup attitudes can perhaps be reconciled by considering how similarity is framed; whether *animals are similar to humans*, or *humans are similar to animals*.

We propose that outgroup humanization is likely under experimental conditions describing non-human animals as similar to humans (i.e., *animals are human-like*). This key Similarity condition (Table 3, Cell 1) is less threatening psychologically, emphasizing "they are like us" (not "we are like them"), raising the status of non-human animals to that of humans. Here categorization processes are expected to lower anti-immigrant prejudice by robbing participants of the ability to dehumanize the outgroup, given that dehumanization depends on a perceived divide between humans and non-human animals (see Haslam, 2006; Patterson, 2002). In contrast, we expect negative outgroup reactions to emerge when humans are described as similar to other animals (i.e., *humans are animal-like*; see Table 3, Cell 2). Emphasizing animal-nature can be threatening (Solomon et al., 1991), essentially "lowering" humans to the "inferior" level of non-human animals, with threats generally prompting outgroup bias (Riek et al., 2006). In keeping with social categorization principles, increased prejudice is also expected to follow manipulations emphasizing the human–animal divide (i.e., *humans are superior* or *animals are inferior*); here human and animal differences are exaggerated (see Table 3, Cells 3 and 4), with immigrants already perceived as relatively more animal-like (see Study 1; see also Hodson & Costello, 2007). In

keeping with Study 1, emphasizing differences between non-human animals and humans will presumably increase dehumanization and prejudices toward a dehumanized outgroup.

Mediating mechanisms of humanization effects on attitudes

Based on the results of Study 1 and our theoretical rationale, we expected outgroup humanization to mediate the relation between the experimental manipulation emphasizing animal-to-human similarity and more favorable outgroup attitudes. We also attempted to clarify how humanization leads to more favorable immigrant attitudes, exploring inclusive intergroup representations and empathy as mediators between immigrant humanization and immigrant attitudes.

Re-categorization (inclusive intergroup representations involving Canadians and immigrants) Interventions emphasizing intergroup similarities induce inclusive intergroup representations (Gaertner & Dovidio, 2000) that promote positive outgroup attitudes (e.g., Hodson, Choma, & Costello, 2009). Exposure to information highlighting animal-to-human similarity is expected to induce the humanization of immigrants, which in turn is expected to promote heightened intergroup re-categorization involving immigrants and Canadians (i.e., immigrants and Canadians belong to a shared superordinate ingroup). As a proximal predictor of attitudes (Gaertner & Dovidio, 2000), increased re-categorization is then hypothesized to promote more favorable immigrant attitudes.

Empathy People exhibit greater empathy towards ingroup (vs. outgroup) members (Brown, Bradley, & Lang, 2006), but empathetic concern can be associated with lower outgroup prejudice (Batson et al., 1997; Hodson, 2008; Hodson et al., 2009). Therefore, the humanization process (i.e., making outgroup members "more human" and therefore similar to the ingroup's nature) is expected to promote heightened immigrant empathy and subsequently more favorable intergroup attitudes.

Overview of Study 2 predictions

The present experiment follows a 2 × 2 factorial design, systematically varying the *Editorial Contrast* (Animal–Human Similarities vs. Differences) and *Editorial Framing* (Animals contrasted to Humans vs. Humans contrasted to Animals). Exposure to the key Similarity editorial, emphasizing *animal-to-human similarity* (vs. all other experimental conditions), is expected to exert beneficial effects on immigrant humanization, inclusive intergroup representations, empathy, and immigrant prejudice (Hypothesis 1). In keeping with our humanization model and the results from Study 1, increased immigrant humanization was expected to explain the positive effect of the key animal-to-human similarity manipulation on immigrant attitudes (Hypothesis 2). We also explored whether heightened inclusive intergroup representations and greater immigrant empathy mediate the effects of immigrant humanization on immigrant attitudes (Hypothesis 3). Because (high) SDO and (low) UO were associated with naturally-occurring human–animal divide perceptions (see Table 1 and Figure 1), these ideologies might influence reactions to manipulated animal–human similarity perceptions; each was considered as moderators of reactions to the manipulations for exploratory purposes.

Method

Participants Undergraduate psychology students from a Canadian university participated for course credit. Non-Canadians were excluded from analyses resulting in a final sample of 120 participants (90 women, 30 men, M_{age} = 19.11, SD = 1.83). Of these participants, 96.7% identified as white/Caucasian.

Procedure

Experimental manipulations of animal-human similarity Four versions of a fictitious editorial were created to represent the four experimental conditions outlined in Table 3. The editorial content either described the similarities between humans and other animals or emphasized the human–animal divide across the following domains:

genetics (DNA), physiological structures, experience of emotion and pain, learning and cognitive abilities, and needs/motivations (editorials partially based on Goldenberg et al., 2001, Study 2; Opotow, 1993). Editorials were closely matched in terms of length and style.

Varying the editorial framing, one of the Similarity conditions described non-human animals as similar to humans (i.e., *animals are human-like*), highlighting factual similarities while avoiding anthropomorphism. A portion of the editorial reads: "Like humans, other animals possess the capacity to make choices, create their own destinies, and understand abstract concepts including cause and effect relationships." In contrast, the alternate Similarity condition described humans as similar to animals (i.e., *humans are animal-like*), with a portion of the editorial reading: "Like animals, much of human behavior is influenced by basic instincts such as hunger, lust, pain avoidance and pleasure." The Difference conditions were designed to exaggerate the human–animal divide, with one condition describing non-human animals as different from humans (i.e., *animals are inferior to humans*). A portion of this editorial reads: "Because animal behavior is primarily influenced by basic instincts, animals are cognitively inferior to humans." The alternate Difference condition described humans as different from animals (i.e., *humans are superior to animals*), with a portion of this editorial reading: "Due to their cognitive superiority over animals, humans are able to inhibit their basic instincts and behave according to sophisticated reasoning."

Manipulation check To assess the Editorial Contrast manipulation, participants rated the extent to which the editorial author argued that humans and animals were similar (1 = *not at all*, to 7 = *very much*). As an additional check, participants also completed an expanded version of the animal-human similarity scale from Study 1.[5] We did not include a manipulation check for Editorial Framing (Animals contrasted to Humans vs. Humans contrasted to Animals) because this independent variable was solely expected to moderate effects of the similarity manipulation and not produce a main effect.

Immigrant (de)humanization Participants completed the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003), indicating how the Big Five personality factors (Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Neuroticism) apply to both Canadians and immigrants (1 = *trait does not apply to group*, to 7 = *trait strongly applies to group*).[6] Composite variables for uniquely and non-uniquely human traits and emotions for both groups were computed as in Study 1. The attribution of uniquely human (secondary) and non-uniquely human (primary) emotions was assessed as in Study 1. Dehumanization/humanization of immigrants was indicated by lesser/greater attribution of uniquely human personality traits or emotions to this target group.[7]

Re-categorization (inclusive intergroup representations involving Canadians and immigrants) Items tapping inclusive intergroup representations involving immigrants and Canadians were based on Esses et al. (2003). Two items measured a *common ingroup identity*: "I don't think of people in terms of being immigrants or non-immigrants, only as people who are part of one group (i.e., Canadian residents)", "The distinction between immigrants and non-immigrants is artificial; we are all part of a shared group (Canadian residents)" (1 = *strongly disagree*, to 7 = *strongly agree*).

Empathy Empathy was assessed using the Batson et al. (1997) six-item empathy scale on which participants rated being sympathetic/compassionate/soft-hearted/warm/tender/moved by immigrants (1 = *not at all*, to 7 = *very much*).

Prejudice toward immigrants, Social Dominance Orientation, and Universal Orientation These variables were assessed as in Study 1.

Results and discussion

Preliminary analyses and descriptive statistics Consistent with Study 1, participants attributed fewer uniquely human traits to immigrants *(M = 4.64, SD = .98)* than Canadians (M = 5.03, SD = .74), $t(119) = -3.51$, $p < .001$, $d = -.45$ overall; there was no difference in attributions of

Table 4. Descriptives and correlations among key variables collapsing across experimental conditions (Study 2)

	M	SD	1.	2.	3.	4.	5.	6.	7.
1. Social Dominance Orientation (1–7)	2.54	1.01	.91	–.52***	–.32***	–.35***	–.48***	–.45***	.53***
2. Universal Orientation (1–5)	3.40	.55		.86	.46***	.41***	.39***	.46***	–.40***
3. Immigrant humanization—traits (1–7)	4.64	.98			.59	.44***	.37***	.42***	–.43***
4. Immigrant humanization—emotions (1–7)	5.31	1.27				.91	.30***	.58***	–.48***
5. Re-categorization (1–7)	3.25	1.08					.72	.50***	–.48***
6. Immigrant empathy (1–7)	4.76	1.24						.93	–.53***
7. Immigrant prejudice (0–4)	1.45	.77							.85

Note: $N = 120$. Humanization (traits or emotions) = higher scores reflect attribution of more uniquely human traits or emotions to immigrants. Re-categorization = higher scores reflect greater inclusive intergroup representations involving Canadians and immigrants. Values in diagonal = scale reliabilities, values in parentheses = scale range.
*** $p \leq .001$.

non-uniquely human traits between immigrants ($M = 4.00$, $SD = .49$) and Canadians ($M = 4.08$, $SD = .45$), $t(119) = -1.70$, $p = .092$, $d = -.17$. Participants also attributed fewer uniquely human emotions to immigrants ($M = 5.31$, $SD = 1.27$) than Canadians ($M = 5.77$, $SD = .88$), $t(119) = -4.64$, $p < .001$, $d = -.42$; there was no significant difference in attributions of non-uniquely human emotions to immigrants ($M = 5.75$, $SD = .91$) versus Canadians ($M = 5.81$, $SD = .86$), $t(119) = -1.22$, $p = .225$, $d = -.07$. Overall there was significant evidence of immigrant dehumanization.

Descriptive statistics for key continuous variables collapsing across experimental conditions were generally consistent with expectations (see Table 4). Consistent with Study 1, both measures of immigrant humanization (trait- and emotion-based) were associated with greater immigrant empathy, heightened inclusive intergroup representations, and decreased immigrant prejudice. Moreover, greater immigrant empathy and heightened inclusive intergroup representations were also associated with lower immigrant prejudice. Higher SDO and lower Universal Orientation were associated with lower immigrant humanization (both traits- and emotion-based), decreased immigrant empathy, less re-categorization, as well as heightened immigrant prejudice.

Manipulation check The experimental Editorial Contrast manipulation proved successful. Collapsing across editorial framing, participants in the Similarity conditions ($M = 5.90$, $SD = .97$) reported that the editorial stressed the similarities between humans and other animals more than participants in conditions emphasizing the human–animal divide ($M = 2.37$, $SD = 1.28$), $t(118) = 16.90$, $p < .001$, $d = 3.11$. Similarity condition participants ($M = 3.64$, $SD = .73$) also reported more heightened perceptions of animal–human similarity than participants in conditions emphasizing the human animal–divide ($M = 2.84$, $SD = .73$), $t(118) = 5.99$, $p < .001$, $d = 1.10$. Overall, participants correctly identified the nature of the editorial and editorials influenced perceptions of animal–human similarity as intended.

Table 5. Editorial contrast (Animal–Human Similarities vs. Differences) × Editorial Framing (Animals Contrasted to Humans vs. Humans Contrasted to Animals) interaction patterns and weighted contrasts (Study 2)

	ANOVA results			Similarity conditions			Difference conditions			Contrast (+3 *vs.*–1, –1, –1)
				(+3)	(-1)		(–1)	(–1)		
	Editorial contrast	Editorial framing	Editorial contrast × framing	Animal-to-human similarity	Human-to-animal similarity		Animals inferior to humans	Humans superior to animals		
	F(1,116)	*F*(1,116)	*F*(1,116)	Mean	Mean	*t*(56)	Mean	Mean	*t*(60)	*t*(116)
Immigrant humanization—traits	9.76**	.03	4.22*	5.10_{a}	4.71_{b}	−2.09*	4.21_{c}	4.53_{bc}	1.13	3.10**
Immigrant humanization—emotions	5.92*	2.69	2.57	5.96_{a}	5.23_{b}	−2.83**	5.05_{b}	5.04_{b}	−.02	3.28***
Canadian humanization—traits	1.04	3.51	.09	5.11_{ab}	4.82_{b}	−1.66	5.20_{a}	4.99_{ab}	−1.05	.67
Canadian humanization—emotions	.38	3.92*	.52	5.94_{ab}	5.51_{b}	−1.95+	5.92_{a}	5.72_{ab}	−.88	.68
Re-categorization	9.01**	.45	1.47	3.72_{a}	3.36_{ab}	−1.27	2.91_{b}	3.01_{b}	.40	2.82**
Immigrant empathy	2.59	2.59	.69	5.22_{a}	4.68_{b}	−1.84+	4.67_{b}	4.51_{b}	−.46	2.30*
Immigrant prejudice	8.49**	4.00*	3.97*	$.98_{a}$	1.52_{b}	2.77**	1.64_{b}	1.64_{b}	.01	−3.99***

Note: $N = 120$. Contrast: +3 (animals similar to humans, $n = 30$), −1 (humans similar to animals, $n = 28$; humans are superior to animals, $n = 34$; animals are inferior to humans, $n = 28$). Humanization (traits or emotions) = attribution of uniquely human traits or emotions to immigrants/Canadians. Re-categorization = higher scores reflect greater inclusive intergroup representations involving Canadians and immigrants. Means not sharing a common subscript across rows differ at $p < .05$.
significance for *t*- and *F*-values: * $p < .05$; ** $p < .01$; *** $p < .001$; + $p = .06$.

Experimental analyses

Recall that effects of the similarity manipulation (Editorial Contrast) were expected to be moderated by the Editorial Framing. A series of 2 (Editorial Contrast: Animal–Human Similarities vs. Differences) × 2 (Editorial Framing: Animals contrasted to Humans vs. Humans contrasted to Animals) between subject ANOVAs were conducted, with immigrant humanization, inclusive intergroup representations, immigrant empathy, or immigrant prejudice as dependent measures. Planned *a priori t*-tests and weighted contrasts (comparing the key Similarity condition to the weighted combination of the other three experimental conditions) were then conducted to directly test our predictions.

As indicated in Table 5, the main effect for Editorial Contrast was significant for all variables except immigrant empathy. That is, in the Similarity (vs. Difference) conditions participants exhibited greater immigrant humanization (trait- and emotion-based), more inclusive intergroup representations and more favorable immigrant attitudes. In keeping with predictions, the main effects for Editorial Contrast were qualified by significant 2-way interactions with Editorial Framing on immigrant humanization (trait-based) and immigrant attitudes (see Table 5). Examples of this interaction pattern are illustrated in Figure 2. As predicted, the key animal-to-human Similarity condition resulted in greater immigrant humanization and decreased immigrant prejudice compared to the other experimental conditions (see forthcoming analyses).

Given the *a priori* predictions, hypothesis-specific follow-up analyses were conducted on variables of interest. In the key animal-to-human Similarity condition (vs. the more threatening human-to-animal Similarity condition), there emerged significantly higher levels of immigrant humanization on trait-based ($d = .55$; see Figure 2a) and emotion-based ($d = .74$; see Figure 2b) measures, marginally higher levels of immigrant empathy ($d = .49$), and significantly lower levels of immigrant prejudice ($d = .73$; see Figure 2c). In contrast, comparisons between the two conditions emphasizing the human–animal divide revealed no differences on any variables, with negative effects emerging regardless of whether animals were described as inferior to humans or humans as superior to animals.

Of prime interest, analyses targeting the specific predicted pattern illustrated in Figure 2 revealed that, in the key animal-to-human Similarity condition (vs. the weighted combination of the other experimental conditions: contrast weights = +3 *vs.* −1, −1, −1; see Table 5, last column) participants attributed higher levels of human traits and emotions to immigrants, reported heightened re-categorization, greater immigrant empathy, and decreased immigrant prejudice. Tests of differences among the other three conditions (humans are animal-like, humans are superior, animals are inferior) on these variables revealed no significant differences (ps > .380) with the exception of trait-based humanization.[8] As revealed in the middle of Table 5, ingroup (Canadian) humanization was not influenced by the manipulations. The animal–human similarity manipulations influenced humanizing perceptions of an outgroup typically dehumanized (Study 1; see also Hodson & Costello, 2007), not perceptions of an ingroup already perceived as relatively quite human.

Exploring ideological orientations as potential moderators

To determine whether the predicted interaction pattern varied as a function of SDO or Universal Orientation, regression analyses treating SDO and Universal Orientation as centered, continuous variables were conducted.[9] No three-way interactions (Editorial Contrast × Editorial Framing × SDO/Universal Orientation) reached significance considering SDO (βs < 1.23, ps > .221) or Universal Orientation (βs < 1.05, ps > .233) on any measures. Therefore participants generally benefitted from the animal-to-human manipulation, even those higher in SDO and lower in Universal Orientation (i.e., highly prejudiced people).

Test of the humanization mediation model

We then sought to test the proposed model: manipulated animal-to-human similarity (vs. all other experimental conditions) was expected to predict increased immigrant humanization, which in turn would predict more favorable immigrant attitudes via heightened inclusive intergroup representations and increased immigrant empathy (see Figure 3). The tested model considered both humanization measures simultaneously, permitted covariation among mediators, and included a direct path from the manipulation to attitudes. Indirect effects are summarized in the bottom portion of Table 2.

The predicted model demonstrated good fit to the data, $\chi^2(2) = 2.14$, $p = .342$, CFI = .999, RMSEA = .022, and SRMR = .023, accounting for 40% of the variability in immigrant prejudice. As indicated in Figure 3, the key animal-to-human Similarity condition exerted both a direct and a sizeable indirect effect (see Table 2) on immigrant prejudice. Exposure to the key animal-to-human Similarity condition resulted in increased levels of both emotion and trait-based humanization uniquely, each of which in turn predicted decreased immigrant prejudice. Both types of immigrant humanization also exerted significant indirect effects on immigrant prejudice (see Table 2); that is, greater attribution of human traits and emotions to immigrants led to heightened empathy and more re-categorization (inclusive representations involving immigrants and Canadians), ultimately resulting in more favorable immigrant attitudes (see Figure 3).

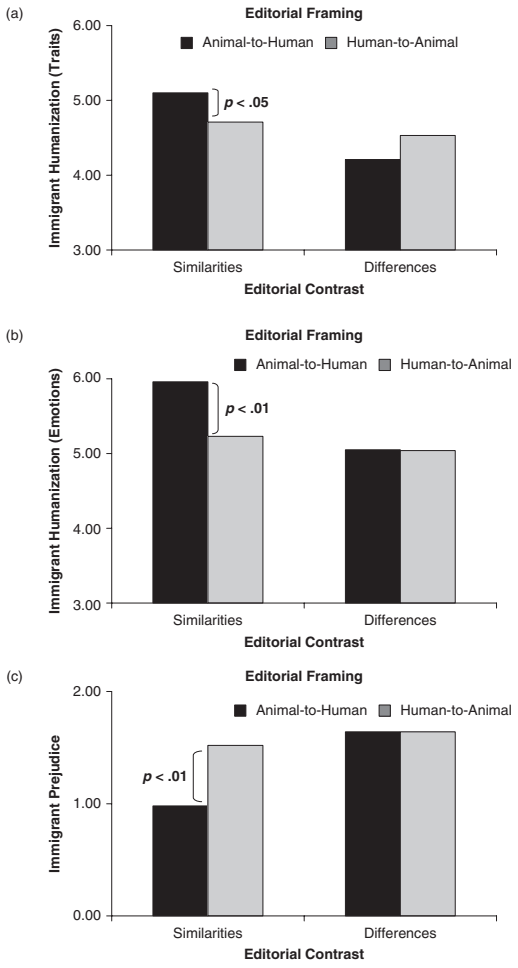

Figure 2. Results of 2 (Editorial Contrast: Animal–Human Similarities *vs.* Differences) × 2 (Editorial Framing: Animals Contrasted to Humans *vs.* Humans Contrasted to Animals) interaction patterns for trait-based immigrant humanization (Figure 2a), emotion-based immigrant humanization (Figure 2b), and immigrant prejudice (Figure 2c), Study 2. $N = 120$.

General discussion

A renewed interest in studying dehumanization in the literature has largely focused on the attitude-relevant consequences of dehumanization for intergroup relations, with little research identifying dehumanization precursors, or the mediators of dehumanization effects on attitudes. Ascertaining dehumanization precursors is crucial to comprehending the origins and development of dehumanizing representations, and isolating mediating mechanisms allows us to understand how dehumanization processes operate on attitudes. As anticipated, outgroup dehumanization appears rooted in the perception that humans are different from and superior to animals. Furthermore, those higher in SDO or lower in Universal Orientation (i.e., highly prejudiced people) were especially likely to perceive humans as distinct from other animals, exacerbating dehumanizing perceptions. Encouragingly,

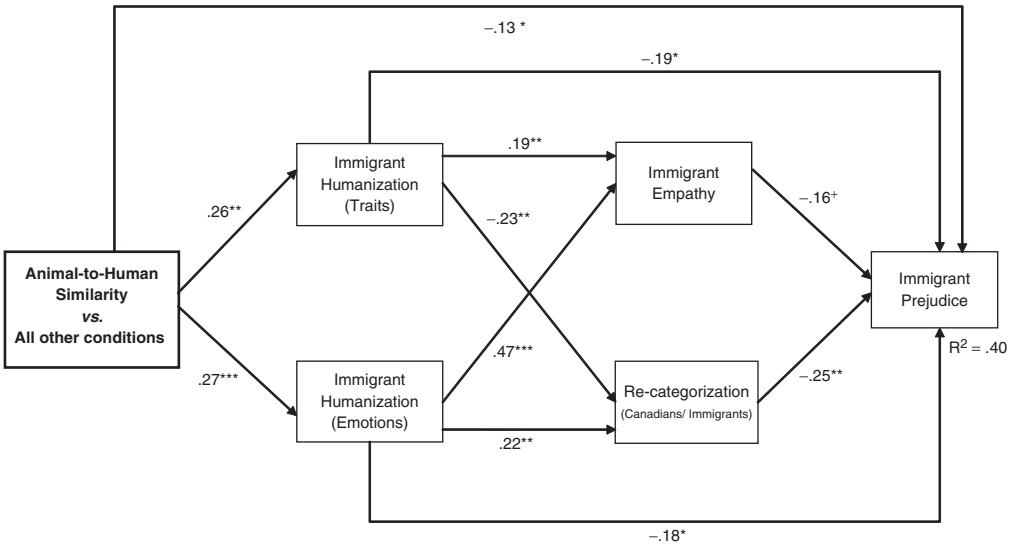

Figure 3. Humanization model (Study 2) testing the effect of the animal-to-human similarity condition (+3) [versus weighted combination of human-to-animal similarity (−1), animals are inferior to humans (−1), and humans are superior to animals (−1) conditions] on immigrant attitudes via immigrant humanization, immigrant empathy, and re-categorization. Immigrant humanization (traits or emotions): higher scores reflect attribution of more uniquely human traits or emotions to immigrants.
Notes: $N = 120$. $^{+}p < .06$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

beliefs in greater animal–human similarity, psychologically distant from and intuitively unrelated to human outgroup attitudes directly, nonetheless positively influenced immigrant attitudes indirectly via immigrant humanization. Having demonstrated that heightened humanization explains the relation between animal–human similarity beliefs and favorable human outgroup attitudes, Study 2 explored whether experimental inducements of animal–human similarity could decrease the utility of dehumanization as a contributor to immigrant prejudice. Consistent with basic social categorization processes, highlighting how *non-human animals are similar to humans* (vs. human-to-animal similarities or the human–animal divide) led to increased immigrant humanization, neutralizing the potential for dehumanizing perceptions to emerge and promote prejudice. These effects emerged even among highly prejudiced people (i.e., high SDO, low Universal Orientation). In contrast, the manipulation bringing humans psychologically closer to animals (*humans are animal-like*) exacerbated dehumanization and immigrant prejudice, akin to manipulations highlighting the human–animal divide. In line with intergroup threat theories, participants presumably interpreted inducements of human-to-animal similarities as threatening to the human status, resulting in increased outgroup negativity.

The present investigation contributes to the literature by illuminating several mechanisms through which (de)humanization can influence intergroup attitudes (see also Esses et al., 2008). The humanization process was theoretically expected to draw the outgroup closer to the ingroup by making outgroup members psychologically more human in nature. Indeed, emphasizing animal-to-human similarities engaged a humanization process, prompting heightened empathy and stronger inclinations to perceive Canadians and immigrants as belonging to the same inclusive ingroup, both of which uniquely predicted more favorable immigrant attitudes (see Figure 3). These findings demonstrate that

(de)humanizing representations can influence intergroup attitudes through both cognitive (recategorization) and affective (empathy) routes simultaneously. Given that humanization also exerted direct effects on immigrant attitudes, future research may consider additional mediators, such as reduced intergroup anxiety (Stephan & Stephan, 2000).

Much of the recent research on outgroup dehumanization has focused on the attribution of uniquely human emotions (e.g., Leyens et al., 2001), and only recently have researchers examined the attribution of uniquely human traits (e.g., Haslam et al., 2005; Hodson & Costello, 2007). To our knowledge the present investigation is the first to consider both emotion- and trait-based (de)humanization simultaneously. Whereas only trait-based (de)humanization emerged as a significant mediator for the relation between animal-human similarity and immigrant prejudice in Study 1, both trait- and emotion-based (de) humanization emerged as unique predictors in Study 2. This difference in outcome perhaps results from the relatively more powerful manipulation (vs. measurement) of animal–human similarity in Study 2. Clearly these (de)humanization operationalizations tap related but distinct ways that outgroups can be represented as relatively less/more human. Given that each type of (de)humanization can uniquely predict prejudice and its proximal mediators (Study 2), future researchers may wish to incorporate each type to more fully measure outgroup (de)humanization.

Theorists often lament that prejudice interventions generally attain only moderate success (Finlay & Stephan, 2000), with some interventions backfiring and increasing prejudice, particularly among people higher in SDO (Danso, Sedlovskaya, & Suanda, 2007; Esses, Dovidio, Jackson, & Armstrong, 2001). The results of Study 2 suggest that stressing "intergroup similarity" alone might be insufficient to improve intergroup relations. Indeed, it may even backfire, acting akin to manipulations that stress differences. On the other hand, less threatening and indirect similarity manipulations designed to psychologically bring the outgroup closer to the ingroup may be particularly effective at improving intergroup relations without backlash. In Study 2, experimentally emphasizing animals as similar to humans heightened similarity perceptions between human social groups. Despite the fact that people higher in SDO or lower in UO naturally perceive a greater human–animal divide (Study 1), they responded favorably to the manipulation highlighting animal similarity to humans (Study 2). Our indirect prejudice intervention, with no explicit focus on specific human outgroups, circumvented negative or defensive reactions that highly prejudiced people exhibit in response to more direct human outgroup prejudice interventions. An alternative strategy to mitigate dehumanization processes could have involved directly humanizing the immigrant outgroup. In addition to concerns that highly prejudiced individuals might resist such intergroup interventions, such a strategy would presumably be short-lived to the extent that it would leave the roots of dehumanization processes intact. By isolating a powerful origin of dehumanizing perceptions (i.e., the animal–human divide), we targeted and influenced the roots of dehumanization, removing the legitimacy of such perceptions altogether. These results would presumably generalize to other outgroups in a way that directly humanizing a specific outgroup would not, a possibility that can be explored in future research. We suggest that future researchers simultaneously examine the viability of interventions highlighting animal–human similarities, specific intergroup similarities, or similarities in general to more clearly determine the most effective method for reducing dehumanization.

Future research can explore whether our humanization approach proves effective among those high on other dehumanization-relevant variables. Disgust sensitivity may be an important factor to consider; those higher in interpersonal disgust sensitivity exhibit more negative intergroup attitudes, in part, through increased dehumanization (Hodson & Costello, 2007). Future research can also determine whether our humanization approach applies to other dehumanized outgroups, such as blacks (Goff et al., 2008), and

whether the beneficial impact of our intervention extends toward outgroups not regularly dehumanized in this manner. For instance, our manipulation presumably would not impact outgroups that are mechanistically dehumanized (i.e., perceived as more machine-like but not necessarily more animal-like, see Haslam, 2006).

Concluding remarks

In the extant literature, little is known about the origins of dehumanization, or how dehumanization impacts outgroup attitudes. In this investigation we have demonstrated how animal–human similarity perceptions, disavowed by those higher in SDO/lower in Universal Orientation, promote humanizing outgroup perceptions and subsequently more favorable outgroup attitudes. Capitalizing on this finding, we then experimentally emphasized the extent to which animals are similar to humans; this manipulation led to the humanization of immigrants and lowered anti-immigrant prejudice. Recognizing that heightened immigrant dehumanization and prejudice follow from an exaggerated human–animal divide, it now becomes imperative to determine when and how beliefs about human superiority or animal inferiority develop. Children are socialized to endorse perceptions of human superiority over other animals through parental influence, religious teachings, cultural traditions, and/or experiences with industries condoning the exploitation of non-human animals. These socialization practices presumably lead children to endorse the cultural "legitimacy" of dominating, victimizing, or ignoring the plight of non-human animals. As suspected by Adorno (1995, as cited in Patterson, 2002), many of our outgroup biases may find their origins in our disregard for animal rights. Encouragingly, providing factual information substantially enhanced animal–human similarity perceptions in our adult sample. Additional research, however, is needed to explore the mechanisms through which beliefs in human superiority over animals develop. Such knowledge will enable the design of interventions to challenge or prevent the development of these beliefs; thereby curtailing dehumanizing perceptions in ways that can "re-humanize" outgroups.

Notes

1. We focus exclusively on animalistic dehumanization, although dehumanization can involve automata (machine-like) representations (i.e., *mechanistic dehumanization*, Haslam, 2006).
2. Positive and negative primary emotions were correlated for Immigrants (r = .45) and Canadians (r = .62); positive and negative secondary emotions were correlated for Immigrants (r = .73) and Canadians (r = .37; ps < .001). We thank an anonymous reviewer for suggesting these analyses.
3. Targeted tests outside of the model revealed a significant indirect effect of Universal Orientation on immigrant humanization via animal–human similarity, Sobel z = 2.30, p = .021.
4. An alternative model with humanization predicting both animal–human similarity and immigrant prejudice revealed significantly poorer model fit [χ^2_{diff} (1) = 4.10, p = .043, CFI = .916, RMSEA = .169, SRMR = .102]. We thank an anonymous reviewer for suggesting this analysis.
5. Three additional items were included to balance the animal–human similarity scale in Study 1.
6. The (de)humanization scale-points varied across studies. Thanks to an anonymous reviewer for highlighting this difference.
7. Positive and negative primary emotions were correlated for Immigrants (r = .60) and Canadians (r = .56); positive and negative secondary emotions were correlated for Immigrants (r = .80) and Canadians (r = .58; ps < .001).
8. More trait-based humanization occurred in the human-to-animal similarity condition versus the animals are inferior to humans condition, $t(54)$ = −2.01, p = .05.
9. Incidentally, neither SDO [$F(3,116)$ = 1.13, p = .342] nor Universal Orientation [$F(3,116)$ = .43, p = .511] were influenced by the experimental manipulations.

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