Abstract

Research implies that there may be an association between attitudes toward marginalized human outgroups and non-human animals. Very few studies, however, have specifically tested this relation empirically. The general purpose of the present research was to determine if such a relation exists and if perceptions of human-animal similarity avail as a common predictor of both types of attitudes. Ideological orientations associated with prejudiced attitudes (Social Dominance Orientation, Right-Wing Authoritarianism, and Universal Orientation) were also examined as individual differences in predicting perceptions of human-animal similarity. As predicted, people who endorsed prejudiced attitudes toward human outgroups (Study 1) and immigrants in particular (Studies 2 and 3), were more likely to endorse prejudiced attitudes toward non-human animals. In Study 2, perceptions that humans are superior (versus similar) to other animals directly predicted higher levels of prejudice toward non-human animals, whereas the effect of human superiority beliefs on immigrant prejudice was mediated by dehumanization. In other words, greater perceptions of humans as superior (versus similar) to other animals “allowed for” greater dehumanization of immigrants, which in turn resulted in heightened immigrant prejudice. Furthermore, people higher in Social Dominance Orientation or Right-Wing Authoritarianism were particularly likely to perceive humans as superior (versus similar) to other animals, whereas people characterized by a greater Universal Orientation were more likely to perceive humans and non-human animals as similar. Study 3 examined whether inducing perceptions of human-animal similarity through experimental manipulation would lead to more favourable attitudes toward non-human animals and immigrants. Participants were randomly assigned to read one of four
editorials designed to highlight either the similarities or differences between humans and other animals (i.e., animals are similar to humans; humans are similar to animals; animals are inferior to humans; humans are superior to animals) or to a neutral control condition. Encouragingly, when animals were described as similar to humans, prejudice towards non-human animals and immigrants was significantly lower, and to some extent this finding was also true for people naturally high in prejudice (i.e., high in Social Dominance Orientation or Right-Wing Authoritarianism). Inducing perceptions that non-human animals are similar to humans was particularly effective at reducing the tendency to dehumanize immigrants ("re-humanization"), lowering feelings of personal threat regarding one's animal-nature, and at increasing inclusive intergroup representations and empathy, all of which uniquely accounted for the significant decreases in prejudiced attitudes. Implications for research, theory and prejudice interventions are considered.
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Over time, the scope of prejudice research has expanded to include more and more previously overlooked outgroups. For example, research is now conducted on prejudice toward women, homosexuals, the elderly, and the obese, all of which represent outgroups who were once overlooked as victims of prejudice and discrimination. Despite this progress, most people believe that prejudice is only applicable to humans, with the inclusion of non-human animals as victims of prejudice and/or discrimination being absurd (Plous, 1993a). However, to the extent that prejudice and discrimination involve viewing or treating others negatively and/or unequally based on group membership, it becomes clear that non-human animals qualify as victims of prejudice and discrimination for they are exploited based on their mere membership to a particular species (i.e., speciesism; Plous, 1993a, 1993b; Singer, 1990). Indeed, Singer (1990) defines speciesism as “a prejudice or attitude of bias in favor of the interest of members of one’s own species and against those of members of other species” (p. 6).

The main goals of the present investigation are to empirically explore the relation between prejudice toward non-human animals and prejudice toward human social outgroups, including immigrants. In addition, the present investigation also examines whether perceptions of human-animal similarity (vs. human superiority) avail as a common predictor of both types of prejudiced attitudes. "Re-humanization" (i.e., a reduced tendency to dehumanize) is expected to act as the mechanism through which human-animal similarity is expected to predict decreased immigrant prejudice. Finally, through experimental manipulation, the role of human-animal similarity in improving
prejudiced attitudes toward non-human animals and immigrants through various proposed mediators (including "re-humanization") is examined.

Social Categorization

The roots and causes of prejudice are many and varied. The social categorization perspective of intergroup relations recognizes that prejudice is a natural consequence of the need for humans to perceive the world in terms of social categories (e.g., Allport, 1954; Brewer 1979; Tajfel, 1969; Tajfel & Turner, 1979; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Allport (1954) suggested that categorical thinking may be necessary for humans to comprehend both their physical and social environments; however, he also acknowledged that excessively rigid categorization and strong tendencies to view the world in terms of dichotomous categories are characteristic of prejudiced people. Thus, despite the obvious convenience and potential utility of social categorization, rigid (vs. flexible) and exclusive (vs. inclusive) categorical thinking can result in devastating consequences for intergroup relations.

Concerning intergroup prejudice, categorizing the social world into exclusive ingroups and outgroups (e.g., men, women, Blacks, Whites) often results in the isolation of outgroups (e.g., Allport, 1954; Brewer 1979; Tajfel 1969; Tajfel & Turner, 1979). That is, as a consequence of perceiving ingroups and outgroups as belonging to distinct categories, ingroup members view themselves as separate and fundamentally different from outgroup members (e.g., Allport, 1954; Brewer, 1979; Tajfel, 1969; Tajfel & Turner, 1979). Social Identity Theory proposes that this tendency to differentiate between ingroups and outgroups is based on the need to obtain or maintain a positive self-identity through one’s ingroup membership (Tajfel, 1969; Tajfel & Turner, 1979).
Although differences between social groups exist, the mere act of perceiving the social world in terms of dichotomous ingroups versus outgroups leads to the exaggeration of intergroup differences (Tajfel, 1969; Tajfel & Turner, 1979). This exaggeration and focus on intergroup differences may justify the negative treatment of outgroup members and ultimately lead to intergroup conflict or discrimination (e.g., Tajfel, 1970). For example, research using the “minimal groups” paradigm indicates that even when people are categorized into arbitrary ad hoc groups, they tend to minimize differences among ingroup members and exaggerate differences between ingroup and outgroup members (e.g., Tajfel 1969; Tajfel & Turner, 1979). Moreover, they tend to show more favourable evaluations and distribute more positive resources to ingroup members versus outgroup members, particularly when identifying strongly with the ingroup (e.g., Hodson, Dovidio, & Esses, 2003).

Inclusive Orientations

To the extent that prejudice toward social outgroups is in part the result of exclusive social categorization, it is important to encourage more inclusive categorization involving the emphasis on intergroup similarities. Additionally, it is important for people to recognize that there are no fixed boundaries separating most social categories including different races, sexual orientations, and even humans and non-human animals (Plous, 1993a). As early as 1954, Allport suggested that non-prejudiced people tend to be more tolerant and resistant to engaging in rigid (vs. flexible) social categorization. Allport also discussed an inclusive ingroup model, whereby humans categorize social groups hierarchically in terms of inclusiveness. For example, ingroups can range in inclusiveness from one’s family, to one’s race, to the all inclusive ingroup of “human-kind”.
Similarly, Self Categorization Theory (Turner et al., 1987) argues that people categorize the “self” into more-or-less inclusive self-identities, ranging from an interpersonal identity (i.e., the self is different from others) to an intergroup or social identity (i.e., the self is similar to ingroup members but different from outgroup members), to the all inclusive “human” identity (i.e., the self is similar to other humans but different from non-humans). According to Self Categorization Theory, one’s self-identity is context dependent and people tend to behave according to whichever identity is salient at the time (e.g., Onorato & Turner, 2004). Therefore, when people define themselves as “we” versus “I”, they tend to endorse a more inclusive collective identity, which leads them to behave in terms of the norms associated with their higher-order social group (Turner et al., 1987). For example, a study by Wohl and Branscombe (2005) indicated that when the “human” identity (vs. social identity) was made salient, members of a historically victimized ingroup (i.e., Jewish North Americans in Studies 1, 2, 4, and Native Canadians in Study 3) were more likely to forgive and attribute less collective guilt to members of the outgroup (i.e., German Canadians in Studies 1, 2, 4, and White Canadians in Study 3). Similarly, in another study, Australian participants who identified more strongly with being a “human” than an “Australian” exhibited more positive attitudes toward asylum seekers, and they were more likely to support lenient government policies involving the welfare of asylum seekers (Nickerson & Louis, 2008).

Several theories for prejudice reduction have been proposed based on the notion that humans have a natural tendency to process the social world in categorical (vs. inclusive) terms. For example, proponents of de-categorization theory argue that prejudice can be decreased if people completely reduce the distinctiveness of group
boundaries (Brewer & Miller, 1984). Ultimately, through de-categorization people will eliminate social categories and begin to view all people as individuals (Brewer & Miller, 1984). Although intriguing, this theory may not be successful in reducing prejudice because it counters the natural tendency for humans to engage in categorical thinking (Gaertner et al., 2000). Furthermore, because there is no longer an association between the encountered individual outgroup member and the general outgroup, the benefits of de-categorization may fail to generalize to the outgroup in general (Hewstone & Brown, 1986).

Alternatively, the Mutual Ingroup Differentiation Model (Brown & Hewstone, 2005; Hewstone & Brown, 1986) recognizes the need for people to engage in categorical thinking, and the importance for people to maintain their ingroup identity. More specifically, this theory suggests that prejudice reduction can be achieved if different groups work together cooperatively while at the same time maintaining their distinct ingroup identities. Thus, people can learn to recognize each group’s strengths and weaknesses and the contribution that each group can make to a common goal (Hewstone & Brown, 1986). However, the Mutual Ingroup Differentiation Model also lacks practicality in that the model may only be successful in situations where different groups share a common goal, and/or when there is a need for cooperation to achieve this common goal.

As a direct extension of Self Categorization Theory, Gaertner and colleagues introduced the Common Ingroup Identity Model as an alternative theory for prejudice reduction (Gaertner & Dovidio, 2000; Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993). According to the Common Ingroup Identity Model, a more effective and practical
strategy for reducing prejudice is to encourage more inclusive thinking, whereby people extend their ingroup boundaries through re-categorization (Gaertner & Dovidio, 2000; Gaertner et al., 1993). Re-categorization involves changing people’s cognitive representations of social groups from completely “separate groups” to more inclusive “one-group” or “common-group” representations (Gaertner & Dovidio, 2000; Gaertner et al., 1993). For example, proponents of Common Ingroup Identity Model would argue that the distinct categories of “Blacks” and “Whites” can be re-categorized into the more inclusive category of “human-kind”. According to Common Ingroup Identity Model, by endorsing inclusive intergroup representations, people tend to exhibit more positive attitudes toward former outgroup members because there emerges a shared common identity between all members of the new inclusive ingroup (Gaertner & Dovidio, 2000; Gaertner et al., 1993). Additionally, the mechanisms that originally contributed to pro-ingroup biases are extended toward the former outgroup members who are now part of the inclusive ingroup (Gaertner & Dovidio, 2000; Gaertner et al., 1993).

The Common Ingroup Identity Model is not without its limitations. Research on Optimal Distinctiveness Theory (Brewer, 1991; see also Hornsey & Hogg, 1999) suggests that people have a need for group distinctiveness, and thus, they may feel threatened by an overly inclusive ingroup. Similarly, Jetten, Spears, Hogg and Manstead (2000) suggest that weakening intergroup boundaries in general may be perceived as threatening to one’s ingroup resulting in greater intergroup bias, particularly towards relevant outgroups. In an attempt to overcome these proposed limitations, Gaertner and colleagues argue that the Common Ingroup Identity Model does not require people to completely abandon their original ingroup identities. That is, it is possible for people to
maintain their ingroup distinctiveness and group boundaries while still perceiving two groups (e.g., Blacks and Whites) as part of the same inclusive ingroup (e.g., human-kind) (Gaertner & Dovidio, 2000). It is proposed that such dual-identity representations allow for greater generalization because they do not completely reduce the distinctiveness of group boundaries, and thus, allow for the recognition of both differences and similarities between sub-groups (Gaertner & Dovidio, 2000).

Both correlational and experimental research on Common Ingroup Identity Model suggest that inclusive cognitive representations ("one-group" and/or "dual-identity") are associated with more positive intergroup consequences including greater intimacy, greater likelihood of extending help, and reduced intergroup bias (e.g., Dovidio et al., 1997). For example, participants assigned to social situations designed to promote one-group and/or dual-identity representations (vs. separate group) demonstrate reduced intergroup bias toward members of an outgroup (e.g., Dovidio et al., 1997; Gaertner, Mann, Murrell, & Dovidio, 1989; Gaertner, Mann, Dovidio, Murrell, & Pomare, 1990; Gaertner, Rust, Dovidio, Bachman, & Anastasio, 1994). Additionally, research indicates that one-group and/or dual-identity cognitive representations mediate the relation between cooperative intergroup contact and reduced intergroup bias (e.g., Gaertner, Dovidio, & Bachman, 1996; Gaertner et al., 1990, 1994). That is, intergroup contact improves attitudes because it promotes inclusive cognitive representations of human social groups. These aforementioned findings have been replicated in both laboratory studies involving minimal groups, and in natural social contexts involving real groups.

A body of research has also been conducted to determine whether the Common Ingroup Identity Model is applicable to social groups based on race or ethnicity. For
example, Nier et al. (2001) examined whether perceptions of a common ingroup identity among Blacks and Whites would significantly reduce prejudice toward Blacks. In their first study, White participants interacted with a Black or White confederate in situations designed to elicit either an individual (i.e., de-categorization) or common-ingroup (i.e., re-categorization) identity. Participants in the common-ingroup identity condition reported more favourable attitudes toward the Black confederate, in comparison to participants in the individual identity condition. In a second study, participants attending a university football game were recruited to participate in an interview by either a White or Black confederate who was wearing clothing indicative of the participant’s own university affiliation, or the opposing team’s university. Results indicated that White students more frequently participated in an interview with a Black confederate when they shared a common university identity, in comparison to Black confederates who were affiliated with the opposing university team (Nier et al., 2001). Another study by Gaertner et al. (1994) revealed that students from a multiethnic high school in the USA who endorsed one-group or dual-identity cognitive representations involving their student body, reported more positive feelings toward fellow students who were members of ethnic outgroups. Similarly, Esses, Dovidio, Jackson, and Armstrong (2001) manipulated a common ingroup identity by emphasizing a common ethnic and/or national identity between immigrants and Canadians. Consistent with Common Ingroup Identity Model, participants in the common ingroup conditions versus the neutral control condition reported more favourable attitudes toward immigrants.

The aforementioned research on Common Ingroup Identity Model provides strong support for the proposition that the endorsement of more inclusive intergroup
representations can lead to lower levels of prejudice and intergroup bias. However, as indicated by Allport’s (1954) inclusive ingroup model and Self Categorization Theory, “human-kind” is often implied to be the ultimate inclusive ingroup. To the contrary, the present research advances the proposition that “animal-kind” is the most inclusive level of ingroup categorization, and that we can and perhaps should extend our ingroup boundaries to include non-human animals. Including non-human animals into one’s ingroup does not mean that humans have to ignore the differences that do exist between themselves and other animals. Rather, people can be encouraged to endorse dual identities, conceiving of humans and other animals as two different but very similar groups who are part of the same inclusive ingroup (i.e., animal-kind). Ultimately, it is proposed that the benefit of inclusive orientations for non-human animals may extend to human outgroups, in ways that will soon be considered.

*Speciesism: Are Humans Prejudiced toward Non-human Animals?*

Indeed, moral philosophers and animal welfare advocates have long recognized the unsettling similarities between the treatment of marginalized human outgroups and the treatment of non-human animals (Hyers, 2006; Plous, 1993a, 1993b; Singer, 1990). For centuries animals have been subjected to cruel treatment in ways that are analogous to how marginalized social outgroups have been treated in the past and in the present. For example, theorists have made comparisons between the enslavement of Blacks in America, the treatment of Jews during the holocaust, or the genocide of indigenous peoples, with the treatment of animals in the factory farming, entertainment, and research industries (e.g., Plous, 1993a, 1993b). Every day non-human animals, like members of marginalized outgroups, are treated as though they are incapable of experiencing pain and
as though they are inferior beings (Plous, 1993a). As a result, non-human animals are treated as commodities with little consideration given to their general welfare or rights.

Only a few empirical studies have been conducted on attitudes toward non-human animals, all of which suggest that speciesism is a prevalent phenomenon. Interestingly, recent research suggests that speciesism is very much prevalent in both materialist countries such as Romania, and post-materialist countries such as Britain (Marcu, Lyons, & Hegarty, 2007). Citizens from both Romania and Britain who participated in focus group sessions tended to use their current social systems to justify the exploitation of non-human animals. That is, participants from Romania cited issues of poverty, existential insecurity, and a greater focus on securing human (vs. animal) rights as justification for speciesism in Romania. Alternatively, participants from Britain cited increased consumption and consumer demand as justification for speciesism in Britain, viewing the interest in animal rights as a product of the traditional past (e.g., traditional farming methods).

Much of the research on animal attitudes has focused on the characteristics associated with people who support or oppose animal rights, or on attitudes toward the use of non-human animals in psychological research. For example, in a review of the literature, Herzog (2007) concluded that women (vs. men) tended to report more positive attitudes toward non-human animals, greater opposition to the exploitation of non-human animals, and greater involvement in animal rights or protection activism (see also Plous, 1991). On the other hand, men tended to report more negative attitudes and behaviours toward non-human animals, including higher rates of animal abuse and engagement in hunting activities (Herzog, 2007). In regards to the use of animals in research, Plous
(1996a, 1996b) indicated that psychologists and psychology major students from the United States tended to support the use of non-human animals in psychological research, only if the research involved observation or confinement methods. However, most of the psychologists and psychology majors reported that animal-based psychological research causing pain and/or death was unjustified, even if the research was approved by the institution and/or deemed as scientifically credible.

Other research on attitudes towards non-human animals has focused on the different types of attitudes that people hold toward non-human animals and the mechanisms through which people justify their own personal exploitation of non-human animals. Indeed, one of the first empirical studies on animal attitudes revealed that people who regularly exploit non-human animals, such as farmers, recreational hunters, or trappers were more likely to view non-human animals in utilitarian (i.e., material value) or dominionistic terms (i.e., human mastery over animals; Kellert, 1980). Similarly, recent research by Hyers (2006) suggests that people often use “necessity” (i.e., economic/physical wellbeing) and “hedonic pleasure” (i.e., status, profit, taste) as justifications for the exploitation of non-human animals. Furthermore, when directly asked about the exploitation of non-human animals, the inconsistencies in people’s attitudes and behaviours are readily apparent. For example, people often condemn animal exploitation in general but endorse their own personal use of non-human animals (Braithwaite & Braithwaite, 1982). Plous (1993b) suggests that people have developed different strategies to help maintain these attitude-behaviour inconsistencies regarding animal exploitation. According to Plous (1993b) some of these strategies include avoidance (e.g., refusing to acknowledge the realities of the factory farming industry),
minimizing one’s own personal use of animals, minimizing the animal’s suffering, and/or
dissociation whereby people use impersonal language to describe consumed versus live
animals, for example (e.g., “veal” instead of “calves”, or “pork” instead of “pigs”).

An additional explanation for the prevalent prejudiced attitudes toward non-
human animals comes from research by Opotow (1993). Opotow argues that many
people exclude non-human animals from the scope of justice, which represent the
boundaries within which considerations of fairness and justice apply. Such exclusion
from the scope of justice presumably justifies the exploitation of non-human animals,
because it allows humans to perceive other animals as undeserving of moral and equal
consideration (Opotow, 1993). Targets are more likely to be excluded from the scope of
justice if they are perceived as dissimilar, of low utility, and if their needs or goals
conflict with the actor’s needs (e.g., Opotow, 1993; 1994). Interestingly, research by
Opotow (1993) indicates that non-human animals (i.e., beetles) are more likely to be
included within the scope of justice if they are perceived as more similar to humans and
of greater utility. However, these effects only occurred in low-conflict conditions, in
which the animal’s need for a scarce resource (i.e., land) did not conflict with the needs
of humans.

Is There a Relation between Human and Non-human Animal Attitudes?

In addition to the argument that non-human animals are victims of prejudice,
research also implies that there may be a relation between human and non-human animal
attitudes. For example, a small body of research suggests that violence toward non-
human animals is associated with the violent treatment of humans. For example, one
study by Ascione (1998) asked abused women seeking shelter to report on the incidence
of animal abuse committed by their abusive partners. An overwhelming majority of women (71%) who reported past or current pet ownership indicated that their abusive partners had killed or violently mistreated one or more of their companion animals, or had made threats to do so.

Additionally, people reporting greater levels of empathy toward non-human animals also report greater levels of empathy toward humans (e.g., Paul, 2000; Signal & Taylor, 2007; Taylor & Signal, 2005), and intergroup research suggests that human-directed empathy facilitates more positive attitudes toward outgroup members (e.g., Batson et al., 1997; Hodson, 2008; Hodson, Choma, & Costello, under review).

Similarly, research conducted by Block (2003) concluded that members of an animal rights association reported more positive attitudes toward animal rights and welfare, and exhibited equal or higher moral reasoning in comparison to a matched control group. That is, people in favour of animal rights were more likely to endorse universal principles of justice, equality, and respect, with their heightened moral concern directed toward both non-human animals and humans (Block, 2003).

Upon review, only one study (Wagstaff, 2001) attempted to examine specifically the relation between attitudes toward non-human animals and attitudes toward a marginalized social outgroup (i.e., the poor). In this study, participants were required to rate their emotional responses to photographs depicting non-human animals in a variety of situations designed to elicit a range of positive and negative emotions. The results indicated that greater empathy directed toward the animal targets in the photos and greater sympathy for animal welfare in general, were positively associated with empathy toward humans, and more favourable attitudes toward the poor.
Furthermore, more recent research suggests that the rationalizations used to justify and reinforce the inhumane treatment of social outgroups are analogous to those used to justify the inhumane exploitation of non-human animals (Hyers, 2006; Plous, 1993a, 1993b). For example, "human nature" has been used to justify prejudice toward social outgroups (e.g., prejudice is an inevitable part of human nature; Esses & Hodson, 2006; Hodson & Esses, 2005) and the exploitation of non-human animals (e.g., humans are instinctually meat eaters; Hyers, 2006). Additionally, increased economic profit has been used to justify unfair working conditions for immigrants and the inhumane treatment of non-human animals in the factory farming industry (e.g., Hyers, 2006).

Despite the similarities between human and non-human animal prejudices, little scientific research has been conducted on this intriguing relation. Perhaps the dearth of research is because, unlike human prejudice, most humans at some time in their lives have exploited non-human animals (Hyers, 2006). The primary goal of Study 1 is to conduct a preliminary examination of the relation between attitudes toward various human outgroups and attitudes toward non-human animal species.
Study 1 (Re-analysis)

The first goal of the present research was to provide empirical support for the proposed relation between prejudiced attitudes toward social outgroups and non-human animals. To test this prediction, published data sets from three separate studies from Hodson and Olson (2005) were re-analyzed. The original purpose of the Hodson and Olson (2005) investigation was to examine links between name initials and attitudes toward social groups and animals (among other categories); however, the direct relation between social groups and animals was unexamined. For the present study, it was hypothesized that there would be a positive relation between attitudes toward national outgroups and attitudes toward non-human animals.

Method

Participants

The first utilizable sample from Hodson and Olson (2005, Study 2) consisted of 132 first-year undergraduate psychology students (19 men, 113 women) from the University of Wales Swansea (United Kingdom). The second sample (Hodson & Olson, Study 3) consisted of 177 introductory psychology undergraduate students (33 men, 144 women) from the University of Western Ontario (Canada). The third sample (Hodson & Olson, Study 4) consisted of 188 undergraduate psychology students (33 men and 155 women) from Brock University (Canada).

Materials

In the original studies (Hodson & Olson, 2005, Studies 2-4), participants rated their attitudes towards various national outgroups and animal species, as well as other general attitude targets on nine-point rating scales (1 = do not like at all, 9 = like very
much). Of particular interest to the present study were attitudes toward 22 different national groups (e.g., Germans, Turks, French, Americans, Japanese, etc.), and attitudes toward 23 different species of animals (e.g., rabbit, lion, dog, moose, whale, etc.). Canada and United Kingdom were excluded from the analyses as they represented the respective national ingroups. Mean composite attitude variables were created for the 21 national outgroups, and also for the 23 different animal species.
Results and Discussion

Pearson correlations (two-tailed) were calculated to evaluate the relation between attitudes toward national outgroups and non-human animals (see Table 1). Additionally, to determine whether or not the predicted attitude relation was simply the result of a general positive attitude bias, correlations were also conducted controlling for a variety of general attitudes (i.e., food, leisure activities, letters, and/or brand name products).

As shown in Table 1, there was a significant and positive correlation between attitudes toward national outgroups and attitudes toward non-human animals in all three samples ($r_s = .32 - .44$), representing moderate effect sizes (Cohen, 1988). Furthermore, these relationships remained significant even after controlling for general attitude ratings ($r_s = .19 - .26$). These results suggest that people who report favourable attitudes toward social outgroups also report favourable attitudes toward non-human animals (and vice versa), and this relation is not due to a tendency to exhibit favourable attitudes toward target objects in general. Rather, this rather strong test of the relation between national group and animal attitudes clearly supports the proposition that attitudes toward these categories are positively associated for psychological reasons directly relevant to intergroup relations and are not a statistical artifact.

Therefore, as hypothesized, people who reported more negative attitudes toward national outgroups also tended to report more negative attitudes toward non-human animals. This relation was evident across different samples involving participants from both Canada and the United Kingdom, and impressively remained significant even after controlling for general attitude response tendencies.
Table 1. 

Correlations between Attitudes toward National Outgroups and Non-human Animals (reanalysis of data from Hodson & Olson, 2005, Studies 2-4).

<table>
<thead>
<tr>
<th>Sample</th>
<th>r</th>
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</thead>
<tbody>
<tr>
<td>1. Hodson &amp; Olson, Study 2 (ns = 129-132)</td>
<td>.32*** [.26**]</td>
</tr>
<tr>
<td>2. Hodson &amp; Olson, Study 3 (ns = 177-186)</td>
<td>.44*** [.23**]</td>
</tr>
<tr>
<td>3. Hodson &amp; Olson, Study 4 (ns = 182-186)</td>
<td>.36** [.19*]</td>
</tr>
</tbody>
</table>

Note. Value in brackets = correlation controlling for general attitudes. *p < .05, **p < .01, ***p < .001.
Study 2

Human-Animal Similarity

The results of Study 1 provide convincing support for the proposed relation between human and non-human animal prejudices. That is, negative attitudes toward human outgroups were positively associated with more negative attitudes toward non-human animals. Given the relation between human outgroup and non-human animal prejudices, Study 2 seeks to examine whether the two types of attitudes share a common underlying predictor. In line with the social categorization perspective of prejudice, one common predictor of prejudice toward non-human animals and immigrants in particular, may be our underlying categorical perception of human-animal similarity. That is, greater beliefs that humans are superior (vs. similar) to other animals is expected to be associated with greater prejudice toward non-human animals and human outgroups.

Before providing an explanation for why perceptions of human-animal similarity are expected to predict prejudice toward both non-human animals and immigrants, it is important to consider a prominent theory in the social psychology literature. Terror Management Theory (Solomon, Greenberg, & Pyszczynski, 1991) argues that humans are motivated to differentiate themselves from other animals because the recognition of one’s animal nature reminds people of their own mortality. Research testing Terror Management Theory does not directly measure perceived human-animal similarity; however, in one study participants under mortality salience threat (vs. control condition) exhibited unfavourable reactions toward an essay that described humans as physically similar to animals (Goldenberg et al., 2001). Furthermore, a recent study by Beatson and Halloran (2007) revealed that participants with low self-esteem who were exposed to
a mortality salience manipulation, in which the similarities between chimpanzee and human mating behaviours were made salient, reported more negative attitudes toward non-human animals. Research also suggests that disgust reactions tend to be elicited by objects or categories that remind people of their animal nature (e.g., sex, death, body products, body envelope violations; Rozin, Haidt, & McCauley, 1993). In line with the Terror Management Theory, Rozin and colleagues theorize that because humans struggle with mortality concerns, disgust reactions function as a means to psychologically distance humans from “inferior” animals, and ultimately from reminders of their own mortality (Rozin et al., 1991). In support of this proposition, research indicates that when primed with both the physiological similarities between humans and animals (vs. human uniqueness) and animal-nature disgust (vs. another aversive topic) participants tend to report greater mortality salience (Cox, Goldenberg, Pyszczynski, & Weise, 2007).

The aforementioned research on Terror Management Theory and disgust reactions perhaps imply that perceptions of human-animal similarity may facilitate negative attitudes toward non-human animals and human outgroups. However, other research implies that perceptions of human-animal similarity may be beneficial for promoting positive intergroup relations. According to Allport (1954) non-prejudiced people are better at recognizing the similarities between themselves and others. Gaertner and Dovidio (2000) also suggest that a common ingroup identity can be activated through the emphasis on existing similarities between social groups and/or factors that are perceived to be shared by social groups (i.e., common fate), which in turn lead to reduced intergroup bias and discrimination (Dovidio, Gaertner, Isen, & Lowrance, 1995).

Furthermore, Plous (1993a, 1993b) argues that people tend to be more considerate
towards others who are perceived as similar (vs. dissimilar) to the self, an argument based on findings that people are more likely to help others of the same race (e.g., Gaertner & Bickman, 1971). Therefore, despite strong support for Terror Management Theory, the present research predicts that in Study 2 perceptions of human-animal similarity will be associated with lower levels of prejudice toward both non-human animals and immigrants. Study 3 will attempt to extricate the conflicting predictions based on Terror Management Theory and Common Ingroup processes by considering different conceptualizations of human-animal similarity.

Little research has been conducted on the direct effect of human-animal similarity on attitudes (i.e., other than as a mortality salience manipulation), with the exception of a few studies on attitudes toward non-human animals. For example, in a study by Wuensch, Poteat, and Jernigan (1991), only half of the participants endorsed beliefs that non-human animals were similar to humans, and those with greater perceptions of human-animal similarity were more likely to support animal rights. Similarly, research by Plous (1991) indicates that people who are involved in animal rights activism are more likely to view human and animal life as being equally important, whereas non-activists are more likely to value human over non-human animal life.

In regards to the consequences of perceived similarity on animal attitudes, research by Hills (1995) concluded that farmers, urban citizens, and animal-rights activists tended to exhibit greater levels of empathy toward non-human animals that were perceived to be more similar to humans on the evolutionary continuum (Hills, 1995). Additionally, research by Plous (1993b) revealed that participants tended to experience greater physiological arousal (i.e., skin conductance) while watching a staged video of
animal abuse involving an animal that was perceived to be more similar to humans (i.e., monkey) in comparison to an animal that was perceived to be more dissimilar to humans (i.e., bullfrog). Research by Plous (1993b) also indicates that people are more likely to support endangered species that are perceived as more similar (vs. dissimilar) to humans.

**Human-Animal Similarity and Dehumanization**

The present research proposes that greater perceptions of human-animal similarity may also predict lower levels of prejudice toward immigrants, with dehumanization acting as the mechanism through which human animal similarity exerts its effect. Dehumanization is often defined as the belief that certain social groups are more “animal-like”, although dehumanization can also involve perceptions that other people or groups are more “machine-like” (Haslam, 2006). The present research focuses on the animalistic form of dehumanization because it involves denying members of the outgroup attributes that are assumed to separate humans from other animals (Haslam, 2006). Moreover, animalistic dehumanization is also expected to be related to perceived human-animal similarity because such dehumanizing perceptions imply a vertical comparison between humans and other animals (Haslam, 2006).

Dehumanization has received scattered attention within the intergroup relations literature, typically being discussed within ethnic and race related contexts in an attempt to explain extreme intergroup hostility such as slavery and/or genocides (Haslam, 2006). Historically, marginalized human outgroups have been portrayed as animal-like such as the depiction of Blacks as apes, and Jews as vermin. Such representations of outgroups as more animal-like presumably justifies the exclusion of these groups from moral consideration, which often leads to negative attitudes and inhumane acts of
discrimination toward members of the dehumanized outgroup (Bandura, 1999, 2002; Bar-Tal, 2000; Opotow, 1990; Schwartz & Sturch, 1989). Moral exclusion also allows perpetrators to view their victims as sub-humans who are incapable of experiencing emotions and pain, and who are undeserving of compassion and respect (Bandura, 1999, 2002; Opotow, 1990). These perceptions are analogous to the way some people view non-human animals (Opotow, 1993).

Recent research suggests that dehumanization is indeed still prevalent today. For example, a recent study conducted by Esses, Veenvilet, Hodson, and Mihic (2008, Study 2) revealed that Canadian participants dehumanized refugees (as defined by a lack of moral values, tendency to engage in “barbarian” acts, and a willingness to cheat the system), and such dehumanizing perceptions lead to greater feelings of contempt, less admiration for refugees, and ultimately to less support for Canadian refugee policies. Recent research also suggests that dehumanization can occur outside of one’s explicit awareness. For example, Goff, Eberhardt, Williams, and Jackson (2008) concluded that U.S. citizens unconsciously harbor historical cognitive representations of Blacks as “ape-like”. That is, when subliminally primed with the concept of “apes” White participants were quicker at identifying Black (vs. White or Asian) faces (Studies 2 and 3). Furthermore, representations of Blacks as “ape-like” lead to the greater acceptance of violence toward a Black crime suspect (Goff et al., 2008, Study 5).

In an effort to demonstrate that dehumanization can occur in everyday interactions, and in the absence of extreme intergroup hostility, Leyens et al. (2000, 2001) introduced a subtle concept of dehumanization, referred to as “infra-humanization”. Infra-humanization involves the tendency to deny characteristics that are
assumed to be uniquely human\textsuperscript{1} to members of the outgroup (e.g., morality, language, intelligence, secondary emotions). Leyens and colleagues' research specifically focuses on the differential attribution of secondary emotions to the ingroup (e.g., versus outgroup). Secondary emotions (e.g., compassion, remorse, and guilt) are assumed to be unique to humans, and are characterized by greater civility, morality, and higher cognition (Demoulin et al., 2004). Various studies conducted by Leyens et al. (2000, 2001) suggest that people indeed deny uniquely human emotions to outgroups (but not to the ingroup), regardless of the emotion valence. In contrast, people do not tend to differentially attribute primary emotions that are assumed to be experienced by both humans and non-human animals (e.g., happiness, fear) to the ingroup versus outgroup.

The differential attribution of uniquely human emotions occurs not only when measured using implicit methods (e.g., Gaunt, Leyens, & Demoulin, 2002), but also when participants are asked to self-report the types of emotions that best represent members of their ingroup and outgroup. For example, Cuddy, Rock, and Norton (2007) asked participants to attribute uniquely human emotions (of negative valence) to a White ingroup or Black outgroup victim of hurricane Katrina. Participants were more likely to perceive the Black outgroup victim as experiencing fewer uniquely human emotions than the White ingroup victim, with these dehumanizing perceptions predicting less intention to help the outgroup victim. In another study, participants attributed fewer secondary emotions to outgroup members in a post-conflict scenario, and greater dehumanization was associated with lower levels of intergroup forgiveness (Tam et al., 2008).

\textsuperscript{1}While there may be reason to debate whether or not some characteristics are indeed unique or not unique to humans, for simplicity the use of the term "uniquely human" refers to attributes that are commonly assumed to be unique to humans. Likewise, the term "non-uniquely human" refers to attributes that are generally assumed to be common to both humans and other animals.
Rather than measuring the attribution of uniquely human emotions, Viki et al. (2006) operationalized dehumanization as the greater association and attribution of “animal” versus “human” words to the outgroup (vs. ingroup). In testing their measure of dehumanization, Viki et al. (2006) concluded that human (vs. animal) words (e.g., humanity, citizen) were perceived as more characteristic of the ingroup, and animal (vs. human) words (e.g., feral, creature) were perceived as more characteristic of the outgroup, regardless of word valence. In line with these findings, research by Boccato, Capozza, Falva, and Durante (2008) found that participants exhibited stronger associations between the category of “human” and the ingroup (vs. outgroup) (Studies 1 and 2) and between the category of “animal” and the outgroup (vs. ingroup) (Study 2).

Similarly, in a study by Zebel, Zimmermann, Viki, and Doosje (2008), people tended to dehumanize Islamic people through greater “outgroup-animal” word associations, which led to reduced guilt and ultimately lower levels of support for reparation policies toward Islamic people. Participants in this study were also more likely to dehumanize outgroup members in response to hearing about how their ingroup negatively treated members of the outgroup in the past. This finding suggests that dehumanization may also be used to justify the negative treatment of outgroup members after the negative treatment has already occurred (Zebel et al., 2008; see also Castano & Giner-Sorolla, 2006).

In addition to the attribution of uniquely human emotions or animal-related words, personality traits represent another characteristic that can be differentially attributed to outgroup versus ingroup members. According to Gosling and John (1999), among the Big-5 personality traits (i.e., openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism) the dimensions of conscientiousness (e.g.,
self-disciplined vs. careless) and openness to experience (e.g., complex vs. conventional) are commonly presumed to be unique to humans (see also Gosling, 2001; Haslam, Bain, Douge, Lee, & Bastian, 2005), perhaps because they require greater cognitive ability. Using this information, Hodson and Costello (2007) examined the differential attribution of uniquely human personality traits to the ingroup versus outgroup. The results suggested that people dehumanize immigrants by associating them with fewer uniquely human personality traits, which in turn predicted more negative attitudes toward immigrants. In the present investigation, the attribution of uniquely human emotions and uniquely human personality traits to immigrants will be used to measure dehumanization in Studies 2 and 3.

At this point, one may ask whether the denial of uniquely human characteristics to outgroup members actually reflect perceptions that outgroup members are more “animal-like” (vs. “machine-like”), as is commonly assumed in the dehumanization literature. Indeed, research by Haslam, Kashima, Loughnan, Shi, and Suitner (2008) suggests that in comparison to humans, non-human animals are indeed perceived as lacking higher cognition and secondary emotions. In contrast, in comparison to humans, “robots” are perceived as lacking human nature traits including desires, and both primary and secondary emotions. In addition, according to research by Loughnan and Haslam (2007), social categories that are perceived as lacking uniquely human characteristics tend to be implicitly and explicitly associated with animals (vs. automatons). On the other hand, social categories that are perceived as lacking human nature traits (e.g., warmth, sociability) tend to be more associated with automatons (vs. animals). Therefore, the aforementioned research provides strong support for the assumption that the lesser
The attribution of uniquely human characteristics to the outgroup reflects underlying perceptions that outgroup members are more “animal-like” versus “machine-like”.

Thus far, the research on dehumanization indicates that outgroups, including immigrants in particular, are dehumanized, and such dehumanizing perceptions result in greater prejudice. However, little to no research has been conducted on the relation between outgroup dehumanization and perceptions of human-animal similarity. This lack of research is surprising for outgroup dehumanization should be a less meaningful predictor of intergroup prejudice if one believes that non-human animals are similar to humans. In other words, because dehumanization reflects the denigration of outgroups to the “inferior” status of non-human animals, greater perceptions of human-animal similarity are expected to take away one’s ability to dehumanize, a process we refer to as “re-humanization”.

**Ideological Orientations**

The present study also seeks to examine the role that ideological orientations commonly associated with prejudice play in predicting perceptions of human-animal similarity. Specifically, the role of Social Dominance Orientation (SDO: Pratto, Sidanius, Stallworth, & Malle, 1994; Sidanius & Pratto, 1999) and Right-Wing Authoritarianism (RWA: Altemeyer, 1996) will be examined. Social dominance orientation and Right-wing Authoritarianism represent the two most important ideological orientations in explaining prejudice, accounting for approximately 50 percent of the variance in prejudicial attitudes (Altemeyer, 1998; Duckitt, Wagner, Plessis, & Birum, 2002).

Social Dominance Theory posits that intergroup bias and conflict is the result of an evolved preference for social hierarchies and group dominance (Sidanius & Pratto,
1999). Therefore, higher levels of SDO capture a greater endorsement of inequality among social groups and a preference for a society characterized by intergroup hierarchies (Pratto et al., 1994). People higher in SDO tend to perceive the world as a “competitive jungle” (Duckitt, 2005, 2006, Duckitt et al., 2002), in which social interactions are perceived as zero-sum competitions over finite resources (i.e., gains made by outgroups result in loss for the ingroup; Esses, Hodson, & Dovidio, 2003; Esses, Jackson, & Armstrong, 1998). Consequently, research suggests that people high in SDO are especially prejudiced toward subordinate and competitive outgroups (Duckitt, 2006), such as immigrants (e.g., Esses et al., 1998, 2003). However, SDO has also been strongly associated with prejudice toward a variety of other outgroups including Blacks, women, and homosexuals (e.g., Whitley, 1999). Because SDO is associated with prejudice toward a variety of different outgroups, it is likely that people scoring higher in SDO will also exhibit higher prejudice toward non-human animals. For example, in terms of behaviour, people higher in SDO tend to be more likely to endorse the use of non-human animals by humans and to report personally engaging in the exploitation of non-human animals (Hyers, 2006).

People higher in SDO also have a tendency to generate and endorse “legitimizing myths”, which they use to rationalize their dominant position in the intergroup hierarchy (e.g., Esses & Hodson, 2006; Hodson & Esses, 2005; Hodson & Costello, 2007; Sidanius & Pratto, 1999). For example, Hyers (2006) revealed that some people justify the exploitation of non-human animals by viewing such acts as part of the natural hierarchy, in which humans are superior to other animals, although the relation between SDO and this specific justification was not tested. Nevertheless, given that people higher in SDO
are more likely to support hierarchical relations involving the superiority of dominant groups over subordinate groups, and are more likely to use legitimizing myths to justify their preference for social dominance, they are expected to be naturally inclined to perceive humans as superior (vs. similar) to other animals. Ultimately, such human superiority perceptions are expected to account for the higher levels of prejudice toward non-human animals exhibited by people higher in SDO.

Research already indicates that higher levels of SDO predict less favourable attitudes toward immigrants both directly and indirectly through greater dehumanizing perceptions (e.g., Hodson & Costello, 2007). Similarly, research by Esses et al. (2008) indicated that participants higher in SDO were more likely to dehumanize refugees, resulting in less admiration, more contempt, and ultimately more negative attitudes toward refugees. Therefore, it is predicted that people higher in SDO will be more likely to dehumanize immigrants, and that this relation will be mediated by greater perceptions that humans are superior (vs. similar) to other animals.

The second ideological orientation to be examined is Right-Wing Authoritarianism, which is characterized by social conventionalism, submission to legitimate authorities, and generalized aggression directed toward non-conformists (RWA: Altemeyer, 1996). People higher in RWA perceive the world as “dangerous” and “chaotic” (Duckitt, 2005, 2006; Duckitt et al., 2002). As a result they are motivated to ensure social order and security by conforming to social norms that are sanctioned by higher authorities (Altemeyer, 1998). Right-wing authoritarianism is also positively associated with religious fundamentalism and dogmatic beliefs, which may explain why people high in RWA are particularly threatened by outgroups who challenge their
traditional social norms and symbolic values, such as immigrants and homosexuals (e.g., Altemeyer, 1996, 1998; Esses et al., 1998). However, people higher in RWA also tend to exhibit prejudice toward a variety of other social outgroups including Blacks, Natives, and women (Altemeyer, 1998). Because RWA is associated with prejudice toward a variety of different outgroups, it is likely that people higher in RWA will also exhibit prejudice toward non-human animals, although research has yet to examine this relation.

One study, however, suggests that traditionally religious people who are affiliated with conservative religions tend to view non-human animals and humans along a dichotomous versus continuous scale (Templer, Connelly, Bassman, & Hart, 2006). Thus, because people higher in RWA are characterized by both religious fundamentalism and dogmatic cognitive orientations (Altemeyer, 1996, 1998) they are expected to be more likely to perceive humans as superior to other animals. People higher in RWA also tend to perceive themselves as moral individuals (Altemeyer, 1998), and thus, to uphold their righteous self-perceptions they may be more likely to support religious ideologies that constitute appropriate relations between humans and other animals. Indeed, research by Hyers (2006) and Marcu et al. (2007) revealed that “religious” explanations (e.g., animals are inferior, animals have no souls, God put animals here for humans to use, humans are superior creatures of God) are often used to justify the exploitation of non-human animals; however, RWA was not directly examined in these studies.

In regards to immigrant prejudice, people higher in RWA may also be especially likely to endorse dehumanizing perceptions to justify their higher levels of prejudice toward immigrants. For example, Esses et al. (2008) theorized that people higher in RWA may endorse dehumanizing perceptions to rationalize their negative attitudes towards
outgroups that are perceived as threatening to society; however, in this particular study they did not find support for this prediction. Recent research by Viki et al., (in press) suggests that there is a positive relation between dehumanization and symbolic threat. Therefore because people high in RWA tend to be sensitive to threats to social order (i.e., values and culture) they may be particularly likely to dehumanize outgroups who are perceived as symbolically threatening. Overall, participants higher in RWA are expected to endorse greater perceptions that humans are superior to other animals which in turn are expected to facilitate greater immigrant dehumanization, and ultimately heightened immigrant prejudice.

The lower end of the continuums for SDO or RWA do not necessarily represent the absence of prejudice, but rather lower levels of prejudice. Furthermore, given that SDO and RWA are only weakly to moderately correlated, it is possible to conceive of somebody scoring both low in SDO and high in RWA (e.g., Altemeyer, 1998). Therefore, low levels of either one of these ideological orientations, on their own, do not necessarily indicate an absence of prejudice. On the other hand, Universal Orientation does represent an inclusive orientation of non-prejudice (i.e., not low prejudice) directed towards all of humanity. Phillips and Ziller (1997) describe people high in Universal Orientation as individuals who actively choose to perceive people in terms of similarities rather than differences. That is, people characterized by a greater Universal Orientation selectively focus on and accentuate commonalities between themselves and others, resulting in a self-other integration (Phillips & Ziller, 1997). One can readily see the apparent similarities between Universal Orientation and the aforementioned Common Ingroup Identity Model. In fact, Phillips and Ziller (1997) questioned whether a greater Universal
Orientation is actually the result of an expanded ingroup, which includes all of humanity. They even suggested that by manipulating a common ingroup identity, Gaertner and colleagues were actually inducing a universal cognitive orientation.

Similar to Allport’s (1954) definition of non-prejudiced individuals, people with a greater Universal Orientation tend to be broad-minded and despite possessing knowledge of group differences, refrain from exaggerating or attending to such differences when making judgments (Phillips & Ziller, 1997). Research by Phillips and Ziller (1997) also indicates that a greater Universal Orientation is associated with higher levels of communal beliefs, empathy and perspective taking, openness to experience, beliefs in social equality (i.e., non-hierarchical relations), and appreciation for diversity. Results from a study by Nicol and Boies (2006) also indicate that Universal Orientation is also negatively correlated with ideologies associated with greater prejudice including RWA ($r = -.14$, in both Studies 1 and 2), and SDO ($r = -.36$ in Study 1, $r = -.50$ in Study 2).

To determine whether Universal Orientation is indeed an orientation of non prejudice, Phillips and Ziller (1997) conducted a series of studies to examine the relation between Universal Orientation and prejudice toward Blacks and ethnic minorities. Results indicated that White participants with a greater Universal Orientation demonstrated lower rates of prejudice and more support towards Blacks. In another study, non-minority participants characterized by a greater Universal Orientation demonstrated greater acceptance of ethnic minorities, and they rated ethnic minorities as equally desirable, attractive, and similar to non-minorities (Phillips & Ziller, 1997).

Because higher levels of Universal Orientation are associated with more favourable attitudes toward Blacks and ethnic minorities (Phillips & Ziller, 1997), it is
predicted that people higher in Universal Orientation will also exhibit more favourable attitudes toward non-human animals. People higher in Universal Orientation naturally focus on the similarities between themselves and others, therefore they are also expected to exhibit enhanced perceptions that humans are similar (vs. superior) to other animals, which in turn are expected to account for their more favourable attitudes toward non-human animals. These enhanced perceptions that humans are similar (vs. superior) to other animals are also expected to predict more favourable attitudes toward immigrants through a reduced tendency to dehumanize immigrants.

Overview of Study 2

In summary, Study 2 attempts to further examine the relation between human and non-human animal prejudice using prejudice measures that tap attitudes toward the rights and welfare of both non-human animals and immigrants. These measures of prejudice differ from the measures used in Study 1, where participants were only required to report how favourable their attitudes were towards specific human outgroups and animal species in general. Perceived human-animal similarity is then examined as a common predictor of prejudice toward both non-human animals and immigrants, with immigrant dehumanization acting as the mechanism through which perceived human-animal similarity may exert its effect on prejudice toward immigrants. Furthermore, SDO, RWA, and Universal Orientation are examined as ideological orientations associated with a natural inclination to perceive humans as superior or similar to other animals.

Hypotheses

H1. A positive association was expected between prejudice toward non-human animals and immigrant prejudice.
H2. Greater perceptions that humans are similar to other animals were expected to directly predict lower levels of prejudice toward non-human animals.

H3. Greater perceptions that humans are similar to other animals were expected to predict lower levels of immigrant prejudice via decreased immigrant dehumanization.

H4. Higher levels of SDO and RWA were expected to predict heightened levels of prejudice toward non-human animals via greater perceptions that humans are superior to other animals, whereas higher levels of Universal Orientation were expected to predict lower levels of prejudice toward non-human animals via greater perceptions that humans and other animals are similar.

H5. Higher levels of SDO and RWA were expected to predict heightened immigrant dehumanization via greater perceptions that humans are superior to animals, whereas higher levels of Universal Orientation were expected to predict lower levels of immigrant dehumanization via greater human-animal similarity.

H6. Given that SDO tends to exert direct effects on attitudes toward immigrants (e.g., Hodson & Costello, 2007), higher SDO was expected to directly predict greater immigrant prejudice and dehumanization.
Method

Participants

Undergraduate psychology students from Brock University participated in this study for course credit. Fourteen immigrants and five additional students who failed to meet the study inclusion criteria of being in first or second year of university were excluded from analyses. The final sample consisted of 70 Canadian participants in first or second year of university (53 women, 17 men) with a mean age of 19.30 (SD = 1.51). Of these participants, 94.3% (n = 66) indicated that their ethnicity was White/Caucasian.

Procedure

After signing the informed consent, participants individually responded to the measures in small groups of two to eight. Participants also provided demographic information and after completion were given a written debriefing form.

Measures

Prejudice toward immigrants (see Appendix C). Participants completed the seven-item Modern Racism Scale (MRS: McConahay, Hardee, & Batts, 1981), which was modified to measure attitudes toward immigrants. This modified scale has demonstrated good reliability in previous research (e.g., ɑ = .80 in Hodson & Costello, 2007). All items were rated along a five-point rating scale (0 = strongly disagree to 4 = strongly agree) and items were reverse scored when necessary so that higher scores reflect higher rates of prejudice toward immigrants. A sample item from this scale reads, “Immigrants are getting too demanding in their push for equal rights.”

Prejudice toward non-human animals (see Appendix D). Prejudice toward non-human animals was measured using a selection of items from two different scales. Eighteen items were selected from the Animal Rights Scale (Wuensch et al., 2002),
which was designed to measure attitudes toward the use and treatment of non-human animals ($a = .91$ in the current study). In addition, 18 items were selected from the Animal Attitudes Scale (Herzog, Batchart, & Pittman, 1991), which measures attitudes towards animal rights and welfare ($a = .87$ in the current study). Given their conceptual and empirical relation ($r = .85, p < .001$), the items from these two scales were aggregated to create a total 32-item “prejudice toward non-human animals” measure. All items were rated along a five-point rating scale ($1 = \text{disagree strongly}$ to $5 = \text{agree strongly}$) and items were reverse scored when necessary so that higher scores reflect greater prejudice toward non-human animals. Sample items read “I think it’s perfectly acceptable for cattle, chickens, and pigs to be raised for human consumption”, “Having extended basic rights to minorities and women, it is now time to extend them also to animals” (reverse scored item). The items from this scale are comparable to the items from the Modern Racism Scale (MRS) used to measure prejudice toward immigrants. That is, while the MRS is commonly conceived of as an attitudes measure, the items seem to tap principles of equality, rights, and justice in ways that are similar to the items from the “prejudice toward non-human animals” scale.

*Human-animal similarity (see Appendix E).* Perceived human-animal similarity was measured using a combination of items selected from two different scales. Five items were selected from the Animal-Human Continuity Scale (Templer et al., 2006), which measures the extent to which people view humans and animals on a dichotomous versus continuous scale ($a = .70$ in the current study). Additionally, five items were selected from a scale by Wuensch et al. (1991) that was developed to assess attitudes toward human-animal similarity ($a = .68$ in the current study). Given their empirical relation ($r =$
.60, \( p < .001 \)), the two scales were aggregated to create a total 10-item “human-animal similarity” measure, which tapped perceptions that humans are different and superior (vs. similar) to other animals\(^2\). All items were rated along a five-point rating scale (1 = disagree strongly to 5 = agree strongly). Items were reverse scored when necessary so that higher scores reflect greater beliefs that humans and non-human animals are similar, and lower scores reflect perceptions than humans are dissimilar and superior to other animals. Sample items read “Humans are so vastly different from other life forms that it is a mistake to classify humans as animals”, “Humans are superior to animals.”

 Dehumanization-personality (see Appendices F). Respondents identified the extent to which 24 personality traits (based on Haslam et al., 2005) applied to Canadians and immigrants on a five-point rating scale (1 = trait does not apply to group at all to 5 = trait strongly applies to group). For purposes of the present study, the personality traits were classified into categories representing the Big Five personality factors (i.e., openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism). Previous pilot testing (\( n = 18 \); see Hodson & Costello, 2007) revealed that people tend to perceive openness to experience and conscientiousness as the most uniquely human personality traits (see also Gosling & John, 1999; Haslam et al., 2005), and neuroticism and agreeableness as the least uniquely human. Therefore, perceived uniquely human (i.e., openness and conscientiousness traits) and non-uniquely human (i.e., neuroticism and agreeableness traits) composite variables were created for both Canadians and immigrants, with higher scores representing the lesser attribution of traits to each group.

\(^2\) There was a positive relation between items specifically tapping perceived human-animal dissimilarity and items specifically tapping human superiority over other animals (\( r = .53, \ p < .001 \)). This strong relation supports our intention to identify people who perceive humans as not only dissimilar but superior to other animals.
.60, p < .001), the two scales were aggregated to create a total 10-item “human-animal similarity” measure, which tapped perceptions that humans are different and superior (vs. similar) to other animals. All items were rated along a five-point rating scale (1 = disagree strongly to 5 = agree strongly). Items were reverse scored when necessary so that higher scores reflect greater beliefs that humans and non-human animals are similar, and lower scores reflect perceptions than humans are dissimilar and superior to other animals. Sample items read “Humans are so vastly different from other life forms that it is a mistake to classify humans as animals”, “Humans are superior to animals.”

Dehumanization-personality (see Appendices F). Respondents identified the extent to which 24 personality traits (based on Haslam et al., 2005) applied to Canadians and immigrants on a five-point rating scale (1 = trait does not apply to group at all to 5 = trait strongly applies to group). For purposes of the present study, the personality traits were classified into categories representing the Big Five personality factors (i.e., openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism). Previous pilot testing (n = 18; see Hodson & Costello, 2007) revealed that people tend to perceive openness to experience and conscientiousness as the most uniquely human personality traits (see also Gosling & John, 1999; Haslam et al., 2005), and neuroticism and agreeableness as the least uniquely human. Therefore, perceived uniquely human (i.e., openness and conscientiousness traits) and non-uniquely human (i.e., neuroticism and agreeableness traits) composite variables were created for both Canadians and immigrants, with higher scores representing the lesser attribution of traits to each group.

2 There was a positive relation between items specifically tapping perceived human-animal dissimilarity and items specifically tapping human superiority over other animals (r = .53, p < .001). This strong relation supports our intention to identify people who perceive humans as not only dissimilar but superior to other animals.
Dehumanization- emotions (see Appendix G). Similar to Leyens et al. (2000, 2001) respondents also indicated the extent to which Canadians and immigrants generally experience six secondary (uniquely human) and six primary (non-uniquely human) emotions, on a five-point rating scale (1=not at all to 5= very much so). Based on Paladino et al. (2002), the scale included 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). Composite variables for perceived uniquely human emotions (i.e., secondary emotions) and perceived non-uniquely human emotions (i.e., primary emotions) were created for both Canadians and immigrants, collapsing across emotion valence. Higher scores represent the lesser attribution of uniquely or non-uniquely human emotions to each group.

Social dominance orientation (see Appendix H). Social Dominance Orientation was assessed using the 16-item social dominance orientation scale (Pratto et al., 1994, original scale reliability \( a = .83 \)). Participants indicated their level of agreement with each of the items using a seven-point rating scale (1=do not agree at all to 7= strongly agree). Items were reverse scored when necessary so that higher scores reflect higher levels of SDO. A sample item reads “Some groups of people are just more worthy than others.”

Right-wing authoritarianism (see Appendix I). Right-Wing Authoritarianism was assessed with a shortened 12-item RWA scale (Altemeyer, 1996; original scale reliability \( a = .90 \)). Participants indicated their level of agreement with each of the items using a seven-point rating scale (1=do not agree at all to 7= strongly agree). Items were reverse scored when necessary so that higher scores reflect higher levels of RWA. A sample item
reads “What our country really needs, instead of more “civil rights” is a good, stiff dose of law and order.”

Universal orientation (see Appendix J). Universal Orientation was assessed using the 20 item Universal Orientation Scale (Phillips & Ziller, 1997, original scale reliability $a = .76$). Participants indicated their level of agreement with each of the items using a five-point rating scale (1=does not describe me well to 5= describes me well). Items were reverse scored when necessary so that higher scores reflect higher levels of Universal Orientation. A sample item reads “At one level of thinking we are all of a kind”.
Results

Descriptive Statistics and Preliminary Analyses

Descriptive statistics including means and standard deviations for all continuous variables of interest are presented in Table 2. Overall, the results were consistent with expectations. Participants generally reported low levels of immigrant prejudice with the mean score falling below the scale mid-point. In contrast, participants reported moderate levels of prejudice toward non-human animals. With regard to the proposed mediators, perceived human-animal similarity scores were moderately high falling above the scale mid-point, whereas the mean scores for dehumanization were low. As typically found with other university-based samples, the means for SDO and RWA fell below the scale-midpoint, whereas the mean for Universal Orientation was relatively high.

Upon screening the data, there were no missing values on any of the variables, and only one univariate outlier (> 3 SD from the mean) was identified on the immigrant dehumanization-personality variable \( z = 3.62 \). The outlier was not removed from the final analyses (no differences were found when analyses were conducted with or without the outlier). Skewness and kurtosis levels were within the acceptable range \( (<|2|) \) for all variables, suggesting that the assumptions for univariate normality had been met (see Table 2). In regards to the tested regression models, no multivariate outliers were identified and the histograms for the standardized residuals appeared to be normally distributed, suggesting that the assumptions for normality of residuals were met. Examination of the scatter-plots for the standardized residuals and predicted values were also examined, and the data points appeared to be randomly distributed, suggesting that the assumptions for homoscedasticity of residuals were also met. Finally independence of...
Table 2.

Descriptive Statistics and Correlations among Key Continuous Variables (Study 2).

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>S</th>
<th>K</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SDO (1-7)</td>
<td>2.55</td>
<td>1.07</td>
<td>.61</td>
<td>-.05</td>
<td>.93</td>
<td>.42***</td>
<td>-.45***</td>
<td>-.43***</td>
<td>.47***</td>
<td>.36**</td>
<td>.61***</td>
<td>.42***</td>
</tr>
<tr>
<td>2. RWA (1-7)</td>
<td>3.13</td>
<td>.97</td>
<td>-.46</td>
<td>-.59</td>
<td>.87</td>
<td>-.40***</td>
<td>-.40***</td>
<td>.33**</td>
<td>.28*</td>
<td>.39***</td>
<td>.37**</td>
<td></td>
</tr>
<tr>
<td>3. Universal</td>
<td>3.40</td>
<td>.39</td>
<td>.41</td>
<td>1.58</td>
<td>.75</td>
<td>.38**</td>
<td>-.32**</td>
<td>-.34**</td>
<td>-.44***</td>
<td>-.38**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation (1-5)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. Human-animal</td>
<td>3.50</td>
<td>.64</td>
<td>-.37</td>
<td>1.07</td>
<td></td>
<td>.79</td>
<td>-.45***</td>
<td>-.25*</td>
<td>-.43***</td>
<td>-.74***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>similarity (1-5)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5. Dehumanization (personality) (1-5)</td>
<td>2.56</td>
<td>.64</td>
<td>-.72</td>
<td>1.78</td>
<td>.83</td>
<td>.62***</td>
<td>.54***</td>
<td>.25*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Dehumanization (emotions) (1-5)</td>
<td>2.13</td>
<td>.66</td>
<td>-.04</td>
<td>-.60</td>
<td>.83</td>
<td>.44***</td>
<td>.28*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Immigrant prejudice (0-4)</td>
<td>1.55</td>
<td>.76</td>
<td>-.01</td>
<td>-.13</td>
<td>.86</td>
<td>.27*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Animal prejudice (0-5)</td>
<td>3.14</td>
<td>.65</td>
<td>-.88</td>
<td>.64</td>
<td>.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note: N = 70. S = skewness; K = kurtosis; SDO = social dominance orientation; RWA = right-wing authoritarianism; dehumanization (personality) = denial of uniquely human personality traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants. Numbers in diagonal represent scale reliabilities. Numbers in parentheses represent measurement-scale ranges. *p < .05; **p < .01; ***p < .001.
residuals was assessed by Durbin Watson values for all models; values ranged from 1.71-2.09, all of which were within the acceptable range for independence (i.e., 1.5 - 2.5).

Preliminary analyses involving a series of paired sample t-tests were conducted to examine whether participants differentially attributed uniquely human personality traits or uniquely human emotions to immigrants versus Canadians. Consistent with expectations, there was no difference in the attribution of non-uniquely human personality traits to Canadians (M = 3.21, SD = .26) or immigrants (M = 3.24, SD = .29), t (69) = -0.72, p = .472. In contrast, participants attributed fewer uniquely human personality traits to immigrants (M = 2.56, SD = .64), compared to Canadians (M = 3.84, SD = .42), t (69) = 13.28, p < .001, (d = 2.37)\textsuperscript{3}, as expected.

In regards to the attribution of emotions, participants also attributed fewer uniquely human emotions to immigrants (M = 2.13, SD = .66) compared to Canadians (M = 4.03, SD = .54), t (69) = 14.76, p < .001, (d = 3.15). However, contrary to expectations, participants attributed more non-uniquely human emotions (i.e., primary emotions) to immigrants (M = 4.01, SD = .63) than Canadians (M = 3.89, SD = .65), t (69) = -2.41, p = .019, (d = .19). Nonetheless, these results provide strong evidence for immigrant dehumanization, given that participants were less likely to attribute uniquely human personality traits and uniquely human emotions to immigrants compared to their Canadian ingroup.

Correlations among Key Variables

Two-tailed correlations between key variables are presented in Table 2. First, in support of Hypothesis 1, higher levels of prejudice toward immigrants was associated

\textsuperscript{3} As recommended by Dunlop, Cortina, Vaslow, and Burke (1996) effect sizes for paired-sample t-tests were calculated using the original means and standard deviations rather than the paired t-test value.
with higher levels of prejudice toward non-human animals \((r = .27)\). In support of Hypothesis 2, greater perceptions that humans are superior to other animals were strongly associated with greater prejudiced attitudes toward non-human animals \((r = -.74)\). This finding supports the social dominance theory position that dominance endorsement is a key facet of bias against others (Sidanius & Pratto, 1999).

Perceptions of human superiority were also associated with greater immigrant dehumanization and heightened immigrant prejudice. Furthermore, both types of dehumanizing perceptions were associated with heightened immigrant prejudice. Higher levels of SDO or RWA were associated with heightened beliefs that humans are superior to other animals, greater immigrant dehumanization, and higher levels of prejudice toward both non-human animals and immigrants. On the other hand, higher levels of Universal Orientation were associated with greater beliefs that humans are similar to other animals, less dehumanization, and lower levels of prejudice toward both non-human animals and immigrants. Consistent with previous research, there was a moderate positive correlation between SDO and RWA, both of which were negatively correlated with Universal Orientation. The modest correlations among the ideologies suggest that they are related but distinct constructs.

Individual Tests of Mediation

Based on recent recommendations by MacKinnon, Fairchild, and Fritz (2007), mediation was indicated by a significant path from the predictor to the mediator and a significant path from the mediator to the criterion after controlling for the predictor's

---

4 Additional regression analyses were conducted with SDO and Universal Orientation entered simultaneously to predict prejudices. Both Universal Orientation and SDO uniquely predicted (at the \(p < .05\) level) attitudes toward non-human animals (\(\beta = -.25, .32\), respectively) and immigrants (\(\beta = -.21, .52\), respectively), providing further support that Universal Orientation is not simply a measure of "low SDO."
effect on the criterion. Mediation results including the Sobel tests for significance of mediation are presented in Table 3.

The effect of human-animal similarity on immigrant prejudice via immigrant dehumanization. As predicted, dehumanization (involving the denial of uniquely human traits) was a significant mediator of the relation between perceptions that humans are superior to other animals and heightened immigrant prejudice (see Table 3). Contrary to expectations, dehumanization involving the denial of uniquely human emotions did not significantly mediate the relation between human-animal similarity and immigrant prejudice (but the effect was marginally significant); no further analyses in Study 2 were conducted using this measure of dehumanization. Overall, in partial support of Hypothesis 3, perceptions that humans are superior to other animals led to greater immigrant prejudice, in part because such perceptions “allowed for” greater immigrant dehumanization involving the denial of uniquely human traits to immigrants.

The effect of ideological orientations on prejudice toward non-human animals via human-animal similarity. As indicated in Table 3, human-animal similarity was a significant mediator of the relation between SDO, RWA, or Universal Orientation and prejudice toward non-human animals. These results provide support for Hypotheses 4, in that participants higher in SDO or RWA were more likely to exhibit prejudice toward non-human animals in part because they perceived humans as superior to other animals. In contrast, participants higher in Universal Orientation were less likely to exhibit prejudice toward non-human animals in part because they perceived humans as similar (vs. superior) to other animals.
Table 3.

Summary of Mediation Results and Sobel Significance Tests (Study 2).

<table>
<thead>
<tr>
<th>Predictor(x)→Mediator(m)→Criterion(y)</th>
<th>$\beta$(mx)</th>
<th>$\beta$(ym.x)</th>
<th>Sobel z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human-animal similarity→dehumanization (personality)→immigrant prejudice</td>
<td>-.45***</td>
<td>.44***</td>
<td>-2.81</td>
<td>.005</td>
</tr>
<tr>
<td>Human-animal similarity→dehumanization (emotions)→immigrant prejudice</td>
<td>-.25*</td>
<td>.35**</td>
<td>-1.74</td>
<td>.081</td>
</tr>
<tr>
<td>Social Dominance Orientation→human-animal similarity→animal prejudice</td>
<td>-.43***</td>
<td>-.68***</td>
<td>3.43</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Right-Wing Authoritarianism→human-animal similarity→animal prejudice</td>
<td>-.40***</td>
<td>-.70***</td>
<td>3.22</td>
<td>.001</td>
</tr>
<tr>
<td>Universal Orientation→human-animal similarity→animal prejudice</td>
<td>-.38***</td>
<td>-.69***</td>
<td>-3.11</td>
<td>.002</td>
</tr>
<tr>
<td>Social Dominance Orientation→human-animal similarity→dehumanization (personality)</td>
<td>-.43***</td>
<td>-.30*</td>
<td>2.13</td>
<td>.033</td>
</tr>
<tr>
<td>Right-Wing Authoritarianism→human-animal similarity→dehumanization (personality)</td>
<td>-.40***</td>
<td>-.37**</td>
<td>2.33</td>
<td>.020</td>
</tr>
<tr>
<td>Universal Orientation→human-animal similarity→dehumanization (personality)</td>
<td>.38***</td>
<td>-.38**</td>
<td>-2.30</td>
<td>.021</td>
</tr>
</tbody>
</table>

Note: $N = 70$. $\beta$(mx) = the effect of predictor on mediator; $\beta$(ym.x) = the effect of mediator on criterion controlling for predictor; dehumanization (personality) = denial of uniquely human personality traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants. *$p < .05$; **$p < .01$; ***$p \leq .001$.

The effect of ideological orientations on immigrant dehumanization via human-animal similarity. As indicated in Table 3, perceptions that humans are superior to other animals significantly mediated the relations between SDO and dehumanization, and RWA and dehumanization, as predicted. Also in support of Hypothesis 5, human-animal similarity significantly mediated the relation between Universal Orientation and
immigrant dehumanization. In summary, participants higher in SDO or RWA were more likely to perceive humans as superior to other animals, which facilitated greater immigrant dehumanization. On the other hand, people higher in Universal Orientation were less likely to dehumanize immigrants because they tended to perceive humans as fundamentally similar (vs. superior) to other animals.

*Test of path model.* All predictions were then tested simultaneously in a path model using AMOS 14.0 software and maximum likelihood estimation. Bootstrapping procedures were used to obtain the significance levels for indirect effects. Recommended model fit criteria (Hu & Bentler, 1999; Kline, 2005) include: non-significant chi-squared values, comparative fit index (CFI) values greater than .95, root-mean-square-error of approximation (RMSEA) values less than .05 (Kline, 2005) or .06 (Hu & Bentler, 1999), and standard root-mean-squared residual (SRMR) values less than .08.

First a model was tested in which all predicted paths (*Hypotheses 2-6*) including the direct path from human-animal similarity to immigrant prejudice were estimated, while also allowing for associations among the three exogenous variables and the two prejudice outcome measures. This model demonstrated good fit, according to established fit criteria, $\chi^2(7) = 9.67, p = .208$, CFI = .984, RMSEA = .074 (confidence interval, .000-.177), and SRMR = .043. However, two of the parameter estimates (i.e., paths from Universal Orientation to human-animal similarity and from human-animal similarity to immigrant prejudice) and the correlation between immigrant and animal prejudice were not significant (dotted lines in Figure 1 represent the non-significant paths from the original tested model). A trimmed model was then tested, in which all non-significant paths and correlations were omitted (see solid lines in Figure 1 for trimmed model).
Figure 1. (Study 2). Results of the final path model (dashed lines = non-significant paths). Immigrant dehumanization = denial of uniquely human personality traits to immigrants. *p < .05, **p < .01, ***p < .001.
In this analysis all remaining specified paths were significant, accounting for 46% of the variability in immigrant prejudice and 54% of the variability in animal prejudice. The data also showed reasonable fit to the model, $x^2(11) = 16.00, p = .141, \text{CFI} = .970, \text{RMSEA} = .08$ (confidence interval, .000-.161), and SRMR = .070. Furthermore, change in model fit was assessed using the chi-squared difference test, which was non-significant, $x^2_D(4) = 6.36, p = .176$. The non-significant chi-squared difference test indicates that dropping the non-significant paths did not result in a significant decrease in model fit from the original model to the trimmed model; thus, the more parsimonious model was retained as the best representation of the data.

As illustrated in Figure 1, greater perceptions that humans are similar to other animals predicted increasingly more favourable attitudes toward non-human animals. Also consistent with expectations, the effect of human-animal similarity on immigrant prejudice was entirely indirect via lower levels of dehumanization ($p = .020$). This finding provides additional support for the proposition that endorsing perceptions that humans are superior to other animals perhaps facilitates greater immigrant dehumanization, which in turn leads to heightened immigrant prejudice. Furthermore, consistent with Hypothesis 6, higher levels of SDO directly predicted greater immigrant dehumanization and immigrant prejudice. However, higher levels of SDO also indirectly predicted greater immigrant dehumanization via heightened perceptions that humans are superior to other animals ($p = .032$), which in turn predicted greater immigrant prejudice ($p = .003$). Similarly, higher levels of RWA also indirectly predicted greater immigrant dehumanization via heightened perceptions that humans are superior to other animals ($p = .052$), which in turn predicted greater immigrant prejudice ($p = .032$). Higher levels of
both SDO ($p = .025$) and RWA ($p = .042$) also indirectly predicted greater prejudice
toward non-human animals via heightened perceptions that humans are superior to other
animals. The results of the tested path model imply causality; however, being
correlational in nature these findings do not directly establish causal links. Study 3 will
focus on testing the proposed causal relations.\textsuperscript{5}

\textsuperscript{5} Additional analyses were conducted to determine whether the effect of human-animal similarity on immigrant prejudice and/ or immigrant dehumanization depended on the extent to which people exhibited favourable or unfavourable attitudes toward non-human animals. The two-way interaction (human-animal similarity x animal prejudice) was not significant for immigrant prejudice ($\beta = .04$, $p = .964$) or immigrant dehumanization ($\beta = -1.17$, $p = .187$).
Discussion

In keeping with Study 1, a positive relation between prejudice toward both non-human animals and immigrants was found. However, Study 2 used alternative measures of prejudice, which tapped general concerns and beliefs that non-human animals and immigrants deserve equal consideration and rights. Overall, greater perceptions that humans are similar to other animals were associated with heightened concerns for the rights and welfare of both non-human animals and immigrants. Interestingly, the positive relation between the two types of prejudices became non-significant when human-animal similarity was entered as a common predictor. This finding suggests that human-animal similarity may be accounting for the common variance between the prejudiced attitudes.

As predicted, the role of human-animal similarity in predicting immigrant prejudice was mediated by dehumanization. That is, participants who perceived humans as superior to other animals were more likely to dehumanize immigrants, which in turn lead to greater immigrant prejudice. Participants naturally high in prejudice (i.e., higher in SDO or RWA) were especially likely to perceive humans as superior (vs. similar) to other animals, which led to higher levels of prejudice toward non-human animals. Furthermore, participants higher in SDO or RWA exhibited greater immigrant prejudice, in part because their perceptions of human superiority over other animals facilitated greater immigrant dehumanization. In contrast, participants higher in Universal Orientation were more likely to perceive humans as similar to other animals, which predicted lower levels of prejudice toward both non-human animals and immigrants, with the latter mediated by decreased dehumanization. Contrary to predictions, Universal Orientation did not avail as a unique predictor of human-animal similarity when tested
simultaneously with SDO and RWA in the path model. Such an effect, however, would be difficult to find given the strength of SDO and RWA in predicting prejudice and its correlates (see Altemeyer, 1998).

As noted in the introduction, past research finds strong empirical support for Terror Management Theory (Solomon et al., 1991), revealing that people are threatened by their animal-nature. In contrast, providing support for the Common Ingroup Identity Model, the results of Study 2 suggest that perceived human-animal similarity is associated with more favourable (vs. negative) attitudes towards non-human animals and immigrants. How can the somewhat conflicting theoretical predictions based on Terror Management Theory and Common Ingroup Identity processes be resolved? Study 3 proposes that the term “human-animal similarity” may be too vague, and perhaps these contradictory findings can be explained by examining the different ways of conceptualizing human-animal similarity.
Study 3

The results of Study 2 suggest that perceived human-animal similarity is an important predictor of prejudice toward both non-human animals and immigrants, with the later mediated by decreased dehumanization. To better interpret the causality implied in the previous analyses, Study 3 attempts to examine the role of human-animal similarity in greater depth through direct experimental manipulation. That is, human-animal similarity is experimentally manipulated via editorials that highlight either the similarities or differences between humans and non-human animals.

*Experimental Manipulation of Human-Animal Similarity*

Research on the Common Ingroup Identity Model (Gaertner & Dovidio, 2000) indicates that interventions designed to emphasize similarities among social categories are successful at inducing “one-group” or “dual-identity” cognitive representations, which in turn lead to reduced intergroup bias. Alternatively, interventions designed to emphasize the salience of intergroup boundaries (i.e., differences) induce representations of fundamentally “separate” social groups, which in turn lead to greater intergroup bias (Gaertner & Dovidio, 2000). Therefore, based on the principles of social categorization and common ingroup identity processes, inducing participants to focus on the shared similarities among humans and other animals is expected to result in lower levels of prejudice toward both non-human animals and immigrants. In contrast, inducing participants to focus on the differences between humans and other animals is expected to result in greater prejudice toward both non-human animals and immigrants.

The prediction that induced human-animal similarity will result in decreased prejudice is inconsistent with Terror Management Theory (Solomon et al., 1991). Terror
Management Theory would perhaps predict that highlighting the similarities between humans and animals would result in negative consequences for non-human animals or immigrants, because people feel threatened by reminders of their animal-nature. The present study proposes that these conflicting hypotheses based on Terror Management Theory and Common Ingroup Identity Model may both be correct once one considers different strategies for emphasizing commonalities between humans and other animals.

**Conceptualizing Human-Animal Similarity**

More specifically, Study 3 seeks to determine whether the implied differential effect of human-animal similarity depends on whether “animals are described as similar to humans” versus “humans described as similar to animals”. In line with Terror Management Theory, people are expected to respond negatively (i.e., exhibit heightened prejudice) to a similarity manipulation describing humans as similar to other animals (i.e., *humans are animal-like*; see Table 4, cell 2). This is expected because reminders of one’s animal-nature have been shown to be aversive (Rozin et al., 1993) and/or threatening (Solomon et al., 1991), essentially “lowering” humans to the level of animals. Indeed, research indicates that feelings of threat and/or anxiety are negatively related to outgroup attitudes (e.g., Stephan & Stephan 2000). On the other hand, people are expected to respond more positively (i.e., exhibit decreased prejudice) to a less-threatening similarity manipulation that describes non-human animals as similar to humans (i.e., *animals are human-like*; see Table 4, cell 1). Furthermore, no differences in the increasingly higher levels of prejudice in the conditions emphasizing the human-animal divide (i.e., animals are inferior to humans vs. humans are superior to animals) are expected (see Table 4, cells 3 and 4). In fact, equally high levels of prejudice are
Table 4.

Summary of Predictions for Experimental Conditions (Study 3).

<table>
<thead>
<tr>
<th>Human-Animal Similarity Condition</th>
<th>Target Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similarity</td>
<td>Animal</td>
</tr>
<tr>
<td>1) Animals are human-like</td>
<td>(-)</td>
</tr>
<tr>
<td>3) Animals are inferior</td>
<td>(+)</td>
</tr>
<tr>
<td>Different</td>
<td></td>
</tr>
</tbody>
</table>

Note: (-) = predicted reduction in prejudice toward non-human animals and immigrants, (+) = predicted increase in prejudice toward non-human animals and immigrants.

expected among the two Difference conditions and the more threatening Similarity condition describing humans as similar to other animals. In summary, lower levels of prejudice toward both non-human animals and immigrants is expected within the inclusive and less-threatening similarity condition describing “animals as similar to humans” compared to the other three conditions. In addition, equally high levels of prejudice are expected within the three remaining conditions (i.e., humans are similar to animals, humans are superior to animals, animals are inferior to humans), given that they are either threatening (Table 4, cell 2) or stress group differences (Table 4, cells 3 and 4).

Based on Self Categorization Theory (Turner et al., 1987), an alternative outcome to the predicted results is that the exaggeration of the human-animal divide (i.e., Difference conditions) may actually increase (vs. decrease) favourable attitudes toward immigrants because they too are humans. In contrast, exaggerating the human-animal divide is likely to lead to increasingly unfavourable attitudes towards non-human animals because they (vs. immigrants) represent the more distant outgroup. However, given that people naturally tend to perceive immigrants as more animal-like (see Esses et al., 2008;
Hodson & Costello, 2007), and that attitudes toward non-human animals and immigrants are closely linked (see Study 2), emphasizing the human-animal divide should not have such diverging effects. That is, exaggerating the human-animal divide should psychologically push humans away from both non-human animals and immigrants.

**Potential Mediators**

Ultimately, by making salient the similarities that non-human animals share with humans (vs. all other conditions), prejudiced attitudes toward non-human animals and immigrants are expected to be increasingly more favourable. Several mediators are proposed as potential mechanisms through which the “animals are similar to humans” condition is expected to exert its positive effect on prejudice.

*Dehumanization.* In Study 2, the relation between human-animal similarity and immigrant attitudes was mediated by decreased immigrant dehumanization. Therefore, stressing that “animals are similar to humans” is expected to reduce the meaningfulness of dehumanization as a justification for immigrant prejudice. In essence, inducing perceptions that “animals are similar to humans” is expected to lead to the “re-humanization” of immigrants by means of taking away the power of dehumanization to predict heightened prejudice.

*Animal-nature threat.* As previously noted, people are threatened by reminders of their animal-nature (e.g., Solomon et al., 1991) and previous research indicates that perceptions of threat and anxiety are associated with negative intergroup attitudes (Stephan & Stephan, 2000). However, describing animals as similar to humans (vs. humans as similar to animals) should be less psychologically threatening than the inverse. This is because the focus is placed on raising the status of non-human animals rather than
lowering the status of humans to “inferior” animals. Therefore, when animals are described as being similar to humans, people are expected to be less threatened and thus, more accepting of their animal-nature, which in turn should lead to decreased prejudice toward both non-human animals and immigrants.

*Inclusive intergroup representations.* Interventions designed to emphasize similarities among social categories are successful at inducing one-group or dual-identity cognitive representations (Gaertner & Dovidio, 2000; see also Hodson et al., under review). Furthermore, both types of inclusive representations result in reduced prejudice (e.g., Gonzalez & Brown, 2006), particularly when used in combination (Gonzalez & Brown, 2003). Therefore, the combination of inclusive “one-group” or “dual-identity” representations (involving humans and animals, and/or immigrants and Canadians) are also considered as potential explanations for the proposed decrease in prejudice within the “animals are similar to humans” experimental condition.

*Empathy.* Finally, the role of empathy is also considered as a potential mediator. Empathy involves feelings of compassion, warmth, and concern towards another person or group (Batson, et al., 1997). Empathetic concern has been associated with reduced prejudice toward social outgroups (Batson et al., 1997; Hodson, 2008; Hodson et al., under review) and non-human animals (e.g., Wagstaff, 2001). Additionally, research suggests that perceived “similarity” plays an important role in influencing feelings of empathetic concern, perhaps because people are more likely to identify with others who are perceived as similar to themselves (e.g., Brown, Bradley, & Lang, 2006). For example, people tend to exhibit an empathetic response bias by displaying greater physiological empathy towards members of their own ingroup (Brown et al., 2006). This
empathetic response bias also extends across species as people tend to exhibit greater subjective and physiological empathetic responses to non-human animal victims that are perceived as more genetically similar to humans (Westbury & Neumann, 2008). In light of these findings, increased empathy toward non-human animals or immigrants was expected to account for some of the decrease in prejudice toward non-human animals or immigrants respectively following the “animals are similar to humans” manipulation.

In summary, exposure to the “animals are similar to humans” experimental condition is expected to result in lower levels of prejudice toward non-human animals by means of decreased animal-nature threat, increasingly more inclusive representations of non-human animals and humans, and increased empathy toward non-human animals. Importantly, this targeted experimental condition is also expected to improve immigrant attitudes by means of reducing one’s ability to dehumanize immigrants, and thus resulting in the “re-humanization” of immigrants. In addition, this experimental manipulation is expected to improve immigrant attitudes by decreasing animal-nature threat, encouraging more inclusive representations involving immigrants and Canadians, and by increasing empathy towards immigrants.

_Ideological Orientations_

Also of interest to Study 3 is whether the experimental manipulation will exert similar effects on naturally prejudiced (i.e., high in SDO or RWA) or non-prejudiced (i.e., high in Universal Orientation) people. Because people higher in SDO are motivated to obtain and maintain their dominant position within the intergroup hierarchy (Duckitt, 2005; Pratto et al., 1994), they may be particularly threatened by the idea of expanding their intergroup boundaries (Esses et al., 2001, 2003). For example, a study by Esses et
al. (2003) revealed that participants scoring higher in SDO were opposed to the idea that immigrants and Canadians were part of a common ingroup, and their negative attitudes toward immigrants, immigration policies, and immigration in general were partly explained by their lack of inclusive representations. Similarly, a study by Danso, Sedlovskava, and Suanda (2007) revealed that inductions designed to emphasize the endorsement of similar values among immigrants and Americans did not improve attitudes toward immigration among individuals scoring higher in SDO. These findings imply that attempting to challenge high SDOs’ hierarchical orientation may backfire and result in even more negative attitudes toward non-human animals or immigrants.

However, Esses et al. (2001, Study 2) found that participants high in SDO who were assigned to read editorials emphasizing either national similarities or both national and ethnic similarities among immigrants and Canadians (vs. a control group), reported more positive attitudes toward immigrants (but not towards immigration). Interestingly, the condition that did not improve attitudes among people high in SDO was the condition that emphasized the common ethnic roots among Canadians and immigrants (i.e., the condition highlighting how Canadians are similar to immigrants), which is perhaps analogous to the “humans are similar to animals” condition in the present study (see Table 4, cell 2). These results imply that common ingroup manipulations describing the outgroup as similar to the ingroup (vs. ingroup similar to outgroup) may be more effective at improving prejudiced attitudes among people high in SDO, although this differential effect was not inferred nor tested by Esses et al. (2001).

Therefore, because describing an outgroup as being similar to the ingroup seems to be less threatening to their hierarchical orientations, people high in SDO should exhibit
lower prejudice toward both non-human animals and immigrants within the “animals are similar to humans” experimental condition, similar to people in general. In contrast, prejudiced attitudes among participants high in SDO should be equally as high among the other three conditions (see Table 4 for summary of predictions). Furthermore, among participants high in SDO, the targeted experimental condition is expected to exert its effect on prejudices through the same mediators proposed for people in general (i.e., dehumanization, animal-nature threat, inclusive representations, or empathy).

Similarly, people high in RWA are expected to feel less threatened by the condition describing animals as more human-like (vs. humans as animal-like). In fact, exposure to the commonalities other animals share with humans may successfully challenge high RWAs’ ideological beliefs regarding the perceived human-animal divide in a non-threatening manner. Ultimately, the same proposed mediators are expected to explain the lower levels of prejudice, among participants high in RWA in the key similarity condition. In contrast, prejudiced attitudes among participants high in RWA are expected to be equally high within the three remaining conditions, as is expected for people generally and for participants high in SDO (see Table 4 for summary of predictions).

Lastly, people characterized by a greater Universal Orientation are expected to exhibit lower levels of prejudice toward non-human animals and immigrants regardless of the experimental condition. That is, because people high in Universal Orientation naturally focus on the similarities (vs. differences) between people, none of the experimental conditions are expected to influence attitudes among people high in Universal Orientation.
Hypotheses

H1. Lower levels of immigrant and non-human animal prejudice are expected in the “animals are similar to humans” condition versus the other three experimental conditions (i.e., “humans are similar to animals”, “humans are superior to animals”, and “animals are inferior to humans”), and a neutral control condition.

H2. Lower levels of immigrant dehumanization, animal-nature threat, greater inclusive representations, and greater empathy are expected in the “animals are similar to humans” condition versus the other three experimental conditions (i.e., “humans are similar to animals”, “humans are superior to animals”, and “animals are inferior to humans”), and a neutral control condition.

H3. Dehumanization, animal-nature threat, inclusive representations involving immigrants and Canadians, and immigrant empathy are expected to mediate the effect of the “animals are similar to humans” condition on immigrant prejudice.

H4. Animal-nature threat, inclusive representations involving non-human animals and humans, and empathy toward non-human animals are expected to mediate the effect of the “animals are similar to humans” condition on non-human animal prejudice.

H5. Higher levels of SDO, higher levels of RWA, and lower levels of Universal Orientation are expected to predict greater prejudice toward immigrants and non-human animals, greater immigrant dehumanization, less inclusive representations, greater animal-nature threat, and lower levels of empathy.

H6. Participants high in SDO or RWA in the key “animals are similar to humans” condition are expected to exhibit lower levels of prejudice toward both
immigrants and non-human animals, a decreased tendency to dehumanize immigrants, more inclusive representations, lower levels of animal-nature threat, and greater empathy versus the other three experimental conditions (i.e., “humans are similar to animals”, “humans are superior to animals”, and animals are inferior to humans”), and a neutral control condition. In contrast no differences in prejudice or the proposed mediators are expected among any of the experimental conditions for people high in Universal Orientation.

H7. Among participants high in SDO or RWA, dehumanization, animal-nature threat, inclusive representations involving immigrants and Canadians, and immigrant empathy are expected to mediate the effect of the “animals are similar to humans” condition on immigrant prejudice. In contrast, no significant mediation effects are expected for participants high in Universal Orientation.

H8. Among participants high in SDO or RWA, animal-nature threat, inclusive representations involving non-human animals and humans, and empathy toward non-human animals are expected to mediate the effect of the “animals are similar to humans” condition on non-human animal prejudice. In contrast, no significant mediation effects are expected for participants high in Universal Orientation.
Methods

Participants

Undergraduate psychology students from Brock University participated in this study for course credit. After excluding participants who did not meet the study inclusion criteria (i.e., Canadian citizen, in 1st or 2nd year of university, and not a member of an animal rights organization) the final sample consisted of 146 Canadian participants (112 women, 34 men) with a mean age of 19.12 (SD = 1.85). Of these participants, 97.3 % (n = 142) indicated that their ethnicity was White/ Caucasian.

Procedure

After signing the informed consent, participants privately read a short editorial after which they were asked to provide their opinions of the author, and reactions to the essay quality. In actuality participants were randomly assigned to read one of four different versions of an editorial that emphasized either the similarities or differences between humans and non-human animals, or a neutral editorial unrelated to the relation between humans and other animals. Participants were then asked to privately respond to the measures of interest that were included in a larger questionnaire package. Participants provided demographic information and after completion were given a full debriefing.

Experimental manipulation (see Appendices K-O)

In order to manipulate human-animal similarity and evaluate the differential effect of similarity based on which group (humans or animals) is described as similar to the other, four versions of a fictitious editorial were created to represent the four cells illustrated in Table 4. The editorials either described the similarities or differences between humans and other animals in the following five domains: Genetics (DNA)
physiological structures, experience of emotion and pain, learning and cognitive abilities, and needs and motivations (small parts of the essays were based on Goldenberg et al., 2001, Study 2; Opotow, 1993).

In the key “animals are similar to humans” condition (see Appendix K), non-human animals were described as similar to humans (i.e., animals are human-like). It is important to note that highlighted similarities between humans and other animals were realistic and not anthropomorphic. A portion of this editorial reads:

The boundary between animals and humans is not as great as most people think. Scientific evidence suggests that this distinction is artificial, for in reality other animals are very similar to humans... Research suggests that what appears to be basic biological programming and/or simple learning by other animals is actually the result of sophisticated cognitive abilities. In fact, like humans, most other animals possess the capacity to make choices, create their own destinies, and understand abstract concepts, including cause and effect relationships. For example, several psychological studies discovered that like humans, most animals are capable of complex thought, including for example, understanding object permanence (i.e., objects outside of visibility continue to exist).

In the “humans are similar to animals” condition (see Appendix L), humans were described as being similar to other animals (i.e., humans are animal-like). A portion of this editorial reads:

The boundary between humans and other animals is not as great as most people think. Scientific evidence suggests that this distinction is artificial, for in reality humans are very similar to other animals.... Research suggests that even more
sophisticated cognitive abilities demonstrated by humans appear to be the result of basic biological programming, and/or simple learning. In fact, like other animals, much of human behaviour is influenced by basic instincts such as hunger, lust, pain avoidance and pleasure. For example, several psychological studies discovered that like animal learning, the majority of human learning is acquired through basic operant conditioning; that is, humans like other animals, learn to engage in or avoid specific behaviours based on the associated rewards or punishments.

In the “animals are different from humans” condition (see Appendix M), non-human animals were described as being inferior to humans. A portion of this editorial reads:

The boundary between animals and humans is greater than most people think. Scientific evidence suggests that animals have little in common with humans, and in reality animals are unique and distinct from humans.... Research suggests that animals are only capable of engaging in behaviours that are the result of basic biological programming, and/or simple learning. Therefore, unlike human behaviour, animal behaviour is primarily influenced by basic instincts, such as hunger, lust, pain avoidance and pleasure. For example, several psychological studies discovered that animal learning (unlike human learning) is only acquired through basic operant conditioning; that is, animals learn to engage in or avoid specific behaviours based on the associated rewards or punishments. As a result of this distinct cognitive inferiority, animals are incapable of evaluating alternatives and/or creating their own destinies.
In the “humans are different from animals” condition (see Appendix N), humans were described as being superior to other animals. A portion of this editorial reads:

The boundary between humans and animals is greater than most people think. Scientific evidence suggests that humans have little in common with animals, and in reality humans are unique and distinct from animals.... Research suggests that humans are capable of engaging in sophisticated cognitive thought, unlike animals. In fact, due to the cognitive superiority of humans over animals, humans are able to inhibit their basic instincts and instead behave according to sophisticated reasoning. For example, several psychological studies discovered that only humans (not animals) are capable of evaluating alternatives, making choices, and creating their own destinies.

In addition, a neutral essay (see Appendix O) was created that consisted of benign information (i.e., the importance of clouds) unrelated to the relation between humans and animals. All editorials contained approximately the same number of words.

Measures

Editorial cover-story (see Appendix P). To reduce suspicion about the purpose of the editorial, participants were asked to provide their opinions of the author and reactions to the quality of the editorial. Participants responded to the following items adapted from Goldenberg et al. (2001), on a seven-point rating scale (1 = “not at all” to 7 = “very much”): "How much do you think you would like the author of this essay?" "How intelligent do you believe the author to be?”, "Do you feel that the author’s opinion is poorly-informed?" "How much do you disagree with the author’s opinion?" “Do you feel that the quality of this essay is strong?”
Manipulation check (see Appendix P and Q). Participants responded to the following item using a seven-point rating-scale (1 = not at all, to 7 = very much): “In the essay you just read, to what extent did the author argue that humans and animals are similar?” Participants were then asked to circle one response to the following item “In the editorial, did the author stress that: animals are similar to humans, humans are similar to animals, animals are different from humans, humans are different from animals, or none of the above? As an additional manipulation check, perceived human-animal similarity was assessed using the same scale as in Study 2 with three additional items: “Animals are not inferior to humans”, “Human and non-human animals do not have a lot in common”, “There are little differences between humans and animals.” There was a strong positive relation between the mean of the items tapping perceived human-animal dissimilarity and the mean of the items tapping human superiority over other animals ($r = .59$, $p < .001$). In keeping with Study 2 (see Footnote 2), this strong relation suggests that those who perceive non-human animals as different from humans also tend to perceive humans as superior to other animals, which supports our intention to identify people who perceive humans as not only dissimilar but superior to other animals.

Prejudice toward immigrants (see Appendix C). Immigrant prejudice was assessed using the same modified version of the Modern Racism Scale (McConahay et al., 1981) as in Study 2.

Prejudice toward non-human animals (see Appendix R). Prejudice toward non-human animals was assessed using a shortened 20-item version of the “prejudice toward non-human animals” scale used in Study 2. Items were chosen based on high inter-item total correlations and factor loadings from Study 2. Items were rated along the same five-
point rating scale (1 = disagree strongly to 5 = agree strongly).

**Dehumanization-Personality (see Appendix S).** The attribution of traits perceived to be uniquely or non-uniquely human was measured using a modified version of the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003). This measure was similar to the measure used in Study 2, although it consisted of fewer personality traits. Participants identified the extent to which 10 personality traits measuring the Big Five personality factors (openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism) generally applied to Canadians and immigrants on a seven-point rating scale (1 = trait does not apply to group at all to 7 = trait strongly applies to group), as employed by Hodson and Costello (2007).

**Dehumanization-Emotions (see Appendix G).** The attribution of perceived uniquely human (secondary) and non-uniquely human (primary) emotions was assessed with the same measure used in Study 2.

**Animal-nature threat (See Appendix Q, items 9 and 14).** Animal-nature threat was assessed using the following two items rated on a seven-point rating scale (1 = not at all to 7 = very much). “I feel threatened and/or uncomfortable when reminded of the similarities that I share with non-human animals”, “I do not feel uncomfortable or threatened to know that I share certain commonalities with non-human animals.” The second item was reverse scored so that higher scores reflect higher levels of animal-nature threat.

**Inclusive intergroup representations (see Appendix T).** Intergroup inclusive representations involving immigrants and Canadians were assessed by five items (based on Esses et al., 2003; Gaertner et al., 1996), rated on a seven-point rating scale (1 =
strongly disagree to 7 = strongly agree). 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)” and dual identity “Although there are distinct immigrant and non-immigrant
groups in Canada, it feels as though we are all playing on the same team.” The two
common ingroup identity items were combined (r = .59, p < .001). Given the conceptual
and empirical relation (r = .56, p < .001) between the items tapping a “common ingroup”
and “dual identity” the mean of the common ingroup identity items and the dual identity
item were then aggregated together to create a single measure that captured a “common-
dual” identity involving immigrants and Canadians.

Parallel inclusive intergroup representations involving non-human animals and
humans were assessed by four items rated on the same seven-point rating scale6. Items
measured a common ingroup identity “The distinction between humans and other animals
is artificial; we are all part of a shared group (i.e., animal-kind)”, and a dual identity
“Although there are differences between humans and non-human animals, it feels as
though we are all part of the same group (i.e., animals).” The common ingroup identity
item and the dual identity item were averaged (r = .59, p < .001), creating an inclusive
representation score capturing a “common- dual” identity involving non-human animals
and humans.

Empathy (see Appendix U). Empathy toward immigrants and non-human animals
was assessed separately using a modified version of the Batson et al. (1997) six-item

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6 Due to an oversight only 1 item was created to measure common-ingroup identity for animals and
humans, whereas there were 2 items measuring common-ingroup identity for immigrants and Canadians.
empathy scale rated on a seven-point rating scale (1 = not at all to 7 = very much).
Participants rated the extent to which they feel (sympathetic towards / compassionate
towards / soft-hearted towards / warm towards / tender towards / moved by) both
immigrants and non-human animals (see also Hodson, 2008; Hodson et al., under
review).

_Ideological orientations (see Appendices H-J)._ Social Dominance Orientation,
Right-Wing Authoritarianism, and Universal Orientation were assessed using the same
measures used in Study 2.
Results

Descriptive Statistics and Preliminary Analyses

Descriptive statistics for key continuous variables collapsing across experimental conditions are presented in Table 5, and within experimental conditions in Table 6. Means and standard deviations were generally consistent with expectations. Across experimental conditions, participants reported low levels of immigrant prejudice and moderate to low levels of immigrant dehumanization, as the means for these variables fell below the scale mid-points. Alternatively, levels of prejudice toward non-human animals were moderate in nature, falling near the midpoint of the scale. Interestingly, the levels of empathy toward immigrants and especially toward non-human animals were very high, falling above the scale midpoint.

Upon removing the participants who failed to meet the study inclusion criteria, there were no missing values on the variables of interest to the present study. Six univariate outliers (> 3 SD from the mean) were identified on the following variables; animal-nature threat (z = 3.66) within the “humans are superior to animals” condition, dehumanization (personality) (z = 3.41, z = 3.41) within the “humans are superior” and “animals are inferior” conditions, dehumanization (emotions) (z = 3.26), RWA (z = 3.18) within the “humans are superior” condition, and animal-empathy (z = -3.17) within the “humans are similar to animals” condition. The outliers were not removed from the final analyses because no differences were found when analyses were conducted with or without the identified outliers. The assumptions of univariate normality appeared to have been met as skewness and kurtosis levels were within the acceptable range (κ 2) for all variables across (see Table 5) and within experimental conditions. No multivariate
Table 5.

*Descriptive Statistics for Key Continuous Variables, collapsing across Experimental Conditions (Study 3).*

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
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<td>-.546</td>
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<td>-.060</td>
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<td>-.388</td>
<td>.197</td>
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<td>Dehumanization- personality (1-7)</td>
<td>3.31</td>
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<td>1.24</td>
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<td>.220</td>
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<td>-.555</td>
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*Note: N = 146. Dehumanization (personality) = denial of uniquely human personality traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants. Values in parentheses = scale ranges.*
Table 6.

*Descriptive Statistics for Key Continuous Variables within Experimental Conditions (Study3.)*

<table>
<thead>
<tr>
<th></th>
<th>Animals similar to humans ($n = 30$)</th>
<th>Humans similar to animals ($n = 28$)</th>
<th>Animals inferior to humans ($n = 28$)</th>
<th>Humans superior to animals ($n = 34$)</th>
<th>Control Condition ($n = 26$)</th>
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<td></td>
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<td>Mean</td>
<td>SD</td>
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<td>Ideological orientations</td>
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<td>Social Dominance Orientation</td>
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</table>

Note. Dehumanization (personality) = denial of uniquely human traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants.
outliers were identified and the histograms for the standardized residuals appeared to be normally distributed, suggesting that the assumptions of normality of residuals were met. Scatter-plots for the standardized residuals and predicted values were also examined, and the data points appeared to be randomly distributed, suggesting that the assumptions of homoscedasticity of residuals were also met. Finally, independence of residuals was assessed by Durbin Watson values for all models; values ranged from 1.66 - 1.87, all of which were within the acceptable range indicative of independence (i.e., 1.5 - 2.5).

As in Study 2, preliminary analyses involving a series of paired sample \(t\)-tests were conducted to examine whether participants differentially attributed uniquely human personality traits or uniquely human emotions to immigrants versus Canadians. Consistent with expectations, there was no difference in the attribution of non-uniquely human traits between Canadians (\(M = 4.04, SD = .50\)) and immigrants (\(M = 3.97, SD = .47\)), \(t(145) = -1.37, p = .174\). However, participants attributed fewer uniquely human traits to immigrants (\(M = 3.31, SD = .93\)) compared to Canadians (\(M = 4.98, SD = .76\)), \(t(145) = -16.00, p < .001 (d = 1.97)\), as expected. Participants also attributed fewer uniquely human emotions to immigrants (\(M = 2.63, SD = 1.24\)) compared to Canadians (\(M = 5.76, SD = .90\)), \(t(145) = 19.76, p < .001 (d = 2.89)\), as expected. In contrast there was no significant difference in the attribution of non-uniquely human emotions to immigrants (\(M = 5.76, SD = .92\)) versus Canadians (\(M = 5.81, SD = .88\)), \(t(145) = 1.07, p = .286\). Overall, there was indeed evidence for immigrant dehumanization; participants were less likely to attribute uniquely human personality traits and uniquely human emotions to immigrants compared to the Canadian ingroup. These effects are notably large in size.
Correlations among Key Variables

Two-tailed correlations between key variables are presented in Table 7. Consistent with Study 2, increased prejudice toward immigrants was associated with higher levels of prejudice toward non-human animals. As expected, both measures of immigrant dehumanization (personality and emotions) and animal-nature threat were associated with increased prejudice toward immigrants, and to a lesser extent increased prejudice toward non-human animals. In addition, both measures of empathy and inclusive representations were negatively associated with prejudice toward immigrants and prejudice toward non-human animals. Consistent with Study 2, higher levels of SDO, RWA, or lower levels of Universal Orientation were associated with greater immigrant dehumanization (both personality and emotions), higher levels of prejudice toward both immigrants and non-human animals, heightened animal-nature threat, reduced empathy, and less inclusive representations involving immigrants or animals.

Manipulation Check

Overall, the experimental manipulation proved successful. Collapsing across the Similarity and Difference conditions, the omnibus $F$-test (Similarity vs. Difference vs. control conditions) for the extent to which the editorial stressed the similarities among humans and non-human animals, was significant, $F(2, 143) = 26.14, p < .001$. Follow-up $t$-tests revealed that participants in the Similarity conditions ($M = 5.90, SD = .97$) were more likely to report that the editorial stressed the similarities between humans and other animals than participants in the Difference conditions [$M = 2.37, SD = 1.28, t(118) = 16.90, p < .001$], or control condition [$M = 1.27, SD = .83, t(82) = 21.15, p < .001$].
Table 7.

Correlations among Key Continuous variable collapsing across Experimental Conditions (Study 3).

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
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<th>6.</th>
<th>7.</th>
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<th>9.</th>
<th>10.</th>
<th>11.</th>
<th>12.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. SDO</td>
<td>.91</td>
<td>.44***</td>
<td>-.47***</td>
<td>.30***</td>
<td>.36***</td>
<td>-.47***</td>
<td>-.47***</td>
<td>.23**</td>
<td>-.38***</td>
<td>-.25**</td>
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<td>.46***</td>
</tr>
<tr>
<td>2. RWA</td>
<td>.85</td>
<td>-.34***</td>
<td>.23**</td>
<td>.30***</td>
<td>-.23**</td>
<td>-.25**</td>
<td>-.26**</td>
<td>-.31***</td>
<td>-.18*</td>
<td>.51***</td>
<td>.35***</td>
<td></td>
</tr>
<tr>
<td>3. Universal Orientation</td>
<td>.84</td>
<td>-.42***</td>
<td>-.36***</td>
<td>.41***</td>
<td>.46***</td>
<td>-.36***</td>
<td>.34***</td>
<td>-.36***</td>
<td>-.42***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Dehumanization (personality)</td>
<td>.55</td>
<td>.42***</td>
<td>-.29***</td>
<td>-.39***</td>
<td>.30***</td>
<td>-.24**</td>
<td>-.26**</td>
<td>.44***</td>
<td>.34***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Dehumanization (emotions)</td>
<td>.91</td>
<td>-.34***</td>
<td>.55***</td>
<td>.19*</td>
<td>-.28***</td>
<td>-.36***</td>
<td>.46***</td>
<td>.28***</td>
<td></td>
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<tr>
<td>6. Inclusive reps. (immigrants)</td>
<td>.82</td>
<td>.53***</td>
<td>-.09</td>
<td>.41***</td>
<td>.28***</td>
<td>-.42***</td>
<td>-.26**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Empathy (immigrants)</td>
<td>.92</td>
<td>-.15</td>
<td>.35***</td>
<td>.48***</td>
<td>-.49***</td>
<td>-.32***</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8. Animal-nature threat</td>
<td>.72</td>
<td>-.25**</td>
<td>-.13</td>
<td>.36***</td>
<td>.31***</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>9. Inclusive reps.(animals)</td>
<td>.74</td>
<td>.41***</td>
<td>-.30***</td>
<td>-.59***</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>10. Empathy (animals)</td>
<td>.92</td>
<td>-.20*</td>
<td>-.50***</td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>11. Immigrant prejudice</td>
<td>.85</td>
<td>.34***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Animal prejudice</td>
<td>.89</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Note. N = 146. SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; dehumanization (personality) = denial of uniquely human personality traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants; inclusive reps. (immigrants) = inclusive representations involving immigrants and Canadians; inclusive reps. (animals) = inclusive representations involving non-human animals and humans. Values in diagonal represent scale reliabilities. *p < .05; **p < .01; ***p < .001.
As another manipulation check, participants also responded to the perceived human-animal similarity scale used in Study 2. Collapsing across the two Similarity and two Difference conditions, the omnibus F-test (Similarity vs. Difference vs. control conditions) was significant for this measure, $F(2, 143) = 18.95, p < .001$. Follow-up t-tests indicated that participants in the Similarity conditions ($M = 3.64, SD = .73$) reported greater perceptions of human-animal similarity than those in the Difference conditions [$M = 2.84, SD = .73, t(118) = 5.99, p < .001$], but not those in control condition [$M = 3.38, SD = .67, t(82) = 1.55, p = .126$]. Furthermore, participants in the Difference conditions reported significantly lower levels of perceived human-animal similarity than those in the control condition, $t(86) = -3.24, P = .002$, as expected. Overall, these results suggest that the participants correctly identified the nature of the editorial and that the editorials influenced perceptions of human-animal similarity in the expected directions.

Additionally, 93% of participants assigned to the “humans are similar to animals” condition reported that the author of the editorial argued that humans were similar to animals, and 97% of participants assigned to the “animals are similar to humans” condition reported that the author of the editorial argued that animals were similar to humans. In regards to the Difference conditions, 80% of participants assigned to the “humans are superior to animals” condition reported that the author of the editorial argued that humans were different from other animals, and 79% of participants assigned to the “animals are inferior to humans” condition reported that the author of the editorial argued that animals are different from humans. Furthermore, 100% of participants assigned to the neutral control condition chose “none of the above” to indicate that the author of the editorial did not address human-animal similarity.
Human-Animal Similarity Manipulation x Focal Group Interaction Patterns

Prejudice toward non-human animals and immigrants. A series of 2 (Human-Animal Similarity Manipulation: Similarity vs. Difference) x 2 (Focal Group: Animals vs. Humans) between subjects ANOVAs with immigrant prejudice and prejudice toward non-human animals as the dependent measures, were conducted (see Table 8). Planned a priori t-test contrasts were then conducted to interpret the interaction patterns and to directly test the predictions. Despite the directional predictions, unless otherwise noted, two-tailed tests were conducted in the interest of being conservative and Cohen’s d (small effect = .20, medium effect = .50, large effect = .80; Cohen, 1988) is reported when appropriate to express the effect sizes for each effect independently. Additionally, the neutral control condition was used to test specific predictions involving the “animals are similar to humans” condition to determine if prejudice in this key condition were significantly lower.

In the interest of brevity, only significant main effects are discussed. The main effect for Focal Group was significant for immigrant prejudice, \( F(1, 116) = 4.00, p = .048 \), with higher levels of immigrant prejudice occurring when humans \( (M = 1.58, SD = .78) \) versus animals \( (M = 1.30, SD = .74) \) were the focus of the manipulations. The main effect for Human-Animal Similarity Manipulation was significant for immigrant prejudice, \( F(1, 116) = 8.49, p = .004 \), and prejudice toward non-human animals, \( F(1, 116) = 4.19, p = .043 \). That is, participants in the Difference conditions (vs. Similarity condition) reported higher levels of prejudice toward both immigrants \( (M_{\text{difference}} = 1.64, SD = .72 \) vs. \( M_{\text{similarity}} = 1.24, SD = .78) \) and non-human animals \( (M_{\text{difference}} = 2.84, SD = .62 \) vs. \( M_{\text{similarity}} = 2.60, SD = .68) \).
Table 8.

*Human-animal Similarity Manipulation (Similarity vs. Difference) x Focal Group (Animal vs. Human) Interaction Patterns and Weighted Contrasts (“animals are similar to humans” vs. weighted combination of the other three conditions), Study 3.*

<table>
<thead>
<tr>
<th>Similarity Conditions</th>
<th>Difference Conditions</th>
<th>Mediators</th>
<th>Criterion Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animals Similar to Humans</td>
<td>Humans similar to Animals</td>
<td>Animals Inferior to Humans</td>
<td>Humans superior to Animals</td>
</tr>
<tr>
<td>Mean</td>
<td>Mean</td>
<td>$t(56)$</td>
<td>$p$</td>
</tr>
<tr>
<td><strong>Animals</strong></td>
<td><strong>Humans</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.90</td>
<td>3.29</td>
<td>2.09</td>
<td>.041</td>
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<tr>
<td><strong>Dehumanization (personality)</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2.04</td>
<td>2.77</td>
<td>2.83</td>
<td>.007</td>
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<tr>
<td><strong>Inclusive reps. (immigrants)</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Empathy (immigrants)</strong></td>
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<td></td>
</tr>
<tr>
<td>5.22</td>
<td>4.68</td>
<td>-1.84</td>
<td>.071</td>
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<tr>
<td><strong>Animal-nature threat</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.47</td>
<td>1.93</td>
<td>2.08</td>
<td>.042</td>
</tr>
<tr>
<td><strong>Inclusive reps. (animals)</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3.42</td>
<td>2.98</td>
<td>-1.97</td>
<td>.053</td>
</tr>
<tr>
<td><strong>Empathy (animals)</strong></td>
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<td></td>
</tr>
<tr>
<td>5.86</td>
<td>5.31</td>
<td>-1.74</td>
<td>.087</td>
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<tr>
<td><strong>Immigrant prejudice</strong></td>
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</tr>
<tr>
<td>.98</td>
<td>1.52</td>
<td>2.77</td>
<td>.008</td>
</tr>
<tr>
<td><strong>Animal prejudice</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2.41</td>
<td>2.80</td>
<td>2.29</td>
<td>.026</td>
</tr>
</tbody>
</table>

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”, $n = 28$). Dehumanization (personality) = denial of uniquely human traits to immigrants; dehumanization (emotions) = denial of uniquely human (emotions) to immigrants; inclusive reps = inclusive representations.
As indicated at the bottom of Table 8, the main effects were qualified by a significant 2-way interaction (human-animal similarity manipulation x focal group) for immigrant prejudice, and a marginally significant 2-way interaction for prejudice toward non-human animals. In support of Hypothesis 1, lower levels of prejudice toward immigrants \((d = .73)\) and non-human animals \((d = .60)\) were reported in the “animals are similar to humans” condition versus the “humans are similar to animals” condition. Among the two Difference conditions, there were no significant differences in prejudices as a function of the Focal Group. The two-way interaction patterns for prejudice toward non-human animals and immigrants are illustrated in Figures 2a and 2b.

The interaction patterns in Figures 2a and 2b suggest that the experimental manipulation exerted the strongest influence on attitudes within the key Similarity condition. Indeed, consistent with predictions, prejudice toward both non-human animals and immigrants was significantly lower in the “animals are similar to humans” condition versus the weighted combination of the other three conditions (see Table 8; contrast weights = +3 vs. -1, -1, -1)\(^7\). Tests of the differences among the other three conditions revealed that they did not significantly differ from each other on immigrant \((ps > .380)\) or non-human animal \((ps > .684)\) prejudice.

Potential mediators. Similar 2 (Human-Animal Similarity Manipulation: Similarity vs. Difference) x 2 (Focal Group: Animals vs. Humans) between subjects ANOVAs were conducted with each of the individual mediators as the dependent measure (see Table 8). Planned a priori \(t\)-test contrasts were then conducted to directly test the predictions, including the comparison between the key similarity condition and the neutral control condition.

\(^7\) For a similar analysis strategy, see Yzerbyt, Dumont, Wigboldus, & Gordijn (2003).
Figure 2 (Study 3). Prejudice toward non-human animals as a function of experimental manipulation (Similarity vs. Difference) and focal group (Humans vs. Animals).

Figure 2b. (Study 3). Prejudice toward immigrants as a function of experimental manipulation (Similarity vs. Difference) and focal group (Humans vs. Animals).
In the interest of brevity, only significant main effects are discussed. The main effect of Focal Group was significant for inclusive representations involving humans and animals, $F(1,116) = 6.77, p = .011$, with more inclusive representations occurring when animals ($M = 3.14, SD = .88$) versus humans ($M = 2.70, SD = .91$) were the focus of the experimental manipulation. The main effect of Human-Animal Similarity Manipulation was significant for several of the proposed mediators. That is, within the Difference conditions (vs. Similarity condition), participants reported greater immigrant dehumanization-personality ($M_{	ext{difference}} = 3.62, SD = 1.13$ vs. $M_{	ext{similarity}} = 3.09, SD = .72$), $F(1,116) = 9.76, p = .002$, greater immigrant dehumanization-emotions ($M_{	ext{difference}} = 2.96, SD = 1.41$ vs. $M_{	ext{similarity}} = 2.40, SD = 1.05$), $F(1,116) = 5.92, p = .017$, less inclusive representations involving immigrants and Canadians ($M_{	ext{difference}} = 2.97, SD = .93$ vs. $M_{	ext{similarity}} = 3.42, SD = .99$), $F(1,116) = 6.03, p = .016$, and less inclusive representations involving animals and humans ($M_{	ext{difference}} = 2.63, SD = .89$ vs. $M_{	ext{similarity}} = 3.21, SD = .86$), $F(1,116) = 12.42, p = .001$.

As indicated in Table 8, the two-way (human-animal similarity manipulation x focal group) interaction was only significant for dehumanization (personality). However, all variables shared essentially the same interaction pattern, which mirrored the patterns for prejudice toward immigrants and non-human animals. That is, in support of Hypothesis 2, significantly lower levels of immigrant dehumanization ($d_{\text{personality}} = .55, d_{\text{emotions}} = .74$), lower levels of animal-nature threat ($d = .54$), greater inclusive representations involving humans and other animals ($d = .52$), and marginally greater empathy towards immigrants ($d = .49$) were found in the “animals are similar to humans” condition versus the “humans are similar to animals” condition (see Table 8). Among the
two Difference conditions, the proposed mediators did not vary as a function of whether humans were described as superior to other animals, or animals as inferior to humans.

Therefore, the experimental manipulation tended to exert the strongest influence within the key “animals are similar to humans” condition. Indeed, consistent with predictions, significantly lower levels of immigrant dehumanization and animal-nature threat, as well as higher levels of immigrant empathy and inclusive representations involving immigrants or animals were found in the “animals are similar to humans” condition than in the weighted combination of the other three conditions (see Table 8; contrast weights = +3 vs. -1, -1, -1). Tests of the differences among the other three conditions revealed only two significant differences; greater inclusive representations involving animals within the “humans are similar to animals” versus the “humans are superior to animals” condition, \( t(54) = -2.01, p = .050 \), and lower levels of immigrant dehumanization (personality) within the “humans are similar to animals” versus “animals are inferior to humans” condition, \( t(60) = 2.36, p = .022 \).

Control group comparisons. A series of one-tailed \( t \)-tests were conducted comparing the “animals are similar to humans” condition and the neutral control condition. In partial support of predictions, participants in the key similarity condition versus the neutral control condition exhibited lower levels of prejudice toward immigrants, \( t(54) = 1.65, p = .050 (d = .43) \), heightened inclusive representations involving immigrants and Canadians, \( t(54) = -2.69, p = .005 (d = .71) \), greater immigrant empathy, \( t(54) = -2.21, p = .016 (d = .59) \), and marginally greater animal empathy, \( t(54) = -1.57, p = .061 (d = .42) \) (see Table 6 for means and SDs). Contrary to expectations, there were no significant differences between the targeted experimental condition and the
neutral control condition on prejudice toward non-human animals, $t (54) = .87, p = .196$, immigrant dehumanization (personality), $t (54) = 1.12, p = .135$, immigrant dehumanization (emotions), $t (54) = 1.24, p = .111$, animal-nature threat, $t (54) = -.15, p = .442$, or inclusive representations involving animals and humans, $t (54) = -.82, p = .210$. 

**Individual Mediation Analyses**

Mediation analyses were conducted to examine whether the proposed mediators explained the significant decrease in prejudice toward immigrants or non-human animals within the key “animals are similar to humans” condition (vs. the three other conditions). As in Study 2, mediation was indicated by a significant path from the predictor to the mediator and a significant path from the mediator to the criterion after controlling for the predictor’s effect on the criterion (MacKinnon et al., 2007). Mediation results and Sobel significance tests are presented in Table 9.

**Mediation of the relation between the key similarity condition and immigrant prejudice.** As indicated in Table 9, tests for mediation were significant for all proposed mediators with the exception of animal-nature threat, which was marginally significant. In support of Hypothesis 3, the reduction in immigrant prejudice within the “animals are similar to humans” condition was accounted for by significantly lower levels of immigrant dehumanization (both personality and emotions), more inclusive representations involving immigrants and Canadians, and heightened immigrant empathy.

**Mediation of the relation between the key similarity condition and non-human animal prejudice.** As indicated in the lower part of Table 9, tests of mediation were only significant for inclusive representations involving animals and humans, and were marginally significant for animal-nature threat. Therefore, in partial support of
### Table 9.

Tests of Mediation for the Relation between “Animals are Similar to Humans” Condition (vs. weighted combination of the other three experimental conditions) and Prejudices (Study 3).

<table>
<thead>
<tr>
<th>Predictor(x) → Mediator(m) → Criterion(y)</th>
<th>β(mx)</th>
<th>β(ym.x)</th>
<th>Sobel (z)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DV: Immigrant Prejudice</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contrast → dehumanization (personality) → immigrant prejudice</td>
<td>-.26**</td>
<td>.38***</td>
<td>-2.46</td>
<td>.014</td>
</tr>
<tr>
<td>Contrast → dehumanization (emotions) → immigrant prejudice</td>
<td>-.27***</td>
<td>.40***</td>
<td>-2.73</td>
<td>.006</td>
</tr>
<tr>
<td>Contrast → inclusive reps. (immigrants) → immigrant prejudice</td>
<td>.20*</td>
<td>-.37***</td>
<td>-2.12</td>
<td>.034</td>
</tr>
<tr>
<td>Contrast → empathy (immigrants) → immigrant prejudice</td>
<td>.19*</td>
<td>-.45***</td>
<td>-2.17</td>
<td>.030</td>
</tr>
<tr>
<td>Contrast → animal-nature threat → immigrant prejudice</td>
<td>-.19*</td>
<td>.31***</td>
<td>-1.81</td>
<td>.070</td>
</tr>
<tr>
<td><strong>DV: Animal Prejudice</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contrast → inclusive reps. (animals) → animal prejudice</td>
<td>.28***</td>
<td>-.57***</td>
<td>-3.24</td>
<td>.001</td>
</tr>
<tr>
<td>Contrast → Empathy (animals) → animal prejudice</td>
<td>.13</td>
<td>-.47***</td>
<td>-1.44</td>
<td>.150</td>
</tr>
<tr>
<td>Contrast → animal-nature threat → animal prejudice</td>
<td>-.19*</td>
<td>.27***</td>
<td>-1.85</td>
<td>.064</td>
</tr>
</tbody>
</table>

Note: N = 120 (control condition not included in analyses). *p < .05; **p < .01; ***p < .001. β(mx) = standardized effect of predictor on mediator; β(ym.x) = standardized effect of mediator on criterion controlling for predictor. Contrast: (+3) “animals similar to humans”, (-1) “humans similar to animals”, (-1) “humans superior to animals”, (-1) “animals inferior to humans”; dehumanization (personality) = denial of uniquely human personality traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants; inclusive reps. = inclusive representations.
Hypothesis 4, the lower levels of prejudice toward non-human animals within the “animals are similar to humans” condition (vs. combination of the other three conditions) was accounted for by significantly more inclusive representations involving animals and humans, and to a lesser extent, lower levels of animal-nature threat. Contrary to expectations animal directed empathy did not avail as a significant mediator.

Test of the full mediation model. Because the proposed mediators tap conceptually distinct facets of intergroup relations, they were tested simultaneously to determine is they uniquely explain the anticipated decrease in prejudice in the key “animals are similar to humans” condition (vs. the other three conditions). All mediation predictions were tested simultaneously using AMOS 14.0 software and maximum likelihood estimation. Bootstrapping procedures were used to obtain the significance levels for indirect effects. First a model was tested in which all predicted mediation paths were estimated, including direct effects from the targeted contrast to both immigrant and non-human animal prejudice, associations among all mediator variables, and the correlation between the two prejudice outcome variables. Because empathy toward non-human animals was not a significant (or marginally significant) mediator in the individual mediation analyses it was not included in the path model.

The first model demonstrated good fit according to established fit criteria, \( \chi^2(5) = 7.08, p = .215, \text{CFI} = .994, \text{RMSEA} = .054 \) (confidence interval, .000-.136), and \( \text{SRMR} = .030 \). A trimmed model was then tested in which the non-significant paths (i.e., direct relation between the targeted contrast and prejudice toward non-human animals) and correlations (i.e., between immigrant and animal prejudice) were omitted (see Figure 3). All the remaining specified paths were significant for the trimmed model, except for the
Figure 3 (Study 3). \( N = 120 \) (control condition not included in analyses). Mediation path model for the relation between the "animals are similar to humans" condition (+3) [vs. "humans are similar to animals" (-1), "animals are inferior to humans" (-1), and the "humans are superior to animals" (-1) conditions] and prejudice toward immigrants and non-human animals (Study 3). Immigrant dehumanization (personality) = denial of uniquely human personality traits to immigrants; immigrant dehumanization (emotions) = denial of uniquely human emotions to immigrants. For ease of interpretation disturbances and correlations are not shown. *\( p < .05 \), ***\( p \leq .001 \).
direct path from the targeted contrast to immigrant prejudice, which became non-significant. The final trimmed model accounted for 40% of the variability in immigrant prejudice and 37% of the variability in animal prejudice with the model showing strong fit to the data, $x^2(10) = 12.58, p = .248$, CFI = .992, RMSEA = .042 (confidence interval .000 -.105), and SRMR = .054. Furthermore, change in model fit was assessed using the chi-squared difference test, which was non-significant, $x^2_D(5) = 5.50, p = .358$, suggesting that there was no decrease in model fit upon dropping the non-significant paths; therefore, the more parsimonious model (see Figure 3) was retained as the best representation of the data.

Consistent with predictions, all six of the mediators tested in the path model uniquely accounted for the lower levels of prejudices in the key experimental condition. As illustrated in Figure 3, the significantly lower levels of immigrant prejudice within the “animals are similar to humans” condition (vs. combination of the other three conditions) was uniquely mediated by lower levels of immigrant dehumanization (both personality and emotions), more inclusive representation involving immigrants and Canadians, greater immigrant empathy, and lower levels of animal-nature threat, as predicted ($p < .001$). Furthermore, the decrease in prejudice toward non-human animals in the “animals are similar to humans” condition (vs. combination of the other three conditions) was uniquely mediated by lower levels of animal-nature threat, and greater inclusive representations involving animals and humans ($p < .001$).

In summary, this conservative analysis suggests that making salient the commonalities that non-human animals share with humans leads to more favourable attitudes toward non-human animals via lower levels of animal-nature threat, and
heightened perceptions that non-human animals and humans share a common ingroup. Perhaps more impressively, the key animal-human similarity manipulation also resulted in significantly lower prejudice toward immigrants in part through decreasing one’s ability to dehumanize immigrants, lowering animal-nature threat, increasing inclusive perceptions involving immigrants and Canadians and increasing immigrant empathy.

**Ideological Orientations**

Analyses were first conducted to determine whether the examined ideological orientations were influenced by the experimental manipulation. A series of one-way ANOVAs were conducted with SDO, RWA, or Universal Orientation as the dependent measures and the five experimental conditions as the independent measure. The results indicated that SDO was not influenced by the manipulation, $F(4, 141) = .15, p = .962$ (between-cell comparisons, $ps > .957$), nor were RWA, $F(4, 141) = 1.10, p = .359$ (between-cell comparisons, $ps > .300$), or Universal Orientation, $F(4, 141) = 1.25, p = .294$ (between-cell comparisons, $ps > .334$).

**Social dominance orientation.** A median split was first conducted on Social Dominance Orientation (high SDO = > 2.47). Next a series of 2 (Human-Animal Similarity Manipulation: Similarity vs. Difference) x 2 (Focal Group: Animals vs. Humans) x 2 (SDO: High vs. Low) between subjects ANOVAs with immigrant prejudice, prejudice toward non-human animals, or one of the individual mediators as the dependent measure, were conducted. Planned a priori t-test contrasts were then conducted among participants high in SDO to directly test the hypotheses (see Table 10).

As predicted in Hypothesis 5, the main effect of SDO was significant for all measures, with higher SDO predicting heightened prejudice toward both immigrants,
Table 10.

Summary of Planned Contrasts among Participants High in Social Dominance Orientation (SDO) (Study 3).

<table>
<thead>
<tr>
<th>Similarity Conditions</th>
<th>Difference Conditions</th>
<th>Contrast (+3, -1, -1, -1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High SDO</td>
<td>High SDO</td>
<td></td>
</tr>
<tr>
<td>Animals similar to</td>
<td>Animals inferior to</td>
<td></td>
</tr>
<tr>
<td>Humans</td>
<td>Humans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Animals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contrast</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>t(25)</td>
<td>t(29)</td>
<td></td>
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<tr>
<td>p</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
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</tr>
<tr>
<td>Mean</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>t(54)</td>
<td>t(54)</td>
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</tr>
<tr>
<td>p</td>
<td>p</td>
<td></td>
</tr>
</tbody>
</table>

Mediators

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Mean</th>
<th>t(25)</th>
<th>p</th>
<th>Mean</th>
<th>Mean</th>
<th>t(29)</th>
<th>p</th>
<th>t(54)</th>
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<tbody>
<tr>
<td>Dehumanization (personality)</td>
<td>3.00</td>
<td>3.55</td>
<td>2.33</td>
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<td>-.53</td>
<td>.601</td>
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<td>.012</td>
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<td>Dehumanization (emotion)</td>
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<td>3.10</td>
<td>2.51</td>
<td>.019</td>
<td>3.36</td>
<td>3.38</td>
<td>.02</td>
<td>.985</td>
<td>2.77</td>
<td>.008</td>
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<tr>
<td>Inclusive reps. (immigrants)</td>
<td>3.15</td>
<td>2.88</td>
<td>-0.69</td>
<td>.049</td>
<td>2.52</td>
<td>2.61</td>
<td>.28</td>
<td>.784</td>
<td>-1.59</td>
<td>.118</td>
</tr>
<tr>
<td>Empathy (immigrants)</td>
<td>5.21</td>
<td>4.30</td>
<td>-2.27</td>
<td>.032</td>
<td>3.79</td>
<td>4.05</td>
<td>.52</td>
<td>.605</td>
<td>-3.03</td>
<td>.004</td>
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<tr>
<td>Animal-nature threat</td>
<td>1.50</td>
<td>2.25</td>
<td>2.18</td>
<td>.039</td>
<td>2.14</td>
<td>2.25</td>
<td>.28</td>
<td>.784</td>
<td>2.23</td>
<td>.030</td>
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<tr>
<td>Inclusive reps. (animals)</td>
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<td>2.54</td>
<td>-1.84</td>
<td>.078</td>
<td>2.68</td>
<td>2.08</td>
<td>-2.13</td>
<td>.042</td>
<td>-2.74</td>
<td>.008</td>
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<tr>
<td>Empathy (animals)</td>
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<td>-1.35</td>
<td>.188</td>
<td>5.38</td>
<td>5.37</td>
<td>.02</td>
<td>.981</td>
<td>-0.84</td>
<td>.403</td>
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Criterion Variables

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<th></th>
<th>Mean</th>
<th>Mean</th>
<th>t(25)</th>
<th>p</th>
<th>Mean</th>
<th>Mean</th>
<th>t(29)</th>
<th>p</th>
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<tbody>
<tr>
<td>Immigrant prejudice</td>
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<td>1.97</td>
<td>3.19</td>
<td>.004</td>
<td>1.91</td>
<td>1.91</td>
<td>-0.01</td>
<td>.994</td>
<td>3.67</td>
<td>&lt;.001</td>
</tr>
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<td>Animal prejudice</td>
<td>2.73</td>
<td>3.17</td>
<td>2.04</td>
<td>.053</td>
<td>2.98</td>
<td>3.02</td>
<td>.19</td>
<td>.848</td>
<td>1.79</td>
<td>.079</td>
</tr>
</tbody>
</table>

Note: N = 58. Contrast = +3 ("animals are similar to humans", n = 13); -1 ("humans are similar to animals", n = 14; "humans are superior to animals", n = 20; and "animals are inferior to humans", n = 11). Dehumanization (personality) = denial of uniquely human traits to immigrants; dehumanization (emotions) = denial of uniquely human (secondary) emotions to immigrants; inclusive reps. = inclusive representations.
$F(1, 112) = 19.58, p < .001$, and non-human animals, $F(1, 112) = 20.59, p < .001$, greater immigrant dehumanization (personality), $F(1, 112) = 8.97, p = .003$, greater immigrant dehumanization (emotions), $F(1, 112) = 6.79, p = .010$, less inclusive representations involving immigrants and Canadians, $F(1, 112) = 22.08, p < .001$, less empathy toward immigrants, $F(1, 12) = 15.63, p < .001$, more animal-nature threat, $F(1, 112) = 9.48, p = .003$, less inclusive representations involving animals and humans, $F(1,112) = 19.71, p < .001$, and less empathy toward non-human animals, $F(1, 112) = 5.43, p = .022$. See Table 7 for the strength of these relations.

There were no significant three-way interactions \(^8\), suggesting that SDO did not moderate the Human-Animal Similarity Manipulation x Focal Group interaction pattern ($Fs < 1.63, ps > .204$). As indicated in Table 10, a priori contrasts among participants high in SDO revealed a familiar interaction pattern. Consistent with Hypothesis 6, high SDOs in the “animals are similar to humans” condition (vs. “humans are similar to animals”) exhibited lower levels of prejudice toward both immigrants ($d = 1.28$) and non-human animals ($d = .82$), in addition to decreased immigrant dehumanization ($d_{personality} = .93; d_{emotions} = 1.00$), greater immigrant empathy ($d = .91$), and lower levels of animal-nature threat ($d = .87$). Furthermore, among high SDOs, there were no significant differences in prejudice or the prejudice correlates between the humans are superior to animals condition versus the animals are inferior to humans condition.

These interaction patterns suggest that even participants high in SDO (i.e., highly prejudiced and dominant people) were significantly and positively affected by the key similarity condition, in which animals were described as similar to humans. Indeed,

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\(^8\) There were also no significant three-way interactions (Human-animal Similarity Condition x Focal Group x SDO) for any of the prejudice measures or mediators, when SDO was treated as a continuous variable ($fs < .25, ps > .235$).
consistent with predictions, high SDOs in the “animals are similar to humans” condition (vs. combination of the other three conditions) exhibited lower levels of prejudice toward immigrants, marginally lower levels of prejudice toward non-human animals, decreased immigrant dehumanization (both measures), heightened immigrant empathy, lower levels of animal-nature threat, and more inclusive representations involving animals (see Table 10, contrast weights = +3 vs. -1, -1, -1). Tests of the differences among the other three conditions revealed only one significant difference; high SDOs exhibited more inclusive representations involving animals and humans, in the “animals are inferior to humans” condition than the “humans are superior to animals” condition, \( t(29) = -2.13, p = .042 \).

Right-wing authoritarianism. A median split was first conducted on Right-Wing Authoritarianism (high RWA = > 3.17). Next, a series of 2 (Human-Animal Similarity Manipulation: Similarity vs. Difference) x 2 (Focal group: Animals vs. Humans) x 2 (RWA: High vs. Low) between subjects ANOVAs with immigrant prejudice, non-human animal prejudice, or one of the mediators as the dependent measure were conducted followed by planned a priori contrasts among participants high in RWA (see Table 11). Consistent with expectations, there was a significant main effect of RWA on several of the measures, with higher RWA predicting heightened prejudice toward both immigrants, \( F(1,112) = 27.75, p < .001 \), and non-human animals, \( F(1,112) = 18.58, p < .001 \), greater immigrant dehumanization (emotions), \( F(1,112) = 8.30, p = .005 \), less empathy toward immigrants, \( F(1,112) = 9.63, p = .002 \), more animal-nature threat, \( F(1,112) = 3.98, p = .048 \), and less inclusive representations involving animals and humans, \( F(1,112) = 13.41, p < .001 \). See Table 7 for strength of these relations.
Table 11.

Summary of Planned Contrasts among Participants High in Right-wing Authoritarianism (RWA) (Study 3).

<table>
<thead>
<tr>
<th>High RWA</th>
<th>Similarity Conditions</th>
<th>Difference Conditions</th>
<th>Contrast (+3, -1, -1, -1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Animals similar to</td>
<td>Animals inferior to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humans similar to</td>
<td>Humans superior to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humans</td>
<td>Animals</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Mean</td>
<td>t(26)</td>
</tr>
<tr>
<td>Mediators</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dehumanization (personality)</td>
<td>2.96</td>
<td>3.30</td>
<td>1.33</td>
</tr>
<tr>
<td>Dehumanization (emotions)</td>
<td>2.18</td>
<td>3.10</td>
<td>2.33</td>
</tr>
<tr>
<td>Inclusive reps. (immigrants)</td>
<td>3.40</td>
<td>3.25</td>
<td>-0.39</td>
</tr>
<tr>
<td>Empathy (immigrants)</td>
<td>5.19</td>
<td>4.39</td>
<td>-1.76</td>
</tr>
<tr>
<td>Animal-nature threat</td>
<td>1.62</td>
<td>2.00</td>
<td>1.22</td>
</tr>
<tr>
<td>Inclusive reps. (animals)</td>
<td>2.88</td>
<td>2.97</td>
<td>0.24</td>
</tr>
<tr>
<td>Empathy (animals)</td>
<td>5.92</td>
<td>5.21</td>
<td>-1.72</td>
</tr>
<tr>
<td>Criterion Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immigrant prejudice</td>
<td>1.22</td>
<td>1.99</td>
<td>2.99</td>
</tr>
<tr>
<td>Animal prejudice</td>
<td>2.61</td>
<td>2.96</td>
<td>1.45</td>
</tr>
</tbody>
</table>

Note: N = 63. Contrast = +3 (“animals are similar to humans”, n = 13) -1 (“humans are similar to animals”, n = 15; “humans are superior to animals”, n = 19; and “animals are inferior to humans”, n = 16). Dehumanization (personality) = denial of uniquely human traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants; inclusive reps. = inclusive representations.
The three-way interaction\(^9\) (Human-Animal Similarity Manipulation x Focal Group x RWA) was significant with immigrant prejudice as the dependent variable; \(F(1, 112) = 4.78, p = .031\), whereas all other three-way interactions were non-significant (\(Fs < 2.95, ps > .090\)). As indicated in Table 11, a priori contrasts among participants high in RWA revealed a familiar interaction pattern for immigrant prejudice and immigrant dehumanization (emotions). In support of predictions, high RWAs exhibited lower levels of prejudice toward immigrants (\(d = 1.17\)) and lower levels of immigrant dehumanization (emotions) (\(d = .91\)) in the “animals are similar to humans” condition versus the “humans are similar to animals” condition. Among high RWAs, prejudice levels or mediators did not significantly differ based on whether humans were described as superior to other animals, or animals as inferior to humans.

Therefore, even high RWAs were positively affected by the key similarity condition describing animals as similar to humans. Indeed, as predicted, high RWAs in the key “animals are similar to humans” condition (vs. combination of the other three conditions) exhibited lower levels of prejudice toward both immigrants and non-human animals, lower levels of dehumanization, increased empathy toward immigrants, and more inclusive representations involving animals and humans (see Table 11; contrast weights = +3 vs. -1, -1, -1). Tests of the differences among the other three conditions revealed one significant difference; high RWAs exhibited less inclusive representations involving animals in the “humans are superior to animals” condition versus the “humans are similar to animals” condition, \(t(29) = -2.13, p = .042\).

\(^9\) There were no significant three-way interactions (Human-animal Similarity Condition x Focal Group x RWA) for any of the prejudice measures or mediators, when RWA was treated as a continuous variable (\(\beta$s $< 1.69, ps > .05\)).
Universal orientation. A median split was first conducted on Universal Orientation (high Universal Orientation = > 3.43). Next, a series of 2 (Human-Animal Similarity Manipulation: Similarity vs. Difference) x 2 (Focal Group: Animals vs. Humans) x 2 (Universal Orientation: High vs. Low) between subjects ANOVAs with immigrant prejudice, prejudice toward non-human animals, or one of the individual mediators as the dependent measure were conducted. Planned a priori contrasts were then conducted among participants high in Universal Orientation to directly test the predictions (see Table 12).

Consistent with predictions, there was a significant main effect of Universal Orientation on all measures, with high Universal Orientation predicting lower prejudice toward immigrants, \(F(1,112) = 5.29, p = .023\) and non-human animals, \(F(1,112) = 11.53, p < .001\), lower levels of immigrant dehumanization (personality), \(F(1, 112) = 12.10, p < .001\) and immigrant dehumanization (emotions), \(F(1,112) = 5.51, p = .021\), more inclusive representations involving immigrants and Canadians, \(F(1, 112) = 13.39, p < .001\), greater immigrant empathy, \(F(1,112) = 16.32, p < .001\), decreased animal-nature threat, \(F(1,112) = 9.43, p = .003\), marginally more inclusive representations involving animals and humans, \(F(1,112) = 3.64, p = .059\), and greater animal empathy, \(F(1, 112) = 8.50, p = .004\). See Table 7 for the strength of these relations.

The three-way interaction\(^{10}\) (Human-Animal Similarity Manipulation x Focal Group x Universal Orientation) was significant for animal-nature threat, \(F(1,112) = 3.88, p = .051\), and marginally significant for immigrant dehumanization (emotions), \(F(1,112) = 3.72, p = .056\); there were no other significant three-way interactions (\(Fs < 2.38, ps > \)

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\(^{10}\) There was a significant three-way interaction (Human-animal Similarity Condition x Focal Group x Universal Orientation) for immigrant prejudice when Universal Orientation was treated as a continuous variable (\(\beta = -2.02, ps = .022\)). There were no other significant three-way interactions.
Table 12.

*Summary of Planned Contrasts among Participants High in Universal Orientation (Study 3).*

<table>
<thead>
<tr>
<th>High Universal Orientation</th>
<th>Similarity Conditions</th>
<th>Difference Conditions</th>
<th>Contrast (+3 -1 -1 -1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animals similar to Humans</td>
<td>Mean: 2.91, Mean: 3.19, t(30) = 2.01, p = .319</td>
<td>Mean: 3.22, Mean: 3.10, t(32) = -.39, p = .703</td>
<td>1.13, p = .262</td>
</tr>
<tr>
<td>Animals similar to Animals</td>
<td>Mean: 2.07, Mean: 2.89, t(30) = 2.49, p = .019</td>
<td>Mean: 2.08, Mean: 2.83, t(32) = 2.10, p = .044</td>
<td>2.01, p = .048</td>
</tr>
</tbody>
</table>

**Mediators**

| Dehumanization (personality) | Mean: 3.80, Mean: 3.75, t(30) = -.15, p = .884 | Mean: 3.34, Mean: 3.04, t(32) = -.92, p = .365 | -1.66, p = .102 |
| Empathy (immigrants)         | Mean: 5.54, Mean: 4.88, t(30) = -1.98, p = .057 | Mean: 5.34, Mean: 4.79, t(32) = -1.70, p = .099 | -2.14, p = .037 |
| Animal-nature threat        | Mean: 1.45, Mean: 1.46, t(30) = .04, p = .972 | Mean: 1.44, Mean: 1.78, t(32) = 1.02, p = .314 | .48, p = .631 |
| Inclusive reps. (immigrants) | Mean: 3.40, Mean: 3.42, t(30) = .06, p = .957 | Mean: 2.94, Mean: 2.58, t(32) = -1.10, p = .279 | -1.76, p = .083 |
| Empathy (animals)            | Mean: 5.87, Mean: 5.81, t(30) = -.19, p = .853 | Mean: 6.04, Mean: 5.82, t(32) = -.80, p = .430 | .05, p = .961 |

**Criterion Variables**

| Immigrant prejudice         | Mean: .90, Mean: 1.63, t(30) = 3.36, p = .002 | Mean: 1.22, Mean: 1.55, t(32) = 1.44, p = .161 | 3.36, p = .001 |
| Animal prejudice            | Mean: 2.42, Mean: 2.57, t(30) = .64, p = .528 | Mean: 2.61, Mean: 2.55, t(32) = -.31, p = .756 | .97, p = .337 |

Note: N = 66. Contrast = +3 ("animals are similar to humans" condition, n = 20) -1 ("humans are similar to animals", n = 12; "humans are superior to animals", n = 18; and "animals are inferior to humans", n = 16). Dehumanization (personality) = denial of uniquely human traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants; inclusive reps. = inclusive representations.
As indicated in Table 12, a priori contrasts among participants high in Universal Orientation revealed a pattern that was inconsistent with predictions. That is, contrary to the expectation that there would be no differences among the experimental conditions, even participants high in Universal Orientation in the “animals are similar to humans” condition versus the “humans are similar to animals” condition exhibited lower levels of prejudice toward immigrants ($d = 1.23$), lower levels of immigrant dehumanization (emotions) ($d = .91$), and marginally greater empathy toward immigrants ($d = .73$). However, participants high in Universal Orientation also exhibited greater immigrant dehumanization (emotions) ($d = .74$) in the “humans are superior to animals” condition versus the “animals are inferior to humans” condition.

Interestingly, these results indicate that the key “animals are similar to humans” condition also exerts a positive influence on people high in Universal Orientation (i.e., non-prejudiced people). Indeed, contrary to original predictions, participants high in Universal Orientation exhibited lower levels of prejudice toward immigrants, lower levels of immigrant dehumanization (emotions), and increased empathy towards immigrants in the “animals are similar to humans” condition (vs. combination of the other three conditions) (see Table 12; contrast weights = +3 vs. -1, -1, -1). Tests of the differences among the other three conditions revealed that participants high in Universal Orientation exhibited less inclusive representations involving animals in the “humans are superior to animals” versus the “humans are similar to animals” condition, $t(28) = 2.91, p = .007$, as well as greater immigrant dehumanization (emotions) in both the “humans are similar to animals”, $t(26) = 2.21, p = .036$ and “humans are superior to animals”, $t(32) = 2.10, p = .044$, conditions versus the “animals are inferior to humans” condition.
Therefore, participants high in Universal Orientation seem susceptible to the manipulations in both the positive and negative direction, like most participants.

*Control group comparisons.* A series of one-tailed *t*-tests were conducted comparing those high in the examined ideological orientations in the “animals are similar to humans” condition versus the neutral control condition on all variables. Consistent with expectations, participants high in SDO in the key “animals are similar to humans” condition (vs. the neutral control condition) exhibited significantly lower levels of immigrant prejudice, *t*(25) = 2.06, *p* = .025 (*d* = .82), reduced immigrant dehumanization (emotions), *t*(25) = 1.80, *p* = .042 (*d* = .72), heightened inclusive representations of immigrants and Canadians, *t*(25) = -2.26, *p* = .017 (*d* = .90), and greater empathy toward immigrants, *t*(25) = -2.84, *p* = .005 (*d* = 1.14). However, there were no significant differences in prejudice toward non-human animals, *t*(25) = -0.09, *p* = .466, immigrant dehumanization (personality), *t*(25) = .69, *p* = .248, animal-nature threat, *t*(25) = -0.35, *p* = .364, inclusive representations involving animals and humans *t*(25) = -0.78, *p* = .221, or empathy toward non-human animals, *t*(25) = -0.63, *p* = .268.

Furthermore, participants high in RWA in the key “animals are similar to humans” condition (vs. the neutral control condition) exhibited significantly lower levels of immigrant dehumanization (personality), *t*(22) = 2.60, *p* = .008 (*d* = 1.11), heightened inclusive representations involving animals and humans *t*(22) = 2.33, *p* = .015 (*d* = .99), and marginally lower levels of immigrant prejudice, *t*(22) = 1.63, *p* = .058 (*d* = .70). Contrary to expectations, there were no significant differences on prejudice toward non-human animals *t*(22) = -0.32, *p* = .376, immigrant dehumanization (emotions), *t*(22) = .57, *p* = .287, inclusive representations involving immigrants and Canadians, *t*(22) = -
1.42, \( p = .085 \), immigrant empathy, \( t(22) = -.89, p = .192 \), animal-nature threat, \( t(22) = .07, p = .471 \), or animal empathy, \( t(22) = .27, p = .396 \).

Additionally, participants high in Universal Orientation in the key “animals are similar to humans” condition (vs. the neutral control condition) exhibited significantly heightened inclusive representations involving immigrants and Canadians \( t(28) = -1.98, p = .029 \) \( (d = .75) \), and higher levels of animal-nature threat, \( t(28) = -1.91, p = .033 \) \( (d = .72) \). There were no significant differences on immigrant prejudice, \( t(28) = .78, p = .221 \), prejudice toward non-human animals, \( t(28) = .36, p = .363 \), immigrant empathy, \( t(28) = -1.09, p = .144 \), inclusive representations involving animals and humans, \( t(28) = .93, p = .180 \), or animal empathy \( t(28) = -.52, p = .305 \).

Mediation analyses among participants high in the examined ideological orientations

Mediation analyses were conducted to examine whether the potential mediators explained the significant decrease in prejudice in the key “animals are similar to humans” condition (vs. the three other conditions) among participants high in SDO, RWA, or Universal Orientation. Mediation results and Sobel significance tests are presented in Table 13. In the interest of brevity, only significant results are discussed.

Mediation of the relation between the key similarity condition and prejudice.

Consistent with predictions, the lower levels of immigrant prejudice among high SDOs in the key “animals are similar to humans” condition (vs. combination of the other three conditions), was in part, due to decreased immigrant dehumanization (emotions) and greater immigrant empathy. Additionally the lower levels of prejudice toward non-human animals among high SDOs was significantly mediated by greater inclusive representations involving animals. Similarly, among high RWAs, decreased immigrant
Table 13.

Mediation among participants high in the examined ideological Orientations (SDO, RWA, Universal Orientation) (Study 3).

<table>
<thead>
<tr>
<th>Predictor (x) → Mediator (m) → Criterion (y)</th>
<th>High Social Dominance Orientation (n = 58)</th>
<th>High Right-Wing Authoritarianism (n = 63)</th>
<th>High Universal Orientation (n = 66)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β(m)</td>
<td>β(ym.x)</td>
<td>Sobel (z)</td>
</tr>
<tr>
<td>DV: Immigrant Prejudice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contrast → dehumanization (personality) → immigrant prejudice</td>
<td>-.31**</td>
<td>.27*</td>
<td>-1.44</td>
</tr>
<tr>
<td>Contrast → dehumanization (emotions) → immigrant prejudice</td>
<td>-.34**</td>
<td>.36**</td>
<td>-1.88*</td>
</tr>
<tr>
<td>Contrast → inclusive reps. (immigrants) → immigrant prejudice</td>
<td>.18</td>
<td>-.31**</td>
<td>-1.39</td>
</tr>
<tr>
<td>Contrast → empathy (immigrants) → immigrant prejudice</td>
<td>.34**</td>
<td>-.32**</td>
<td>-2.26*</td>
</tr>
<tr>
<td>Contrast → animal-nature threat → immigrant prejudice</td>
<td>-.29*</td>
<td>.31**</td>
<td>-1.72</td>
</tr>
<tr>
<td>DV: Animal Prejudice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contrast → inclusive reps. (animals) → animal prejudice</td>
<td>.32**</td>
<td>-.46***</td>
<td>-1.92*</td>
</tr>
<tr>
<td>Contrast → Empathy (animals) → animal prejudice</td>
<td>.10</td>
<td>-.52***</td>
<td>-.82</td>
</tr>
<tr>
<td>Contrast → animal-nature threat → animal prejudice</td>
<td>-.29*</td>
<td>.15</td>
<td>-1.23</td>
</tr>
</tbody>
</table>

Note. β(mx) = the standardized effect of predictor on mediator; β(ym.x) = standardized effect of mediator on criterion controlling for predictor. Contrast: +3 (animals similar to humans), -1 (humans similar to animals, humans superior to animals, animals inferior to humans); dehumanization (personality) = denial of uniquely human personality traits to immigrants; dehumanization (emotions) = denial of uniquely human emotions to immigrants; inclusive reps. = inclusive representations. *p ≤ .05; **p < .01; ***p < .001.
dehumanization (both personality and emotions) and greater immigrant empathy significantly mediated the effect of the "animals are similar to humans" condition (vs. combination of the other three conditions) on immigrant prejudice. However, among participants high in Universal orientation, there were no significant mediators for the effect of the key Similarity condition on prejudice toward non-human animals or immigrants.

Therefore, overall, the "animals are similar to humans" experimental condition (vs. the combination of the other three conditions) was successful at improving prejudice toward immigrants among naturally prejudiced people (i.e., high in SDO or RWA), through reducing their ability to dehumanize immigrants, and by increasing immigrant empathy. For those high in SDO, heightened human-animal inclusive cognitive representations mediated the key Similarity manipulation’s effect on attitudes toward non-human animals.

Reactions to the author of the editorial and the editorial content. Additional analyses were conducted to determine whether the experimental conditions influenced participant’s opinions of the author and/ or the editorial content. The omnibus F-test for the extent to which the author of the editorial was perceived to be intelligent was significant, $F(4, 141) = 3.27, p = .013$. Follow-up t-tests indicated that participants in the "animals are similar to humans" condition ($M = 5.37, SD = .81$) were more likely to perceive the author as being intelligent than participants in the "humans are superior" [$M = 4.88, SD = .88, t(62) = -2.28, p = .026$], "animals are inferior" [$M = 4.75, SD = 1.11, t(56) = -2.43, p = .018$], and neutral control [$M = 4.42, SD = 1.06, t(54) = -3.76, p < .001$] conditions, but not the "humans are similar to animals" condition ($M = 5.00, SD = 1.19$).
The omnibus F-test for the extent to which participants disagreed with the author’s opinion was also significant, $F(4, 141) = 3.03, p = .020$, in that participants in the neutral control condition ($M = 2.54, SD = 1.30$) were less likely to disagree with the author’s opinion compared to participants in the “humans are superior” [$M = 3.88, SD = 1.52, t(58) = -3.62, p < .001$], “animals are inferior” [$M = 3.79, SD = 1.83, t(52) = -2.86, p = .006$], and the “humans are similar to animals” [$M = 3.62, SD = 1.83, t(52) = -2.43, p = .018$] conditions, but not the “animals are similar to humans” condition [$M = 3.30, SD = 1.62, t(54) = -1.92, p = .061$]. Additionally, the omnibus F-test for the editorial quality was significant, $F(4, 141) = 5.69, p = .030$, in that participants in the “animals are similar to humans” condition ($M = 4.97, SD = 1.16$) were more likely to report that the editorial quality was strong compared to participants in the “humans are superior” [$M = 4.26, SD = 1.42, t(62) = -2.15, p = .036$], “animals are inferior” [$M = 3.82, SD = 1.54, t(56) = -3.21, p = .002$], “humans are similar to animals” [$M = 4.00, SD = 1.56, t(56) = -2.69, p = .009$], and the neutral control [$M = 4.11, SD = 1.48, t(54) = -2.41, p = .019$] conditions. The experimental manipulation did not significantly influence the extent to which participants reported liking the author, $F(4, 141) = 1.83, p = .126$, nor the extent to which the author was perceived as poorly informed, $F(4, 141) = 1.59, p = .180$. 
Discussion

Study 3 attempted to examine the different ways of conceptualizing human-animal similarity (i.e., humans are similar to animals vs. animals are similar to humans), with the expectation that the different conceptualizations may exert divergent effects on intergroup attitudes. More specifically, human-animal similarity was expected to exert negative effects on prejudiced attitudes and prejudice correlates when humans were described as similar to animals. On the other hand, human-animal similarity was expected to exert positive effects when animals were described as similar to humans.

This broadened conceptualization of human-animal similarity allowed us to interpret the contradictory theoretical predictions based on Terror Management Theory (Solomon et al., 1991) and Common Ingroup Identity Model (Gaertner et al., 1993) for the effects of human-animal similarity on prejudice.

Making the distinction between the two conceptualizations of human-animal similarity (i.e., animals are similar to humans vs. humans are similar to animals) proved beneficial. In support of predictions, there was a significant decrease in prejudice toward both non-human animals and immigrants in the key similarity condition, in which non-human animals were described as similar to humans compared to when humans were described as similar to other animals. These results highlight the importance of examining both types of human-animal similarity, given that they exert opposing effects on prejudiced attitudes.

Furthermore, prejudice toward both non-human animals and immigrants was significantly lower in the key similarity condition versus the weighted combination of the other three conditions (i.e., humans are similar to animals, humans are superior to
animals, animals are inferior to humans). There were no significant differences among the Difference conditions that emphasized the human-animal divide and the “humans are similar to animals” condition; prejudice levels in these conditions were equally as high.

Impressively, immigrant prejudice in the key similarity condition was also significantly lower than the neutral control condition. This significant difference suggests that the differences in immigrant prejudice among experimental conditions was perhaps the result of reduced prejudice in the key similarity condition, rather than heightened prejudice in the other three conditions. In contrast, prejudice toward non-human animals in the key similarity condition was not significantly lower than the control condition. Therefore, it is uncertain as to whether prejudice toward non-human animals was actually reduced or whether it was heightened in the other experimental conditions.

The “animals are similar to humans” manipulation (vs. weighted combination of the other three conditions) also exerted positive effects on the prejudice correlates. Specifically, participants in the key similarity condition (vs. humans are similar to animals) also exhibited a reduced tendency to dehumanize immigrants, lower levels of animal-nature threat, and a greater tendency to perceive humans and other animals as belonging to an inclusive ingroup (“animal-kind”). Furthermore, when tested individually or simultaneously in a path model (see Figure 3), the prejudice correlates (with the exclusion of animal empathy) availed as significant mediators of the lower prejudice toward non-human animals and/or immigrants in the key “animals are similar to humans” condition.

The key similarity condition seemed to be particularly effective at decreasing the meaningfulness of dehumanization. That is, when non-human animals were described as
similar to humans, immigrants were to some extent "re-humanized", which in part accounted for the lower levels of prejudice toward immigrants. Additionally, participants in the "animals are similar to humans" condition exhibited decreased feelings of threat regarding their personal similarity to other animals, which also partly accounted for the lower levels of prejudice toward immigrants.

Previous research indicates that inclusive intergroup representations that are induced through emphasizing similarities among social categories lead to reduced intergroup bias (Gaertner & Dovidio, 2000; see also Hodson et al., under review). Similarly, in the present investigation, participants were more likely to endorse representations of immigrants and Canadians as part of an inclusive ingroup when animals were described as similar to humans, which in part lead to lower levels of immigrant prejudice. Similarly, participants in the key similarity condition were also more likely to endorse representations of animals and humans as part of an inclusive ingroup ("animal-kind"), which in part accounted for the significantly lower levels of prejudice toward non-human animals.

Previous research also suggests that perceived "similarity" plays an important role in influencing feelings of empathic concern (Brown et al., 1996). In support of this proposition, participants in the present study exhibited increasingly higher levels of empathic concern for immigrants in the key similarity condition, which also uniquely accounted for the lower levels of prejudice toward immigrants. However, contrary to expectations, empathic concern for non-human animals did not avail as a unique mediator of prejudice toward non-human animals. Examination of the descriptive statistics (see
Table 6) indicates that the mean levels of empathy towards non-human animals were high in all five conditions, perhaps resulting in a ceiling effect.

Impressively, even among participants naturally high in prejudice (i.e., high in Social Dominance Orientation or Right-Wing Authoritarianism), prejudice toward both non-human animals and immigrants were significantly lower under the key “animals are similar to humans” manipulation (vs. combination of the other three conditions).

Furthermore, immigrant prejudice among people high in SDO or RWA in the key similarity condition was significantly lower than the neutral control condition. These findings suggest that immigrant prejudice may have been reduced among highly prejudiced people. Furthermore, none of the ideological orientations were significantly influenced by the experimental manipulation, which provides strong evidence that the ideological orientations predict human-animal similarity and not the reverse.

Impressively, participants high in SDO or RWA under the “animals are similar to humans” manipulation (vs. combination of other three conditions) exhibited lower levels of dehumanization and increased empathy toward immigrants, both of which accounted for the lower levels of immigrant prejudice. In regards to non-human animal prejudice, participants high in SDO assigned to the key similarity condition were more likely to endorse representations of humans and animals as part of an inclusive ingroup (i.e., “animal-kind”), which in part accounted for their lower levels of prejudice toward non-human animals. These results are impressive given that the key similarity manipulation exerted a positive influence on highly prejudiced people who naturally perceive humans as superior to other animals. Surprisingly, the “animals are similar to humans” manipulation was also effective among naturally non-prejudiced people (i.e., high in
Universal Orientation). That is, people high in Universal Orientation in the key similarity condition also exhibited significantly lower immigrant prejudice, a decreased tendency to dehumanize immigrants, and greater immigrant empathy. However, none of the mediators significantly accounted for the lower levels of immigrant prejudice for participants high in Universal Orientation.

Overall, our attempt to identify the differential effects of the two different ways to conceive of human-animal similarity proved fruitful. In general, Study 3 demonstrated that immigrant and non-human animal prejudices, even among highly prejudiced people, can be improved by emphasizing how animals are similar to humans (vs. humans similar to animals). Additionally, Study 3 also identified some of the mechanisms through which the key similarity manipulation exerted its effects on prejudiced attitudes, including the "re-humanization" of immigrants.
General Discussion

Moral philosophers and animal-activists have implied an association between attitudes toward non-human animals and attitudes toward marginalized human outgroups. Very few studies, however, have tested this relation empirically. The general purpose of the present investigation was to empirically examine the relation between prejudiced attitudes toward human outgroups and non-human animals, and whether human-animal similarity availed as a common predictor of both types of attitudes. Furthermore, Study 3 examined whether inducing perceptions of human-animal similarity through experimental manipulation would lead to lower levels of prejudice toward non-human animals and immigrants. These predictions were also tested among people believed to be naturally high or low in prejudice, and/or naturally inclined to perceive humans as superior or similar to other animals. Furthermore, dehumanization, animal-nature threat, inclusive intergroup representations, and empathy were considered as explanations for the expected lower levels of prejudice.

The present investigation uncovered an empirical relation between human and non-human animal attitudes. That is, people who exhibited higher prejudice toward human outgroups were also more likely to endorse prejudiced attitudes toward non-human animals. This relation was found by measuring basic favourable and unfavourable attitudes toward various human outgroups and animal species in Study 1, and attitudes toward the rights and welfare of non-human animals and immigrants in Study 2. Study 2 also revealed that prejudiced attitudes toward both immigrants and non-human animals shared a common underlying predictor. Specifically, greater perceptions that humans are superior to other animals directly predicted heightened prejudice toward non-human
animals. Beliefs that humans are superior to other animals also predicted heightened prejudice toward immigrants, and this relation was mediated by dehumanization. That is, greater perceptions of humans as superior (vs. similar) to other animals “allowed for” greater immigrant dehumanization, and ultimately heightened immigrant prejudice. Study 2 also revealed that people higher in SDO or RWA were especially likely to perceive humans as superior (vs. similar) to other animals. Whether tested individually or simultaneously, the relation between higher SDO or RWA and prejudice toward non-human animals or immigrant dehumanization were mediated by greater perceptions that humans are superior to other animals. On the other hand, people high in Universal Orientation were especially likely to perceive humans and other animals as similar. When tested individually, greater perceptions of human-animal similarity accounted for the lower levels of prejudice toward non-human animals, and decreased immigrant dehumanization exhibited by people higher in Universal Orientation.

Having established that perceptions of human-animal similarity are important in predicting prejudice toward both non-human animals and immigrants, Study 3 sought to experimentally manipulate human-animal similarity to better interpret the causality implied by the results of Study 2. Participants were randomly assigned to a neutral control condition, or to one of four experimental conditions in which they read an editorial that described animals as similar to humans, humans as similar to other animals, animals as inferior to humans, or humans as superior to animals. Somewhat consistent with Terror Management Theory (Solomon et al., 1991), participants in the condition describing “humans as similar to animals” exhibited higher levels of prejudice towards non-human animals and immigrants compared to the “animals are similar to humans”
condition. In fact, prejudice levels in the “humans are similar to animals” condition were comparable to the higher levels of prejudice in the conditions that highlighted the human-animal divide (i.e., humans are superior or animals are inferior). This finding implies that humans may indeed be threatened by their animal-nature specifically resulting in negative reactions towards non-human animals and immigrants.

More encouragingly, when animals were described as similar to humans (vs. the other three experimental conditions) prejudice toward non-human animals and immigrants was significantly lower, as predicted. However only prejudice toward immigrants was significantly lower in the key similarity condition compared to the neutral control condition, suggesting that only immigrant (not animal) prejudice was perhaps reduced in this key Similarity condition.

The present investigation also revealed some of the mechanisms through which the key experimental condition exerted its effects on prejudice. The lower levels of prejudice toward non-human animals under the “animals are similar to humans” manipulation was uniquely accounted for by decreased feelings of personal threat over one’s animal-nature, and greater representations that humans and non-human animals belong to the same inclusive ingroup (“animal-kind”). Consistent with the correlational findings in Study 2, describing animals as similar to humans led to a decreased tendency to dehumanize immigrants, a process that we refer to as “re-humanization”. Furthermore, the “re-humanization” process in part accounted for the lower levels of immigrant prejudice in the key similarity condition. In addition, lower levels of animal-nature threat, greater representations that immigrants and Canadians belong to the same inclusive
ingroup, and increased empathy towards immigrants each uniquely accounted for the lower levels of prejudice toward immigrants in the key similarity condition.

Impressively, people naturally high in prejudice (i.e., high in SDO or RWA) also exhibited lower levels of prejudices in the key “animals are similar to humans” condition. Specifically, participants high in SDO reported decreased prejudice toward immigrants, which was accounted for by a reduced tendency to dehumanize immigrants, and heightened immigrant empathy. Similarly, participants high in RWA also exhibited decreased prejudice towards both immigrants and non-human animals in the key similarity condition. Similar to high SDOs, the decrease in immigrant prejudice among high RWAs in the key similarity condition was accounted for by a reduced tendency to dehumanize immigrants, and heightened immigrant empathy. Immigrant prejudice, among high SDOs or RWAs, was also lower in the key similarity condition than in the neutral control condition, proving further evidence that prejudice toward immigrants was likely reduced among highly prejudiced people. The key similarity condition was so effective that it even improved attitudes toward immigrants among people who are naturally non-prejudiced (i.e., high in Universal Orientation).

**Implications for Theory and Future Research**

It is important to emphasize that the results of the present research do not insinuate that all people who view humans as different or even superior to other animals are prejudiced. Nor do our results suggest that all people who consume or occasionally exploit non-human animals are higher in prejudice. The results may suggest that viewing humans as *different* from other animals implies that humans are *superior*; however, the relation is likely much more complex. For example, it is reasonable to conceive of
someone who perceives humans and animals as differing in degree (i.e., not kind) but still deserving of equal consideration. The complexity of the human-animal relationship is further demonstrated by the fact that many people exhibit favourable attitudes toward some non-human animal species (e.g., companion animals such as dogs and cats), but are indifferent or cruel to others (e.g., farm animals). For example, some people claim that they “like” or even “love” animals, but also believe that it is acceptable to eat animals for dinner, bring their children to circuses, or purchase products that were tested on and/or made from animals. These examples illustrate that, like all intergroup phenomena, the human-animal relationship is very complex and further research is needed to improve our understanding of the dynamics of the relationships between humans and other animals. Perhaps, future studies can further investigate the relation between perceptions of humans as dissimilar versus superior to other animals, or whether human-animal similarity is a better predictor of attitudes towards specific animal species versus “animals” as a general outgroup.

The results of the present investigation offer important contributions to the social categorization perspective of prejudice. Specifically, the present research advances the idea that “animal-kind” rather than “human-kind” is the most inclusive level of social categorization, and that extending our ingroup-boundaries to include non-human animals has important implications for attitudes toward human outgroups. In theory, extending our ingroup boundaries to include all of “animal-kind” should allow human ingroup biases to generalize to all social groups (including non-human animals and dehumanized outgroups), because no social group falls outside the ultimate inclusive boundary of “animal-kind”. In other words, if animals are perceived as similar to humans it will be
much harder for people to justify excluding human outgroups that are lower in the inclusive ingroup hierarchy.

According to the results of Study 3, stressing human-animal similarity alone is not enough to improve attitudes. Human animal similarity only exerted a positive effect on attitudes toward non-human animals and immigrants when non-human animals were described as similar to humans (i.e., *outgroup brought toward ingroup*), as opposed to when humans were described as similar to other animals (i.e., *ingroup brought down to outgroup*). Furthermore, research by Esses et al. (2001) indicates that people higher in SDO reacted less favourably to Common Ingroup Identity manipulations, in which Canadians were described as similar to immigrants (i.e., *ingroup brought down to outgroup*), as opposed to when immigrants were described as similar to Canadians (i.e., *outgroup brought towards ingroup*). Taken together these findings imply that manipulations designed to psychologically bring the outgroup closer to the ingroup (vs. ingroup closer to outgroup) tend to be more effective at reducing prejudice. At the very least, these results highlight the importance of considering which group (i.e., ingroup or outgroup) is described as similar to the other, especially when conducting future research on Terror Management Theory or Common Ingroup Identity Model.

The present research also offers important contributions to the growing interest in dehumanization as a predictor of prejudice. Haslam (2006) argues that animalistic dehumanization implies a vertical comparison between humans and animals, an assumption strongly supported by the present research. That is, animalistic dehumanization was indeed facilitated by greater perceptions that humans are superior (vs. similar) to other animals. In addition, the experimental results of Study 3 revealed
that, when people are induced to perceive animals as similar to humans, their tendency to
dehumanize immigrants is significantly reduced. Perhaps more impressively, the
decreased tendency to dehumanize immigrants in the key experimental condition was
also evident among highly prejudiced people (i.e., SDO or RWA). These results imply
that to some extent immigrants were “re-humanized” under the key similarity condition,
in that they were less likely to be perceived as “inferior” animals. This process essentially
removed the ability of dehumanizing perceptions to emerge and promote prejudice.
Given that no research has yet examined methods for reducing dehumanization, these
results are very powerful and promising. Thus, future research should continue to explore
the role of human-animal similarity and dehumanization in greater depth.

Given that increasingly higher levels of prejudice were exhibited in the
experimental conditions emphasizing the human-animal divide (i.e., humans are superior
to animals, or animals are inferior to humans), it is of importance to determine when in
the developmental lifespan such beliefs appear, and how such beliefs develop. For
example, perhaps children are socialized at a young age to endorse perceptions of human
superiority through religious teachings, parental influence, or early experiences that lead
children to believe that it is acceptable or easy to dominate and victimize non-human
animals. Future research should explore these mechanisms through which beliefs in
human superiority over animals may develop, with the intention of designing appropriate
methods to challenge and/or prevent the development of such beliefs. Furthermore,
perhaps human superiority beliefs are unconscious. For example, C. Hafer (personal
communication, 2007) speculates that beliefs in human-superiority over other animals
represent an implicit fundamental assumption about the world. She suggests that
assumptions of a human-animal discontinuity would have been adaptive in our past, allowing people to justify the exploitation of natural resources (e.g., other animals) for personal gain or survival. Future research is needed to determine if beliefs in human superiority over animals are indeed implicit.

Future research is also needed to establish the long-term effects of the key similarity manipulation on prejudiced attitudes. Longitudinal studies need to be conducted to determine whether prejudice toward immigrants and non-human animals can indeed be reduced under the key Similarity condition, and whether the respective effects are short versus long-term. Furthermore, it would be of interest to determine whether the models proposed in Study 2 and 3 apply to social outgroups other than immigrants, or whether human-animal similarity is restricted to predicting prejudice toward dehumanized outgroups. Given that the key manipulation exerted its effects on prejudice through mediators other than dehumanization (i.e., inclusive intergroup representations, animal nature threat, and empathy) we expect that it would predict prejudice toward other human outgroups as well, although it may be particularly effective for dehumanized outgroups.

Perhaps a limitation to the present investigation is that all of the samples consisted primarily of undergraduate university students who tend to score lower in SDO, RWA, and prejudice than the general population. However, this limitation may also speak to the strength of the results given that strong support was found for most predictions despite having restricted variance on many of the variables. Nonetheless, future research should attempt to replicate the results using a more representative sample. It would also be of interest to determine whether people who regularly exploit non-human animals (e.g.,
farmers, hunters) are especially likely to perceive humans as superior to other animals, and as a result, more likely to dehumanize marginalized outgroups. Furthermore, future cross-cultural research would be of great interest to determine whether the results of the present investigation are relevant for different cultures (i.e., non-westernized cultures). It is reasonable to speculate that perceptions of human superiority over animals, and thus dehumanization, may be less prevalent among cultures where people are inclined to live in harmony with nature, such as Native American cultures.

Future research can also utilize alternative methods for manipulating human-animal similarity. The present investigation manipulated human-animal similarity through editorials that were designed to highlight the similarities or differences between humans and other animals. Previous research indicates that editorials are indeed powerful manipulations that have been very successful at influencing attitudes (see Esses et al., 2008; Maio, Bell, & Esses, 1996). However, under the manipulation used in the present study, prejudice toward non-human animals in the key experimental condition was not significantly lower than the neutral control condition. This non-significant difference raises the question as to whether prejudice toward non-human animals was actually reduced or the result of increasingly higher prejudice in the other conditions\textsuperscript{11}. Perhaps with a stronger manipulation there would have been a significant difference, although this is unlikely given that the manipulation checks all proved successful. Nevertheless, future studies may consider more impactful or engaging stimuli (e.g., video footage depicting non-human animals behaving similarly to humans), with the expectation that stronger manipulations may be even more successful in altering people’s attitudes.

\textsuperscript{11}Supplementary analyses revealed that in comparison to the neutral control condition, prejudice toward non-human animals was significantly greater in the human superiority and animal inferiority experimental conditions.
Practical Implications and Conclusion

The present research has important implications for the animal-rights movement. Specifically, campaigns and literature used by animal-welfare or animal-rights advocates should be designed to highlight the ways in which non-human animals are similar to humans and not the converse. For example, Farm Sanctuary initiated a “Sentient Beings” campaign (Farm Sanctuary, 2008) which advocates for non-human animals that are exploited by agribusiness. More specifically, this campaign uses real-life stories, photographs and other literature to educate people on how farm animals (in particular) are sentient beings who share common emotions and motivations with humans. According to the present findings, it is these types of campaigns and portrayals of non-human animals that serve the best chances of positively influencing people’s attitudes toward non-human animals. On the contrary, campaigns that stress “humans are animals too” might actually backfire and exacerbate prejudice.

The current research also has important social implications for prejudice interventions. Given that prejudice was significantly lower when animals were described as similar to humans, interventions incorporating such representations should be developed. Prejudice interventions generally tend to obtain only moderate success (Finlay & Stephan, 2000), and some interventions even backfire resulting in increasingly higher levels of prejudice (particularly among high SDOs) (Esses et al., 2001). However, an intervention designed to highlight how animals are similar to humans has great potential for success given its subtle nature, and the lack of focus on specific human outgroups. Although people can feel threatened by overly inclusive categorizations (Brewer, 1991; Hornsey & Hogg, 1999; Jetten et al., 2000), incorporating non-human animals into one’s
ingroup does not detract from one’s humanity, and thus, should not be perceived as overly threatening to one’s social identity. Indeed, this is suggested by the present investigation. Overall, such an indirect intervention is likely to be more successful at circumventing the negative or defensive reactions that people higher in prejudice exhibit in response to prejudice interventions.

Perhaps the premise that animals are similar to humans can also be incorporated into early prejudice prevention programs for children. For example, educational programs highlighting the ways in which animals are similar to humans can be implemented into the school systems as compulsory educational lessons. Additionally, programs can be designed to provide children with more frequent opportunities to interact with all types of animals, and to develop human-animal bonds at an early age. Such early prevention programs are imperative for children to learn about the ways in which animals are similar to humans, in hopes that the beneficial impact of these representations on attitudes toward non-human animals will generalize to human outgroups as well.
References


Appendix A: Brock University Ethics Approval

DATE: August 21, 2007

FROM: Linda Rose-Krasnor, Acting Chair Research Ethics Board (REB)

TO:  Gordon Hodson, Psychology
      Kimberly COSTELLO

FILE:  07-029 COSTELLO

TITLE: Attitudes Toward Groups, Animals, and Social Issues

The Brock University Research Ethics Board has reviewed the above research proposal.

DECISION:  Accepted as Clarified.

This project has received ethics clearance for the period of August 21, 2007 to September 1, 2008 subject to full REB ratification at the Research Ethics Board's next scheduled meeting. The clearance period may be extended upon request. The study may now proceed.
Appendix B: Informed Consent

Title of Study: Attitudes toward Groups, Animals, and Social Issues
Principle investigator: Kimberly Costello
M.A. Student, Department of Psychology
Kimberly.costello@brocku.ca (905) 688-5550 (#3714)

Faculty Supervisor: Dr. Gordon Hodson
Assistant professor, Psychology
ghodson@brocku.ca, ext 5127

PURPOSE/INFORMATION: You are being invited to participate in a study investigating personality and attitudes people have toward various groups, animals, and social issues. You will be given 2 copies of this consent form to read and sign, one of which you will keep for your own records. You will then be asked to read a short editorial and complete a series of questionnaires. The duration of your participation is approximately 50 minutes. Upon completion you will be provided with a debriefing which will describe details about the purpose of the study.

RISKS/BENEFITS: Some of the questions may be unpleasant to answer for they deal with sensitive subjects such as race, etc. You may decline to answer any questions or participate in any component of the study. Participation in this study can count as course research participation or you may accept a payment of $5 (you must choose only 1 of these options).

CONFIDENTIALITY: All information provided is considered confidential; your name will not be associated with the data collected in the study. Because we are interested in average responses you will not be identified individually in any written reports of this research. Only the Principal Investigator (Kimberly Costello) & the Faculty Supervisor (Dr. Hodson) will have access to the data, and all information will be stored securely at all times in a locked office. Given the intentions of publishing the results, data will be kept until approximately 5-7 years from date after which all data will be destroyed.

PARTICIPATION: Your participation is completely voluntary and you may decline to participate at any time. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled.

FEEDBACK AND PUBLICATION: The results from this may be used in journal articles or presentations. The results of this research study may be available in July of 2008. Please provide your email address below if you would like to receive a copy of the results.

CONTACT: If you have any questions about this study please contact the Principal Investigator or the Faculty Supervisor (see above). If you have any concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca. This study has received ethics clearance through Brock University’s Research Ethics Board (REB # 07-029)

CONSENT: I have read and understand the above information. I have received a copy of this form. I understand that I may ask questions in the future. I agree to participate in this study.

Please check one of the following:

☐ I am participating in this study for 1 hour of research participation in a course and will not receive payment for participation.

☐ I am participating in this study for $5. This experiment will not count toward research participation hours in a course.

Participant’s Signature: ____________________ Researcher’s Signature: ____________________

If you would like a copy of the results for this study please provide your email address ____________________
Appendix C: Modern Racism Scale

Please circle a number according to the following scale to indicate your agreement or disagreement with the following statements.

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree strongly</td>
<td>Neither agree nor disagree</td>
<td>Agree strongly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Over the past few years, the government and news media have shown more respect for immigrants than they deserve.
   - 0
   - 1
   - 2
   - 3
   - 4

2. It is easy to understand the anger of immigrants in Canada.
   - 0
   - 1
   - 2
   - 3
   - 4

3. Discrimination against immigrants is no longer a problem in Canada.
   - 0
   - 1
   - 2
   - 3
   - 4

4. Over the past few years, immigrants have gotten more economically than they deserve.
   - 0
   - 1
   - 2
   - 3
   - 4

5. Immigrants have more influence on government policies than they ought to have.
   - 0
   - 1
   - 2
   - 3
   - 4

6. Immigrants are getting too demanding in their push for equal rights.
   - 0
   - 1
   - 2
   - 3
   - 4

7. Immigrants should not push themselves where they are not wanted.
   - 0
   - 1
   - 2
   - 3
   - 4
Appendix D: Prejudice toward Non-human Animals Scale (Study 2)

For each statement, please indicate the degree of your agreement or disagreement by writing in a number from 1 to 5 on the line next to it.

5 = agree strongly
4 = agree a little
3 = neither agree nor disagree
2 = disagree a little
1 = disagree strongly

1. Humans have no right to displace wild animals by converting wilderness areas into farmlands, cities and other things designed for people.

2. Animal research cannot be justified and should be stopped.

5. It is wrong to wear clothing made from leather (e.g., shoes, belts, jackets).

6. We need more regulations governing the use of animals in research.

7. It is wrong to eat beef, chicken and other meat.

10. Having extended basic rights to minorities and women, it is now time to extend them also to animals.

12. New surgical procedures and experimental drugs should be tested on animals before they are used on people.

13. I am very concerned about pain and suffering in animals.

14. Since many important questions cannot be answered by doing experiments on people, we are left with no alternatives but to do animal research.

15. There is nothing wrong with wearing animal fur (such as mink coats).

16. It is appropriate for humans to kill animals that destroy human property, for example, rats, mice, and pigeons.

18. Most psychological research done on animals is unnecessary and invalid.

19. Hunters play an important role in regulating the size of animal populations.

20. It is wrong to hunt wild animals just for sport.

21. I do not think that there is anything wrong with using animals for medical research.
22. There should be extremely stiff penalties for people who participate in activities such as cockfighting.

23. Wild animals such as mink and racoons should not be trapped, and their skins made into fur coats.

24. There is nothing wrong with hunting wild animals for food.

25. I think that people who object to raising animals for meat are too sentimental.

26. I think it is perfectly acceptable for cattle, chickens and pigs to be raised for human consumption.

27. Basically, humans have the right to use animals as we see fit.

28. The slaughter of whales and dolphins should be immediately stopped, even if it means some people will be put out of work.

29. I sometimes get upset when I see wild animals in cages at zoos.

30. In general I think that human economic gain is more important than setting aside more land for wildlife.

31. Too much fuss is made over the welfare of animals these days when there are many human problems that need to be solved.

32. Continued research with animals will be necessary if we are to ever conquer diseases such as cancer and AIDS.

33. It is unethical to breed purebred dogs for pets when millions of dogs are killed in animal shelters each year.

34. The use of animals in rodeos and circuses is cruel.

35. The production of inexpensive meat, eggs, and dairy products justifies maintaining animals under crowded conditions.

36. The use of animals such as rabbits for testing the safety of cosmetics and household products is unnecessary and should be stopped.
Appendix E: Human-Animal Similarity Scale (Study 2)

Please indicate the extent to which you agree or disagree with the following statement according to the following scale.

5 = agree strongly  
4 = agree a little  
3 = neither agree nor disagree  
2 = disagree a little  
1 = disagree strongly

1. Humans are not the only creatures who have thoughts; some non-human animals can think too.

2. Some non-human animals have emotions such as affection, anger, or fear.

3. Humans are so vastly different from other life that it’s a mistake to classify humans as animals.

4. Humans evolved from other animals, thus other animals are structurally and mentally similar to humans.

5. A dog or a cat may act as if it is emotional, but it doesn’t really feel emotions like humans do.

6. Humans are superior to animals.

7. Non-human animals can fall in love.

8. The needs of humans should always come before the needs of animals.

9. It is okay to use animals to carry out tasks for humans.

10. It is crazy to think of an animal as a member of your family.
Appendix F: Dehumanization- Personality Scale (Study 2)

Listed below, in the left hand column, are a number of personality traits. Please indicate using the scale provided, how much you think these traits apply to the following groups. For example, circle “5” if you strongly agree that the trait applies to the group, or circle “1” if you strongly disagree that the trait applies to the group.

<table>
<thead>
<tr>
<th>Trait</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait does not apply</td>
<td>Neutral</td>
<td>Trait strongly applies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open-Minded</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
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<td>Active</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Contented</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Curious</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Disorganized</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Even-Tempered</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Passive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Analytic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Conscientious</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Impulsive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Imaginative</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Insecure</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Canadians</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Immigrants</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Rude</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemotional</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
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<td>Selfless</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stingy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncooperative</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irresponsible</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sympathetic</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fun-loving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserved</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polite</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jealous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix G: Dehumanization- Emotions Scale (Studies 2 and 3)

Listed below, in the left hand column, are a number of emotions. Please indicate using the scale provided, how much you think the following groups typically experience the listed emotions. For example, circle “7” if you strongly agree that the group experiences the emotion, or circle “1” if you strongly disagree that the group experiences the emotion.

<table>
<thead>
<tr>
<th></th>
<th>Immigrants</th>
<th>Canadians</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Joy</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Guilt</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Friendliness</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Fear</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Excitement</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Compassion</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Shame</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Pleasure</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Sadness</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Rage</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Hope</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td><strong>Remorse</strong></td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>
Appendix H: Social Dominance Orientation Scale (Studies 2 and 3)

Below are a series of statements with which you may either agree or disagree. For each statement, please indicate the degree of your agreement or disagreement by writing in a number from 1 to 7 on the line next to it. Please remember that there are no right or wrong answers, and that your first responses are usually the most accurate.

<table>
<thead>
<tr>
<th>Do not agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Some groups of people are just more worthy than others.</td>
<td>___</td>
</tr>
<tr>
<td>2. We should do what we can to equalize conditions for different groups</td>
<td>___</td>
</tr>
<tr>
<td>3. In getting what your group wants, it is sometimes necessary to use force against other groups.</td>
<td>___</td>
</tr>
<tr>
<td>4. If certain groups of people stayed in their place, we would have fewer problems.</td>
<td>___</td>
</tr>
<tr>
<td>5. We would have fewer problems if we treated different groups more equally.</td>
<td>___</td>
</tr>
<tr>
<td>6. To get ahead in life, it is sometimes necessary to step on other groups.</td>
<td>___</td>
</tr>
<tr>
<td>7. No one group should dominate in society.</td>
<td>___</td>
</tr>
<tr>
<td>8. Group equality should be our ideal.</td>
<td>___</td>
</tr>
<tr>
<td>9. All groups should be given an equal chance in life.</td>
<td>___</td>
</tr>
<tr>
<td>10. We must increase social equality.</td>
<td>___</td>
</tr>
<tr>
<td>11. Superior groups should dominate inferior groups.</td>
<td>___</td>
</tr>
<tr>
<td>12. It's probably a good thing that certain groups are at the top and other groups are at the bottom.</td>
<td>___</td>
</tr>
<tr>
<td>13. We must strive to make incomes more equal.</td>
<td>___</td>
</tr>
<tr>
<td>14. Sometimes other groups must be kept in their place.</td>
<td>___</td>
</tr>
<tr>
<td>15. It would be good if all groups could be equal.</td>
<td>___</td>
</tr>
<tr>
<td>16. Inferior groups should stay in their place.</td>
<td>___</td>
</tr>
</tbody>
</table>
Appendix I: Right-wing Authoritarianism Scale (Studies 2 and 3)

Please circle your response, using the scale below.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strongly Disagree</td>
<td>Moderately Disagree</td>
<td>Slightly Disagree</td>
<td>Neither Disagree Nor Agree</td>
<td>Slightly Agree</td>
<td>Moderately Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

1. Gays and lesbians are just as healthy and moral as anybody else.
   1 2 3 4 5 6 7

2. Atheists and others who have rebelled against the established religions are no doubt every bit as good and virtuous as those who attend church regularly.
   1 2 3 4 5 6 7

3. There are many radical, immoral people in our country today who are trying to ruin it for their godless purposes, whom the authorities should put out of action.
   1 2 3 4 5 6 7

4. Our country will be destroyed someday if we do not smash the perversions eating away at our moral fibre and traditional beliefs.
   1 2 3 4 5 6 7

5. The situation in our country is getting so serious, the strongest methods would be justified if they eliminated the troublemakers and got us back to our true path.
   1 2 3 4 5 6 7

6. Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.
   1 2 3 4 5 6 7

7. People should pay less attention to the Bible and the other old traditional forms of religious guidance, and instead develop their own personal standards of what is moral and immoral.
   1 2 3 4 5 6 7

8. The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas.
   1 2 3 4 5 6 7

9. There is nothing wrong with premarital sexual intercourse.
   1 2 3 4 5 6 7

10. What our country really needs, instead of more “civil rights” is a good, stiff dose of law and order.
    1 2 3 4 5 6 7

11. Some of the best people in our country are those who are challenging our government, criticizing religion, and ignoring the “normal way” things are supposed to be done.
    1 2 3 4 5 6 7

12. The facts on crime, sexual immorality, and the recent public disorders all show that we have to crack down harder on deviant groups and trouble-makers if we are going to save our moral standards and preserve law and order.
    1 2 3 4 5 6 7
Appendix J: Universal Orientation Scale (Studies 2 and 3)

Please circle a number to indicate your agreement or disagreement with the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The similarities between males and females are greater than the differences.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I tend to value similarities over differences when I meet someone.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. At one level of thinking we are all of a kind.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I can understand almost anyone because I'm a little like everyone.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Little differences among people mean a lot.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I can see myself fitting into many groups.</td>
<td></td>
<td></td>
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<tr>
<td>7. There is a potential for good and evil in all of us.</td>
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<tr>
<td>8. When I look into the eyes of others I see myself.</td>
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<tr>
<td>9. I could never get accustomed to living in another country.</td>
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<tr>
<td>10. When I first meet someone I tend to notice differences between myself and the other person.</td>
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<tr>
<td>11. &quot;Between&quot; describes my position with regard to groups better than does &quot;in&quot; and &quot;out.&quot;</td>
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<tr>
<td>12. The same spirit dwells in everyone.</td>
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<tr>
<td>13. Older persons are very different than I am.</td>
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<tr>
<td>14. I can tell a great deal about a person by knowing their gender.</td>
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</tbody>
</table>
15. There is a certain beauty in everyone.

16. I can tell a great deal about a person by knowing his/her age.

17. Men and women will never totally understand each other because of their inborn differences.

18. Everyone in the world is very much alike because in the end we all die.

19. I have difficulty relating to persons who are much younger than I.

20. When I meet someone I tend to notice similarities between myself and the other person.
Appendix K: Animals are Similar to Humans Experimental Manipulation (Study 3)

We are interested in your opinion of the following editorial. Please read the portion of the editorial below.

The boundary between animals and humans is not as great as most people think. Scientific evidence suggests that this distinction is artificial, for in reality other animals are very similar to humans. Because humans evolved from other animals, humans and other animals should be genetically and behaviorally similar. Indeed, genetic research continues to discover evidence suggesting that other animals do share a significant proportion of their DNA with humans. For example, the DNA of chimpanzees is 98.4% identical to the DNA of humans. More recent genetic research indicates that even mice share 80% of their genes with humans.

Due to the high percentage of genes that other animals share with humans, the nervous systems of most other animals are based on the same physiological principles as the human nervous system. As a result, other animals are motivated to avoid pain and to seek pleasure, just like humans. In fact, all other animals demonstrate the same physiological responses to pain as humans do, including increased heart and breathing rates. Furthermore, both animals and humans possess a centralized brain containing the limbic system, which is responsible for emotional experiences. Evidence from various areas of research including physiology, endocrinology and psychology support the position that other animals are very similar to humans on an emotional level. For example, several studies provide evidence that other animals experience complex emotions in a manner similar to humans.

Research suggests that what appears to be basic biological programming and/or simple learning by other animals is actually the result of sophisticated cognitive abilities. In fact, like humans, most other animals possess the capacity to make choices, create their own destinies, and understand abstract concepts, including cause and effect relationships. For example, several psychological studies discovered that like humans, most animals are capable of complex thought, including for example, understanding object permanence (i.e., objects outside of visibility continue to exist).

Animals obviously share the same needs and motivations as humans. Like humans, all other animals are motivated to find security, shelter, food, to avoid predators/enemies, and to protect their home fronts. Other animals also have a need to engage in social behaviours analogous to that of humans. For example, like humans, other animals are motivated to seek out and maintain social relationships, engage in creative behaviours to attract mates, and to protect and raise offspring.
Appendix L: Humans are Similar to Animals Experimental Condition (Study 3)

We are interested in your opinion of the following editorial. Please read the portion of the editorial below.

The boundary between humans and other animals is not as great as most people think. Scientific evidence suggests that this distinction is artificial, for in reality humans are very similar to other animals. Because humans evolved from other animals, humans and other animals should be genetically and behaviorally similar. Indeed, genetic research continues to discover evidence suggesting that humans share a significant proportion of their DNA with other animals. For example, human DNA is 98.4% identical to the DNA of chimpanzees. More recent genetic research indicates that humans even share 80% of their genes with mice.

Due to the high percentage of genes that humans share with other animals, the human nervous system is based on the same physiological principles as the nervous system for other types of animals. As a result, humans are motivated to avoid pain and to seek pleasure, just like other animals. In fact, humans demonstrate the same physiological responses to pain as all other animals, including increased heart and breathing rates. Furthermore, humans and other animals possess a centralized brain containing the limbic system, which is responsible for emotional experiences. Evidence from various areas of research including physiology, endocrinology and psychology support the position that humans are very similar to other types of animals on an emotional level. For example, several studies provide evidence that the human experience of emotions is virtually identical to that of other animals.

Research suggests that even more sophisticated cognitive abilities demonstrated by humans appear to be the result of basic biological programming, and/or simple learning. In fact, like other animals, much of human behaviour is influenced by basic instincts such as hunger, lust, pain avoidance and pleasure. For example, several psychological studies discovered that like animal learning, the majority of human learning is acquired through basic operant conditioning; that is, humans like other animals, learn to engage in or avoid specific behaviours based on the associated rewards or punishments.

Humans also share the same needs and motivations as other animals. Like other types of animals, all humans are motivated to find security, shelter, food, to avoid enemies/predators, and to protect their home fronts. Humans also have a need to engage in social behaviours analogous to that of many other animals. For example, like other types of animals, humans are motivated to obtain and maintain social relationships, engage in creative behaviours to attract partners, and to protect and raise offspring.
Appendix M: Animals are Inferior to Humans Experimental Condition (Study 3)

We are interested in your opinion of the following editorial. Please read the portion of the editorial below.

The boundary between animals and humans is greater than most people think. Scientific evidence suggests that animals have little in common with humans, and in reality animals are inferior to humans. Even though it is probable that humans and animals share some common ancestry, animals are not very genetically and behaviorally similar to humans. Indeed, genetic research continues to discover evidence suggesting that there are millions of differences among DNA molecules between animals and humans. For example recent genetic research indicates that there are more differences between chimpanzees and humans than once believed. This important distinction between chimpanzees and humans primarily lies in the functional importance of gene expression; thus, even the quality of genes shared between chimpanzees and humans is very different.

Due to the great number of genetic differences between animals and humans, animals possess a much simpler nervous system. As a result, animals experience pain and pleasure in a way that is qualitatively different from that of humans. In fact, unlike humans, animals are not able to consciously reflect on their experiences of pain and pleasure and thus, are unable to anticipate experiencing them in the future. Furthermore, most animals (unlike humans) have smaller and less developed brains and thus, do not possess a large pre-frontal cortex, which is responsible for complex cognitive behaviours. As a result, evidence from various areas of research including physiology, endocrinology and psychology supports the position that animals are very different from humans on an emotional level. For example, several studies provide evidence that animals are only capable of experiencing very basic emotions.

Research suggests that animals are only capable of engaging in behaviours that are the result of basic biological programming, and/or simple learning. Therefore, unlike human behaviour, animal behaviour is primarily influenced by basic instincts, such as hunger, lust, pain avoidance and pleasure. For example, several psychological studies discovered that animal learning (unlike human learning) is only acquired through basic operant conditioning; that is, animals learn to engage in or avoid specific behaviours based on the associated rewards or punishments. As a result of this distinct cognitive inferiority, animals are incapable of evaluating alternatives and/or creating their own destinies.

Animals have very different needs and motivations from humans. The basic needs of animals are much simpler than humans, because animals are primarily motivated by physiological needs such as finding shelter, food, avoiding predators, and protecting offspring. Furthermore, when animals are motivated to engage in social behaviours, they do so primarily for reasons relevant to basic survival, unlike humans.
Appendix N: Humans are Superior to Animals Experimental Condition (Study 3)

We are interested in your opinion of the following editorial. Please read the portion of the editorial below.

The boundary between humans and animals is greater than most people think. Scientific evidence suggests that humans have little in common with animals, and in reality humans are superior to animals. Even though it is probable that humans and animals share some common ancestry, humans are not very genetically or behaviorally similar to animals. Indeed, genetic research continues to discover evidence suggesting that there are millions of differences among DNA molecules between humans and animals. For example, recent genetic research indicates that there are more differences between humans and chimpanzees than once believed. This important distinction between humans and chimpanzees primarily lies in the functional importance of gene expression; thus, even the quality of genes shared between humans and chimpanzees is very different.

Due to the great number of genetic differences between humans and animals, the human nervous system is much more sophisticated than the nervous system of animals. As a result, humans experience pain and pleasure in a way that is qualitatively different from animals. In fact only humans are able to consciously reflect on their experiences of pain and pleasure and anticipate experiencing them in the future. Furthermore, only humans possess a larger pre-frontal cortex, which is responsible for more complex cognitive behaviours. As a result, evidence from various areas of research including physiology, endocrinology and psychology supports the position that humans are very different from animals on an emotional level. For example, several studies provide evidence that only humans are capable of experiencing more complex emotions characterized by civility and higher cognition.

Research suggests that humans are capable of engaging in sophisticated cognitive thought, unlike animals. In fact, due to the cognitive superiority of humans over animals, humans are able to inhibit their basic instincts and instead behave according to sophisticated reasoning. For example, several psychological studies discovered that only humans (not animals) are capable of evaluating alternatives, making choices, and creating their own destinies.

Humans also have more complex needs and motivations that extend beyond the basic physiological needs and motivations of animals. For example, only humans are motivated to obtain a variety of elaborate needs including, self-esteem, achievement, and the need to gain the respect of other humans. In contrast to animals, humans are also motivated to learn, create, and to ultimately obtain a better understanding of the world around them.
Appendix O: Neutral Control Condition (Study 3)

We are interested in your opinion of the following editorial. Please read the portion of the editorial below.

Clouds are one of the most essential components to the atmosphere system. Clouds are responsible for a variety of important functions including, the regulation of energy balance and the redistribution of heat from the equator towards the poles. Because each type of cloud forms in a different way and each bring its own kind of weather, clouds also inform us about what is going on in our atmosphere and how the weather might change in the hours or even days to come.

A cloud is composed of a mass of condensed water droplets of frozen ice crystals that are suspended in the atmosphere. Cloud formation begins when the air is cooled below its saturation point. This happens when air comes into contact with a cold surface or a surface that is cooling by radiation. For example cloud formation can occur when two air masses below saturation point mix together or when the air stays the same temperature but absorbs more water vapor into it until it reaches its saturation point.

Clouds are also responsible for precipitation, which is a major component of the hydrologic cycle. Precipitation is produced when super-cooled water droplets and ice crystals in a cloud interact to produce the rapid growth of ice crystals; these crystals then precipitate from the cloud and melt as they fall, or when the collision of rising and falling water droplets produce larger and larger droplets, which are eventually heavy enough to overcome air currents in the cloud and the updraft beneath it and as a result, fall as rain.

Clouds are classified into 4 groups based on the cloud's altitude. “High” clouds include Cirrus clouds, which form above 23,000 feet. These types of clouds tend to be white and wispy, and usually indicate a stable weather situation and do not usually bring precipitation. “Middle” clouds include Altostratus clouds, which form between 6,500 and 16,500 feet and are blue-grey in colour. These types of clouds often warn for storms with continuous rain or snow. “Low” clouds include Stratus clouds, which form up to 6,500 feet and are usually grey in colour. These clouds do not usually bring precipitation, although if low in altitude, drizzle or fog can occur. Lastly, “Vertical” clouds include Cumulus clouds, which rise far above their base and form at many heights. These types of clouds tend to be white, puffy clouds that look like pieces of floating cotton. Cumulus clouds are also sometimes called fair weather clouds; however with continued upward growth, giant cumulonimbus clouds often form, which are thunderstorm clouds.
Appendix P: Cover-Story and Manipulation Check Items (Study 3)

We are interested in your opinions regarding the essay that you just read. Please circle your response to the following questions using the following scale.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>2</td>
<td>3</td>
<td>Neutral</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

1) How much do you think you would like the author of this essay?  
   1  2  3  4  5  6  7

2) How intelligent do you believe the author to be?  
   1  2  3  4  5  6  7

3) Is the author’s opinion well-informed?  
   1  2  3  4  5  6  7

4) How much do you agree with the author’s opinion?  
   1  2  3  4  5  6  7

5) Do you feel that the quality of this essay is strong?  
   1  2  3  4  5  6  7

6) In the essay you just read, to what extent did the author argue that humans and animals are similar?  
   1  2  3  4  5  6  7

7) In the essay that you just read, did the author stress that: (Please check one answer).

   [ ] Animals are similar to humans
   [ ] Animals are different from humans
   [ ] Humans are similar to animals
   [ ] Humans are different from animals
Appendix Q: Human-Animal Similarity Scale (Study 3)

Please circle your response based on the following scale to indicate the extent to which you agree or disagree with the following statements.

<table>
<thead>
<tr>
<th>1 Agree Strongly</th>
<th>2 Agree a little</th>
<th>3 Neutral</th>
<th>4 Disagree a little</th>
<th>5 Disagree Strongly</th>
</tr>
</thead>
</table>

1. Humans are not the only creatures who have thoughts, some animals can think too.
   - 1
   - 2
   - 3
   - 4
   - 5

2. Some animals experience emotions like humans, such as affection, anger, or fear.
   - 1
   - 2
   - 3
   - 4
   - 5

3. A dog or a cat may act as if it is emotional, but it doesn't really feel emotions like humans do.
   - 1
   - 2
   - 3
   - 4
   - 5

4. Humans are so vastly different from other life forms that it is a mistake to classify humans as animals.
   - 1
   - 2
   - 3
   - 4
   - 5

5. Humans evolved from other animals, thus other animals are structurally and mentally similar to humans.
   - 1
   - 2
   - 3
   - 4
   - 5

6. Humans are superior to animals.
   - 1
   - 2
   - 3
   - 4
   - 5

7. There are little differences between humans and animals.
   - 1
   - 2
   - 3
   - 4
   - 5

8. Some animals can fall in love too.
   - 1
   - 2
   - 3
   - 4
   - 5

9. The needs of humans should always come before the needs of animals.
   - 1
   - 2
   - 3
   - 4
   - 5

10. Human and non-human animals do not have a lot in common.
    - 1
    - 2
    - 3
    - 4
    - 5

11. It is okay to use animals to carry out tasks for humans.
    - 1
    - 2
    - 3
    - 4
    - 5

12. Animals are not inferior to humans.
    - 1
    - 2
    - 3
    - 4
    - 5

13. I felt threatened/uncomfortable when reminded of the similarities that I share with non-human animals.
    - 1
    - 2
    - 3
    - 4
    - 5

14. It does not make me uncomfortable to know that I share certain commonalities with non-human animals.
    - 1
    - 2
    - 3
    - 4
    - 5
Appendix R: Prejudice toward Non-human Animals Scale- Shortened Version (Study 3)

Please indicate the degree of your agreement or disagreement by writing in a number from 1 to 5

5 = agree strongly
4 = agree a little
3 = neither agree nor disagree
2 = disagree a little
1 = disagree strongly

1. Humans have no right to displace wild animals by converting wilderness areas into cities, etc

2. Animal research cannot be justified and should be stopped.

3. It is wrong to wear clothing made from leather (e.g., shoes, belts, jackets).

4. We need more regulations governing the use of animals in research.

5. It is wrong to eat beef, chicken and other meat.

6. Having extended basic rights to minorities and women, it's now time to extend them to animals

7. I have seriously considered becoming a vegetarian in an effort to save animal lives.

8. I am very concerned about pain and suffering in animals.

9. There is nothing wrong with wearing animal fur (such as mink coats).

10. It is wrong to hunt wild animals just for sport.

11. There should be extremely stiff penalties for people who participate in activities such as dog fighting.

12. It is perfectly acceptable for cattle, chickens and pigs to be raised for human consumption

13. The slaughter of whales and dolphins should be immediately stopped, even if it means some people will be put out of work.

14. I sometimes get upset when I see wild animals in cages at zoos.

15. In general I think that human economic gain is more important than setting aside more land for wildlife.

16. Too much fuss is made over the welfare of animals when there are many human problems that need to be solved.

17. It is unethical to breed purebred dogs when millions of dogs are killed in animal shelters.

18. The use of animals in rodeos and circuses is cruel.

19. The production of inexpensive meat, eggs, and dairy products justifies maintaining animals in inhumane conditions.

20. The use of animals such as rabbits for testing cosmetics is unnecessary and should be stopped.
Appendix S: Dehumanization- Personality Scale (Study 3)

Listed below, in the left hand column, are a number of personality traits. Please indicate using the scale provided, how much you think these traits apply to the following groups. For example, circle “7” if you strongly agree that the trait applies to the group, or circle “1” if you strongly disagree that the trait applies to the group.

<table>
<thead>
<tr>
<th>Trait does not apply</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Trait strongly applies</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Neutral</td>
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<td>Neutral</td>
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<table>
<thead>
<tr>
<th>Trait</th>
<th>Immigrants</th>
<th>Canadians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraverted and Enthusiastic</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Critical and Quarrelsome</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Dependable and Self-disciplined</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Anxious and Easily upset</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Open to new experiences and Complex</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Reserved and Quiet</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Sympathetic and Warm</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Disorganized and Careless</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Calm and Emotionally Stable</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Conventional and Uncreative</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
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Appendix T: Inclusive Representations Scale (Study 3)

1. The distinction between humans and other animals is artificial; we are all part of a shared group (i.e., animal-kind).

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<th>7</th>
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</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
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2. It usually feels as though humans and non-human animals belong to different groups.

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<th>6</th>
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<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
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3. Although there are differences between humans and non-human animals, it feels as though we are all part of the same group (i.e., animal-kind).

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<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
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4. Categories such as “humans” and “animals” are meaningless; all creatures are unique and separate from each other.

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<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
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5. 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).

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<th>5</th>
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<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
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</table>

6. The distinction between immigrants and non-immigrants is artificial; we are all part of a shared group (Canadian residents).

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<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
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</tbody>
</table>

7. In Canada, it usually feels as though immigrants and non-immigrants belong to different groups.

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<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

8. In Canada, it usually feels as though we are individuals rather than members of immigrant and non-immigrant group.

<table>
<thead>
<tr>
<th>1</th>
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<th>4</th>
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<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
<td></td>
<td></td>
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</tbody>
</table>

9. Although there are distinct immigrant and non-immigrants groups in Canada, it feels as though we are all playing on the same team.

<table>
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<tr>
<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Neutral</td>
<td>Strongly Agree</td>
<td></td>
<td></td>
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</table>
Appendix U: Empathy Scale (Study 3)

Listed below in the left hand column are a number of statements. Please answer by circling your response on the rating scale.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at All</td>
<td>Neutral</td>
<td>Very Much</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Immigrants</th>
<th>Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please indicate the extent to which you feel <strong>sympathetic</strong> towards:</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Please indicate the extent to which you feel <strong>compassionate</strong> towards:</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Please indicate the extent to which you feel <strong>soft-hearted</strong> towards:</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Please indicate the extent to which you feel <strong>warm</strong> towards:</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Please indicate the extent to which you feel <strong>tender</strong> towards:</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Please indicate the extent to which you feel <strong>moved by</strong>:</td>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>
Appendix V: Written Debriefing Form

Study Title: Attitudes toward Groups, Animals, and Social Issues

The purpose of this research is to examine the relation between attitudes toward the welfare of non-human animals and attitudes toward social outgroups, such as immigrants. Specifically, we were interested in whether people who perceive humans and animals as more similar (versus different) would be associated with more positive attitudes toward non-human animal welfare and/or more favourable attitudes toward immigrants. Furthermore, previous research suggests that people tend to view immigrants in particular, as more animal-like (i.e., less human) and such perceptions result in more negative attitudes toward immigrants.

In order to examine these research questions, some participants were assigned to read an editorial describing the similarities [or differences] between humans and other animals or a neutral editorial, which was unrelated to the relationship between humans and other animals. Please note that some of the information in the editorial describing the differences between humans and other animals was fictitious and created for experimental purposes only. That is, scientific evidence suggests that humans and animals are indeed very similar; therefore, in order to create an editorial which exaggerated the human- animal divide, it was necessary to create fictitious information about and/or exaggerate the differences that exist between humans and other animals. In order to clarify some of the fictitious information that you may have been exposed to it is important to know that in reality, genetic research continues to discover evidence suggesting that other animals and humans share a significant proportion of DNA. Furthermore, research does suggest that most other animals do demonstrate the same physiological responses to pain as humans do, including increased heart and breathing rates, and many animals are indeed capable of engaging in more complex thoughts.

Please note that there is no right or wrong answers to any of the questionnaire items you may have responded to and that it is natural for people to vary in terms of how much they like other groups and people. However, if you are experiencing any emotional stress involved with the sensitive topics of some of the questionnaire statements, please contact the personal counseling services at Brock University. (905) 688-5550 ext. 3240. http://www.brocku.ca/sdc/counselling/.

If you feel your rights of a participant have been violated or you have any questions regarding research participation rights, contact the Research Ethics Office reb@brocku.ca, (905) 688-5550 ext. 3035. If you have any questions please feel free to contact any of the following:

Principal investigator: Kimberly Costello, MCB 213, Kimberly.costello@brocku.ca
Supervisor: Dr. Hodson, MCB 324, (905) 688-5550 ext 5127 ghodson@brocku.ca

For further information about the topics examined in this study refer to the following:

For further information on issues related to non-human animal welfare, please refer to http://www.peta.org

Please refrain from informing any potential future participants about the nature or purpose of this study because doing so would likely influence their responses and jeopardize the study.