ESSAY: Generalized Prejudice Reduction: Speciesism, Sexism and Racism - What if We Can Diminish All by Tackling Just one?

Dusan Pajovic and Ricardo Borges Rodrigues
Dusan_Pajovic@iscte-iul.pt; rfprs@iscte-iul.pt

Abstract

There is a history of analysis of relationships between different prejudices, including the interconnection of racism, sexism, and speciesism. Likewise, several studies suggested that prejudices have the same underlying causes and assumptions, one of the most significant being *Social Dominance Orientation* (SDO), or belief in the legitimacy and desirability of hierarchies. Therefore, if prejudices have a common root (in SDO), tackling just one of them should result in spillover prejudice reduction effect to all the others via a reduction in SDO. The current study examined this idea by testing the effect of an intervention design to reduce prejudices towards women, black people, and non-human animals, and testing SDO as a mediator. Participants were randomly assigned to one of four conditions (speciesism, sexism, racism, or control) where they underwent a prejudice reduction intervention as an elaborative imagined contact induction. The participants expressed strong intercorrelations between the SDO, sexism, racism and speciesism attitudes. However, interventions proved to be statistically nonsignificant, alongside the mediation of SDO. The limitations of the study are discussed and directions for future studies are provided.

keywords: generalized prejudice reduction, speciesism, sexism, racism, social dominance orientation, human-animal relations

Prejudice serves as a significant driving force and acts as a crucial starting point for the majority of discriminatory behavior worldwide. According to Gordon Allport (1954), if an individual harbors prejudice towards one particular group, it is highly likely that they will exhibit similar sentiments towards other diverse populations. For instance, someone who holds anti-homosexual views is also likely to hold negative attitudes towards immigrants, feminists, and so on. Since Allport's observation, numerous authors (Akrami et al., 2011; Bergh et al., 2012; Duckitt & Sibley, 2007) have explored this topic. These authors have found that prejudices targeting different groups are interconnected. Various studies (Pettigrew, 2009; Schmid et al., 2012) have demonstrated that intervening in one category of prejudice can lead to a reduction in seemingly unrelated categories. For example, establishing contact with immigrants as a primary group has resulted in a decrease in prejudice towards secondary groups, such as homosexuals and Jewish people (Schmid et al., 2012). Research has consistently shown significant correlations between prejudice towards different targets, and factor analyses have identified a generalized prejudice factor that accounts for 50% to 60% of the variance (Ekehammar & Akrami, 2003). Researchers have explained this phenomenon by examining individual differences, such as right-wing authoritarianism (Altemeyer, 1981) and social dominance orientation (Sidanius & Pratto, 1999).

One model that considers non-human animals is the Social Dominance Human-Animal Relations model (Dhont et al., 2016). It suggests that prejudice has a common origin in *social dominance orientation* (SDO), which refers to the preference for group-based dominance and inequality. If prejudices share a common root, addressing one of them should lead to a reduction in all other prejudices. In other words, reducing one type of prejudice should have a generalized prejudice reduction effect. Given this, which typology should be the focus of a prejudice reduction intervention in order to effectively reduce all forms of prejudice?

Building on the Social Dominance Human-Animal Relations model (Dhont et al., 2016; SD-HARM), this research aims to measure the impact of reducing racism, sexism, or speciesism to determine if an intervention targeting each of these dimensions results in a generalized reduction of prejudice across the other two typologies. According to the aforementioned model, it is expected that SDO, as the underlying cause of prejudices, mediates this effect. Therefore, this study offers a new perspective with both theoretical and practical implications.

Literature Review

Speciesism

While racism and sexism have been extensively studied and recognized in academia and public opinion, speciesism remains largely unexplored. In fact, there has been a debate on whether speciesism should be considered a form of prejudice (see Plous, 2003). However, if we define prejudice as "any negative attitude, emotion, or behavior towards members of a group" (Brown, 2010, p. 7), it becomes evident that speciesism falls within this category as well. Speciesism can be understood as the failure, in attitude or practice, to grant equal consideration and respect to nonhuman beings (Dunayer, 2004). Similarly, Peter Singer, in his influential work Animal Liberation (2015), defines speciesism as "a bias in favor of the interests of one's own species and against those of other species" (p. 6). Like other prejudices, speciesism is a relatively stable construct that persists over time (Caviola et al., 2019).

Different approaches have been used to measure speciesism, such as assessing attitudes (Caviola et al., 2019; Herzog et al., 1991) or examining behavioral intentions (Auger & Amiot, 2019). However, further evidence is needed to systematically understand the latter approach (Auger & Amiot, 2019).

Justifications for the oppression of non-human animals often rely on assumptions that animals are cognitively inferior to humans, lack moral agency, and experience less suffering compared to humans (Caviola et al., 2019). However, even if we set aside the fact that humans define these concepts, it is important to note that some of the species that suffer the most under human oppression possess similar sentience and capacity for suffering as humans. In fact, certain species and individuals in the animal kingdom outperform some humans or other less oppressed animals in intelligence tests and exhibit behaviors aligned with human-defined moral guidelines (see Dunayer, 2004). This highlights the inconsistencies of speciesism. Moreover, evidence of speciesism can be observed in the fact that humans generally would not support the same types of exploitation directed towards individuals with mental challenges (see Caviola et al., 2019; Singer, 2015).

Although speciesism often stems from the belief that humans possess inherently greater value than other animals, its presence extends beyond this dichotomy. Dogs and pigs, for instance, exhibit remarkably similar cognitive and emotional capacities (Mendl et al., 2010), yet there is a stark contrast in

how they are perceived by the majority of people in the Global North. We express love and care towards one while simultaneously supporting the exploitation and slaughter of the other (see Joy, 2011). Importantly, speciesism, like racism and sexism, is not limited to a particular country or nationality; it can be observed across diverse cultures, albeit with varying targets of prejudice (see Amiot & Bastian, 2015).

Simultaneously, the pervasive nature of this ideological system enables the use of animals for human pleasure or consumption, including for food, clothing, entertainment, experimentation, and medicine (Caviola et al., 2019). Consequently, the number of animals killed in just three days exceeds the total number of humans killed in recorded history's wars (Heinrich Böll Foundation & Friends of the Earth Europe, 2014; Hedges, 2003). Such actions are often justified by arguments of normality, neutrality, and necessity, mirroring the same myths used to rationalize racism and sexism (Joy, 2011, 2019). In truth, speciesism, racism, and sexism share many commonalities.

Interconnection of speciesism, sexism and racism

The interconnection of speciesism with racism (see e.g., Patterson, 2002) and sexism (see e.g., Adams, 2000) has been discussed in philosophy for some time, and more recently, empirical evidence has supported these connections. For instance, Allcorn and Ogletree (2018) conducted research that supported the *linked oppression thesis*, which proposes a relationship between attitudes towards gender and animals. In their empirical study, Allcorn and Ogletree (2018) examined ambivalent sexism, beliefs in gender norms, attitudes towards animal welfare (e.g., views on fur usage, animal testing, welfare laws in animal agriculture, etc., measured using a scale from Herzog et al., 1991), and justification for meat consumption (based on a scale from a previous study that highlighted the association between masculinity and the justification of carnism; see Rothgerber, 2013). This study involved both female and male university students in Texas. The results indicated that pro-meat-eating attitudes were associated with sexist beliefs and support for traditional gender roles, while a pro-animal stance was negatively correlated with benevolent/hostile sexism scores and traditional gender attitudes (Allcorn & Ogletree, 2018). This research provides empirical support for the interconnectedness of speciesism, sexism, and traditional gender roles.

Not only does various forms of oppression, such as sexism, have significant implications for human behavior towards animals (Glasser, 2018),

but speciesist attitudes also have consequences for the devaluation of other human outgroups. The Interspecies Model of Prejudice (Costello & Hodson, 2014; Hodson & Costello, 2012; Hodson et al., 2013) proposes that perceiving humans as fundamentally different and superior to other animals leads to the dehumanization of Black people and immigrants. When individuals seek to scapegoat or devalue marginalized individuals or minority groups, they often resort to labeling them as different animals. Consequently, women may be referred to as "chicks," Jewish people may be portrayed as "rats," and Black individuals may be compared to "apes." This process of reducing humans to the level of non-human animals results in the exclusion of outgroups from moral consideration (Bandura, 1999; Bar-Tal, 1989; Costello & Hodson, 2014).

The key insight is that treating outgroups like animals would lose its significance if animals were treated well in the first place (Plous, 2003). These ideas are not mere intellectual debates but have practical implications that can be observed in various contexts. For instance, the belief in the justness of hierarchies contributes to the dehumanization and devaluation of certain groups (Costello & Hodson, 2014). Therefore, acknowledging the detrimental effects of hierarchies prompts us to consider how we can dismantle or at least question their validity. Additionally, speciesism is closely associated with prejudices against low-status groups situated at the bottom of the social hierarchy (Jackson, 2019). Furthermore, research has shown that sexism, speciesism, and racism are correlated with each other (Caviola et al., 2019; Dhont et al., 2016; Everett et al., 2019), reinforcing the idea that these dimensions share a common origin. Caviola et al. (2019) demonstrated a positive association between speciesism, racism, sexism, and homophobia in a US sample. Similarly, Everett et al. (2019) found positive associations in samples from the UK, Belgium, and the US as well.

A study conducted in Canada by Jackson (2019) found that individuals who held stronger endorsements of speciesism exhibited less positive attitudes towards a wide range of human groups, including those differing in ethnicity, sexual orientation, ability, and social-political standing (Jackson, 2019, p. 454). It is worth noting that in this study, speciesism did not predict positive attitudes towards groups with which the majority of participants identified (Canadians and university students). This suggests that speciesism may be associated with the social hierarchy, where attitudes towards certain groups are influenced by their perceived position in the hierarchy.

It seems that common people are generally intuitively aware of this interconnection, since Everett et al. (2019) proved that, just like sexists, racists and homophobes, speciesists are evaluated more negatively and expected to hold more general prejudicial attitudes. In the same study, participants (male and female from the US) predicted that those targets that are high in speciesism, racism and sexism will also be high in the social dominance orientation. Models presented in the next section offer a possible explanation of a common root of these three prejudices.

SDO and SD-HARM

Social Dominance Orientation (SDO) can be defined in terms of preference for inequality of social groups (Pratto et al., 1994). Individuals who score high on SDO see hierarchies as legitimate and desirable, which normalizes group-based inequalities and justifies inter-group oppression (Pratto et al., 1994). SDO as a personal trait has been shown to be one of the best predictors of racism and sexism (Ho et al., 2012; Kteily et al., 2012; Pratto et al., 1994).

Although this construct was initially developed to explain dynamics between different human groups, it has been recently implemented within the human-animal relations paradigm in the form of the Social Dominance Human-Animal Relations model (SD-HARM).

SD-HARM (Dhont et al., 2016) proposes that prejudiced beliefs in human-human and human-animal relations stem from a common ideological preference for group-based dominance and inequality. Several studies have identified correlations between speciesism and other prejudices such as sexism, racism, and homophobia. However, in line with the SD-HARM model, these correlations diminished and became statistically nonsignificant when social dominance orientation (SDO) was taken into account as a controlling factor underlying prejudices (Dhont et al., 2014a; Dhont et al., 2016).

Dhont et al. (2016) conducted a series of three studies in the US, Belgium, and the UK to test this hypothesis. Their research demonstrated that social dominance orientation (SDO) played a crucial role in the significant positive association between attitudes towards ethnic outgroups and speciesist attitudes towards animals. This association remained even after accounting for other ideological variables such as right-wing authoritarianism and political conservatism. SDO emerged as a key factor in these relationships. Similarly, other studies, including Caviola et al. (2019) and Dhont et al.

(2014), found that speciesism, alongside racism, sexism, and homophobia (in the case of Caviola et al., 2019), exhibited positive associations with SDO.

Even though the Social Dominance Orientation has been presented as something relatively stable, there is evidence showing that it can be reduced via interventions, just like the prejudices themselves. There seems to be several approaches to reducing SDO. These methods encompass exposure to social sciences during university education, as demonstrated by Dambrun et al. (2008). The study revealed that university students who enrolled in social science courses exhibited lower beliefs in the justness and necessity of hierarchies. Another contributing factor is the act of helping others as evidenced by research conducted by Brown (2011) and Kuchenbrandt et al. (2013), which showed that assisting specific individuals can diminish SDO. Additionally, the acquisition of a feminist identity, involving the acceptance of feminine attitudes and identification as a feminist, has been found to decrease social dominance orientation (Foels & Pappas, 2004). This goes all the way to intergroup contact, which has shown a significant influence on the aforementioned construct (Dhont et al., 2013; Shook et al., 2015). Engaging in intergroup contact, as we will discuss in the following section, can take various forms, including through imagination.

Imagined contact

Allport (1954) proposed the influential hypothesis that contact between conflictual groups can reduce prejudice, provided certain conditions are met, including equal status, intergroup cooperation, common goals, and institutional support. Subsequent research has found that even when these conditions are not fully met, contact can still have a smaller but significant effect in reducing prejudice (Dovidio et al., 2017; Pettigrew & Tropp, 2008). Moreover, contact does not necessarily have to be direct and in-person; it can take extended, virtual, vicarious, or imagined forms (Dovidio et al., 2017). Imagination plays a crucial role in prejudice reduction, as individuals actively engage in mentally simulating positive contact experiences (Crisp & Turner, 2009). This form of contact is particularly effective for individuals who lack regular opportunities for real-life contact (Crisp et al., 2008; Fujioka, 2005).

Imagined contact has been shown to be more effective in changing behavioral intentions, but it can also lead to attitude changes when an elaborative approach is used (Auger & Amiot, 2019; Husnu & Crisp, 2010). Interestingly, imagined contact can not only reduce prejudice towards a

specific outgroup but also have spillover effects on other social categories. Harwood et al. (2011) found that imagined contact intervention led to attitude changes towards various outgroups not directly targeted by the intervention. However, in their study, the effects were observed primarily among related categories. For example, a prejudice intervention targeting illegal immigrants reduced prejudices towards legal immigrants, political refugees, and Black people, but did not significantly affect attitudes towards women or White people (Harwood et al., 2011). It is worth noting that in this study, only the imagined contact method was used without additional layers of approaches such as counter-stereotypic behavior, which may explain the limited scope of the effects.

Indeed, while the findings highlight an important pathway for prejudice reduction, it remains unclear whether reducing one type of prejudice leads to a reduction in others. The potential spillover effect of speciesism as a prejudice, in connection to other forms of prejudice like sexism and racism, is a particularly unexplored area. Understanding the interconnections and inseparability of these prejudices could have significant implications, not only in theoretical terms but also in practical applications. It would provide valuable insights into developing comprehensive strategies for prejudice reduction that address multiple forms of bias simultaneously.

Present Study

Based on the previous research, which suggests that there is the common root of proposed prejudices, the aim of this study is to test the hypothesis that an intervention on one prejudice will result in prejudice reductions in the other two dimensions or, in other words, cause the generalized effect of the prejudice reduction. Therefore, there are four types of interventions: speciesism, sexism, racism and a control one, while the dependent variables are all of the mentioned prejudices themselves. First, to test the efficiency of interventions we hypothesized that target-specific intervention leads to less prejudice in that dimension:

H1: Prejudice reduction interventions targeting racism, sexism or speciesism lead to less prejudice towards the same target compared to a control condition.

Secondly, we predict that prejudice reduction interventions in one of the categories leads to the generalized prejudice reduction in the others, specifically:

H2: Prejudice reduction interventions targeting racism, sexism, or speciesism lead to less prejudice towards other targets compared to a control condition.

Thirdly, as proposed by the SD-HARM model we hypothesize that:

H3: Social Dominance Orientation mediates all the generalized prejudice reduction effects.

Figure 1

Generalized prejudice reduction model via Social Dominance Orientation
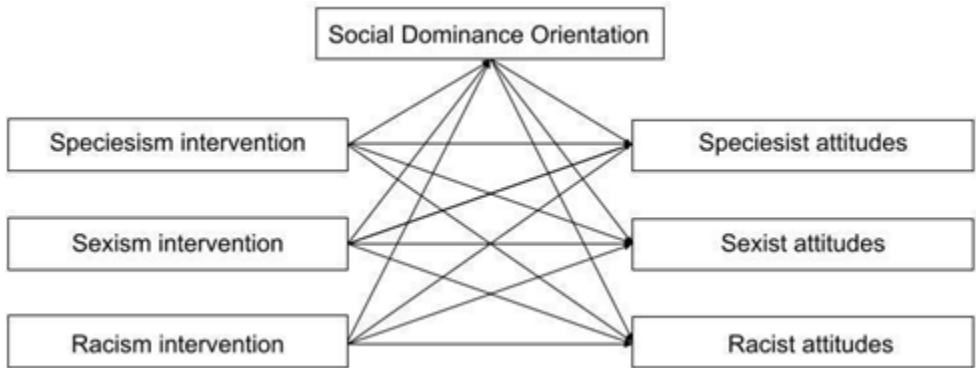
Method
Participants

The sample (N=201) is composed of USA nationality White male adults, ranging from 18 to 65 (M=36.60, SD=12.03) years old. Participants were reached through the recruitment website for online surveys Prolific and were paid the amount of 1.50£ for participating in the study.

Participants who did not self-identify as males and White were excluded from the study. Research was being re-opened on Prolific for submissions until a sample size of the participants who met the criteria was fulfilled. The sample size was determined by the power analysis via *G*Power* (Faul et al., 2009), which indicated that we need at least 200 participants to detect a medium effect of $F = 0.241$, taking an α of .05 and power of .95. Effect size F was computed through the data analyzed in the meta-analytic study of imagined contact by Miles & Crisp (2014). It was calculated by means of three components used in the present research: USA nationality of participants, attitude changing and ethnicity as an outgroup.

Participants come from diverse regions and they have a diverse educational background, with the highest level of education ranging from no high school degree (*n*=2) to postdoctoral degree (*n*=1).

Design

The experiment consists of 4 condition between-subjects design, with prejudice reduction interventions as the independent variable (speciesism vs racism vs sexism vs control) and measured prejudice level (speciesism vs racism vs sexism) as the dependent variables.

Participants were randomly allocated to one of the conditions, 3 experimental (*N*=47 for Speciesism, *N*=55 for Sexism, and *N*=56 for Racism) and one control (*N*=43). The order of assessment of prejudice target was controlled for by randomly assigning participants to one of the following orders (speciesism vs racism vs sexism; speciesism vs sexism vs racism; sexism vs racism vs speciesism; sexism vs speciesism vs racism; racism vs speciesism vs sexism; racism vs sexism vs speciesism).

Measures

Social Dominance Orientation

The mediator was assessed with the Social Dominance Orientation Scale (Pratto et al., 1994). For this study participants completed the short version of the scale (Dhont et al., 2014a), that was highly reliable in the current study (α = 0.86). The scale consists of 6 items (e.g. *Superior groups should dominate inferior groups*) with the answers on a 7-point scale (1, *strongly disagree*; 7, *strongly agree*).

Racism

The dependent variable was measured using the Modern Racism Scale (McConahay, 1986; MRS), which is used to evaluate racial attitudes. This study used a short version of a scale (α = .94) with 7 items (e.g. *Blacks are getting too demanding in their push for equal rights*).

Participants indicated their agreement with each item on a 7-point Likert scale ranging from 1=*strongly disagree* to 7=*strongly agree*.

Sexism

This dependent variable was assessed with the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996), which is widely used to measure sexist attitudes towards women. Glick and Fiske (1996) proposed that it measures

two sides of sexism: hostile and benevolent sexism. The shortened version of the scale ($\alpha = .90$), developed by Rollero et al. (2014), was used in the current study. Participants indicated their agreement or disagreement for 12 statements (e. g. *Women seek to gain power by getting control over men; Every man ought to have a woman whom he adores*) on a 7-point scale (1, *strongly disagree*; 7, *strongly agree*). ASI has demonstrated adequate reliability with a Cronbach's alpha coefficient of 0.93 for hostile and 0.85 for benevolent sexism.

Speciesism

This dependent variable was measured using the short version of the Speciesism scale (Caviola et al., 2019), which consists of 6 items (e.g. *It is morally acceptable to trade animals like possessions*) on 7-point scale (1, *strongly disagree*; 7, *strongly agree*), with higher scores reflecting a greater amount of speciesism. In the present study scale had Cronbach's alpha of 0.86.

Demographics

Participants were asked standard questions concerning their age, objective and subjective income, state (which was later recoded into regions: South, Northeast, West and Midwest), and the highest level reached in education. Also, even though they were pre-screened for those conditions, they were asked about sex and ethnicity as a manipulation check and exclusion criteria. In addition to that, participants were asked to indicate their political ideology from 1, *very liberal* to 7, *very conservative*.

Manipulation check

As a means of manipulation check, participants were asked two questions. The first one was a question about the main protagonist of the story they have read, with the options: animal, woman, a Black man or the building. The second question was about the degree of distress a person in the story felt, ranging from 1 (*not stressed at all*) to 5 (*extremely stressed*).

Manipulation

Interventions were provided in the form of imagined contact essay, with the additional layers of elaborative and clue rich text (Husnu & Crisp, 2011), that proved to enhance the effect of the imagined contact. Additionally, counter-stereotypic behavior of the target (Dasgubta & Asgiri, 2009;

Taschler & West, 2016) was added, as it proved to be effective in reducing sexism when primed with higher quality contact (Taschler & West, 2016); as well as reducing the general intergroup threat and reinforcing ingroup norms thus promoting positive attitudes (Yetkili et al., 2018). Another important component is empathy and perspective-taking, which displayed the strongest effect size in prejudice reduction and improving intergroup attitudes in a meta-analytic study (Beelmann & Heinemann, 2014). The final layer of the current intervention is warmth and competence traits of the targets (Brambilla et al., 2011) to emphasize both the intelligence and emotions. Ultimately, in order not to perceive prejudice targets as outliners, systemic oppression was subtly primed. At the end of the text, participants were asked to take a moment and reflect on the situation (see Beelmann & Heinemann, 2014). As noted, interventions were domain-specific (race, sex, non-human animal or control). In all the conditions, as helping may enhance the process of prejudice reduction (Brown, 2011; Kuchenbrandt et al., 2013), participants engaged in the open-ended question of what they would do next.

Procedure

Before conducting the research, study was preregistered (https://aspredicted.org/blind.php?x=xw3827) and ethical approval was obtained from the ISCTE University Ethical Committee. The present research was conducted using the Qualtrics survey platform. In the beginning, participants were given the explanation that the study purpose is to assess how imagination affects people's attitudes. They were randomly assigned to one of the four conditions. When participants got allocated, they were given a task to read the imagined contact essay targeted towards one of the previously mentioned prejudices or control reading, where they read about a neglected building. According to the standard guidelines, participants were asked to close their eyes and imagine the details of the situation and reflect on them. Once finished, they wrote what they would do next to elaborate more on the situation. To validate the intention of the study, but also to check for inattentive participants, they were asked simple questions about the essay they had read. Afterwards, a questionnaire was given to them to assess the mediator variable of Social Dominance Orientation. Subsequently, dependent variables were measured with the previously mentioned scales in random order: speciesism, racism and sexism. At the very end, participants answered questions concerning their demographics,

objective and perceived income, and political ideology. The whole study, including the interventions, lasted around 10 minutes.

Results

Data gathering process took place between the 13th of May and the 30th of July. Of the 283 participants who started the initial screening survey, 82 participants were excluded for not meeting study criteria, as they did not finish the study and did not provide key information (27), or they do not fit the race (16) or sex (4) criteria of the study, or failed to answer the manipulation check questions correctly (16). Also, the participants were excluded based on the predefined premise that they need to spend at least 20 seconds reading the intervention (11) and at least the 40 seconds total time of reading the intervention plus imagining the situation (8). Ultimately, the analysis was performed on 201 participants.

Descriptive Analysis and Correlations

Descriptive analysis was performed on all the relevant variables, alongside Pearson's or Spearman's correlations procedures (see Table 2).

Table 2

Correlations

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Social Dominance	2.38	1.25	-									
2. Speciesism	3.40	1.33	.41**									
3. Racism	2.69	1.48	.80**	.43**								
4. Sexism	3.53	1.22	.59**	.50**	.72**							
5. Hostile Sexism	3.25	1.52	.67**	.47**	.75**	.88**						
6. Benevolent Sexism	3.80	1.31	.32**	.40**	.47**	.84**	.49**					
7. Age	36.43	12.01	.02	-.08	.04	-.01	-.05	.05				
8. Political Ideology	3.38	1.79	.47**	.28**	.53**	.45**	.42**	.35**	.04			
9. Education	4.49	1.58	.32**	.34**	.22**	.23**	.20**	.18**	.27**	.17*		
10. Income	4.88	2.17	.17*	.11	.07	.02	-.03	.08	.13	.06	.37**	
11. Perceived Income	3.26	.95	.16*	.16*	.13	.05	.04	.04	.04	.08	.33**	.58**

* indicates p<.05. ** indicates p<.01

All the dependent variables had highly significant ($p<.01$) positive correlation with each other, alongside with the mediator variable of social dominance orientation and with the political ideology of the participant.

Intra-target Prejudice Reduction Model

Speciesism intervention on the speciesist attitudes

To investigate linear regressions, a simple mediating process was performed using PROCESS macro for SPSS (Hayes, 2013), particularly its model number four. For the first analysis the outcome variable was speciesism attitudes. The predictor variable for the analysis was the speciesism intervention. The mediating variable for the analysis was social dominance orientation. The effect of the speciesism intervention on the speciesism attitudes was found to be statistically nonsignificant ($B = -.162$, $SE = .286$, $p = .57$). Also, the effect of the intervention on the social dominance orientation ($B = .113$, SE $= .270$, $p = .68$) was nonsignificant, while speciesist attitudes had a significant association ($B = .348$, $SE = .113$, $p < .01$) with the SDO. The 95% confidence interval for the indirect effect of the Speciesism intervention on speciesist attitudes through social dominance orientation ($B = .039$, $SE = .111$) included zero (- .148 to .309) suggesting a nonsignificant indirect effect.

Sexism intervention on the sexist attitudes

The same program and the same model were used to estimate simple linear regression of the sexism intervention on the sexist attitudes, with the mediation of the social dominance orientation. The effect of the sexism intervention on the sexist attitudes was found to be statistically nonsignificant ($B = -.025$, $SE = .189$, $p = 0.90$). The intervention on the SDO variable had a nonsignificant effect ($B = .093$, $SE = .268$, $p = .73$). Additionally, sexist attitudes had a statistically significant relation ($B = .534$, $SE = .072$, $p < .01$) with the social dominance orientation. The analysis of the indirect effect of the sexism intervention on the sexist attitudes through social dominance orientation [$B = .049$, $SE = .150$, *95% C.I.* (- .234, .367)] suggested a nonsignificant indirect effect.

Racism intervention on the racist attitudes

In a same manner we used PROCESS (Hayes, 2013) to measure the effect of the racism intervention on the racist attitudes, with the mediation of the social dominance orientation. The manipulation was found to be statistically nonsignificant ($B = -.251$, $SE = .171$, $p = .14$) with its effect on the dependent variable. Racist intervention had a nonsignificant effect on the mediating variable ($B = -.172$, $SE = .274$, $p = .53$), but the racist attitudes had a significant connection ($B = .933$, $SE = .063$, $p < .01$) with the SDO. At the same time, the indirect effect of the racist intervention on the racist attitudes

through the SDO [$B = -.161$, $SE = .257$, 95% C.I. (- .666, 0.335)] was nonsignificant.

Generalized Prejudice Reduction Model

As in the previous analyses, PROCESS (Hayes, 2013) and its model number four were used to assess all the generalized prejudice reduction effects, or spill-over effects of one target to the other attitudes.

Speciesism intervention on the sexist attitudes

The manipulation of the independent variable in a form of speciesism intervention on the sexist attitudes was statistically nonsignificant ($B = -.054$, $SE = .198$, $p = .79$). The intervention had a nonsignificant effect ($B = .113$, $SE = .270$, $p = .68$) on the social dominance orientation, which was used as a mediating variable, but the dependent variable had a significant association ($B = .561$, $SE = .078$, $p < .01$) with the mediator. The 95% confidence interval for the indirect effect of the speciesism intervention on sexist attitudes through SDO ($B = .063$, $SE = .158$) included zero (- .226 to .403) suggesting a nonsignificant indirect effect, therefore the hypothesis was not confirmed.

Speciesism intervention on the racist attitudes

The effect of the speciesism intervention on the racist attitudes was found to be statistically nonsignificant ($B = .005$, $SE = .208$, $p = 0.98$). The intervention on the SDO, as the mediating variable, had a nonsignificant effect ($B = .113$, $SE = .270$, $p = .68$). However, racist attitudes had a statistically significant relation with the mediator ($B = .943$, $SE = .082$, $p < .01$). The analysis of the indirect effect of the Sexism intervention on Sexist attitudes through Social Dominance Intervention [$B = .107$, $SE = .258$, 95% C.I. (- 0.382, 0.623)] suggested a nonsignificant indirect effect.

Sexism intervention on the speciesist attitudes

The effect of the independent variable on the speciesist attitudes was statistically nonsignificant ($B = -.235$, $SE = .272$, $p = 0.39$). The sexism intervention had a nonsignificant effect on the social dominance orientation ($B = .093$, $SE = .268$, $p = 0.73$) as well. Speciesist attitudes had a strongly significant association with the SDO ($B = .329$, $SE = .103$, $p < .01$). The indirect effect of the intervention on the dependent variable through the mediation was statistically nonsignificant [$B = .030$, $SE = .101$, 95% C.I. (-.135, .273)].

Sexism intervention on the racist attitudes

The sexism intervention had a nonsignificant effect on the racist attitudes (B = - .266, SE = .175, p = 0.13). At the same time, it had a nonsignificant effect on the social dominance orientation (B = .092, SE = .268, p = 0.73). As in the previous analysis, a dependent variable had a significant relation with the SDO (B = .901, SE = .066, p < .01). However, the indirect effect of the sexism intervention on the racist attitudes through the SDO was nonsignificant [B = .083, SE = .248, *95% C.I.* (- .414, .565)].

Racism intervention on the speciesist attitudes

For this analysis the outcome variable was the speciesism attitudes, while the predictor variable was the racism intervention. The mediating variable for the analysis was social dominance orientation. The effect of the racism intervention on the speciesist attitudes was found to be statistically nonsignificant (B = - .179, SE = .256, p = .49). Also, the effect of the intervention on the social dominance orientation (B = - .172, SE = .274, p = .53) was nonsignificant, while speciesist attitudes had a significant association (B = .391, SE = .095, p <.01) with the SDO. At the same time, the indirect effect of the intervention on the speciesist attitudes through the social dominance orientation was nonsignificant [B = - .067, SE = .109, *95% C.I.* (- .270, .173].

Racism intervention on the sexist attitudes

Racism intervention, as the independent variable, had a statistically nonsignificant effect on the dependent variable of the sexist attitudes (B =.062, SE = .219, p = .78). In the same manner, the effect of the intervention on the SDO (B = - .172, SE = .274, p = .53), or the mediator variable, was nonsignificant. On the other hand, association between sexist attitudes and social dominance orientation (B = .536, SE = .081, p < .01) was strongly significant.

However, the hypothesis was not confirmed since the indirect effect of the racism intervention on the sexist attitudes through the SDO was nonsignificant [B = - .092, SE = .149, *95% C.I.* (- .393, .196)].

Discussion Overview

In the present study, our aim was to examine speciesism in conjunction with other forms of prejudice such as sexism and racism, and investigate the

potential for reducing them collectively. Prior research, including studies by Caviola et al. (2019), Dhont et al. (2014a), and Dhont et al. (2016), has demonstrated that prejudices are interconnected to some extent, indicating the presence of underlying factors. Furthermore, there is evidence suggesting that interventions targeting prejudice in one domain can lead to a generalization effect, influencing attitudes in other domains (Pettigrew, 2009; Schmid et al., 2012).

Taking into account the underrepresentation of speciesism in such studies, despite its pervasive influence in everyday life routines (e.g., animal consumption, visiting zoos and aquariums, purchasing fur), we sought to explore if the spill-over effect persists and extends to reducing all the analyzed prejudices simultaneously. Consistent with previous research and the SD-HARM model (Dhont et al., 2016), which posits that both human and non-human animal prejudices are rooted in Social Dominance Orientation, we hypothesized that SDO would mediate the effect of generalized prejudice reduction.

Consistent with previous research (Caviola et al., 2019; Dhont et al., 2014a; Dhont et al., 2016), this study revealed a highly significant correlation between speciesism, sexism, and racism, further highlighting their shared characteristics. Racism and sexism exhibited a strong correlation with each other, while they demonstrated a moderate to strong correlation with speciesism, as determined by Cohen's (1998) guidelines. Additionally, all three forms of prejudice showed a strong relationship with social dominance orientation, which aligns with expectations.

The disparity in the effect sizes can be attributed to the critique raised by Dovidio et al. (2010), suggesting that the Modern Racism Scale (McConahay, 1986) used to measure racism may reflect a more overt expression of prejudice due to changes in historical and social contexts. On the other hand, the other two scales capture more contemporary expressions of prejudice. Furthermore, the results indicated that higher levels of conservatism, measured as political orientation, were associated with increased levels of speciesism, racism, and sexism, which is in line with previous studies (Dhont et al., 2016). This finding is not surprising, as conservatism often aligns with support for the status quo and resistance to social change, which would be necessary to dismantle the aforementioned systems. These findings underscore the broader implications of general dominance strivings, highlighting their associations with different forms of prejudice and support for inequality in both human intergroup relations

(racism and sexism) and human-animal relations (speciesism). Social dominance orientation, serving as a potential root of these worldviews, plays a significant role in shaping these outcomes. It impacts not only our attitudes towards other sentient beings but also our relationship with the planet itself, illustrating the interconnectedness of exploitation and the desire for domination. Previous research has demonstrated that individuals higher in social dominance orientation are more likely to endorse exploitative practices depleting natural resources and deny climate change (Häkkinen & Akrami, 2014; Hoffarth & Hodson, 2016; Jylhä & Akrami, 2015; Milfont et al., 2013).

These theoretical advancements offer practical solutions that should not be overlooked when addressing issues such as racial and gender discrimination, animal cruelty, and climate change. The studies mentioned, including the present one, bring us closer to understanding the "unique role of group-based dominance as a central factor linking prejudicial tendencies in human-human, human-animal relations" (Dhont et al., 2016, p. 517), as well as shaping human-nature behavior.

The potential for generalized prejudice reduction among these three dimensions implies that they share common underlying factors, suggesting that addressing one prejudice could lead to a reduction in others. While the concept of spillover effects is not new, it typically occurs within similar social groups (e.g., spill-over from prejudice reduction targeting immigrants to attitudes towards Black people but not women, as seen in Harwood et al., 2011). To account for this, our study incorporated multiple layers within the interventions, including counter-stereotypic behavior and opportunities to help the outgroup. By testing intra-target prejudice reduction models, we aimed to examine the effectiveness of these interventions in reducing prejudices within each target group separately.

Auger and Amiot (2019) were among the first researchers to investigate the concept of imagined contact with both valued animals (dogs) and devalued animals (cows). Their study demonstrated that participants were able to change their behavioral intentions towards these animals, but no significant change in attitudes was observed. This finding aligns with the established understanding that imagined contact tends to be more effective in influencing behavior rather than attitudes (Miles & Crisp, 2014). It is important to note that studies examining imagined contact specifically with Black people and women are limited in the literature. This is likely due to the availability of real-life contact opportunities with these groups, which can

diminish the role of imagined contact in shaping attitudes (Miles & Crisp, 2011).

In order to try to pass this barrier with these prejudice dimensions, we introduced a mixed-method approach, with the different layers of intervention (see Manipulation section). The same approach was used with different targets: a Black man to tackle racism, a woman to tackle sexism, and a cow to intercept speciesism. The initial idea was to test if there is generalized prejudice reduction between these three dimensions and to measure the strength of its effect.

The interventions proved to be statistically nonsignificant, so we failed to test the main hypothesis. The first hypothesis was not supported because intra-target prejudice reduction intervention did not work. In other words, speciesism intervention did not reduce speciesism; sexism intervention failed to reduce sexism; and racism intervention did not reduce racism.

Therefore, the second hypothesis stating there will be a generalized prejudice reduction effect remained unsupported as well. As well, interventions did not have an impact either on SDO, but that variable was related to all the assessed prejudices.

According to the meta-analysis (Miles & Crisp, 2014), this type of nonsignificant results is not extraordinary, especially for prejudices towards ethnic groups; as well, sex and gender are largely neglected in these types of studies. In the same manner, the research of speciesism in this context is lacking, as mentioned before. Possible explanation regarding the non-significance may be in the fact that White men in the US may interact with both women and Black people and have a regular contact in daily life, as they are not the group that is hard to reach, which is one of the prerequisites for imagined contact (Crisp et al., 2008; Fujioka, 2005). Also, this intervention was done in an online setting, which may play a valuable role, since previous studies showed that web-delivered imagined contact may not be effective (Bordeleau, 2021). However, the research on this regard is lacking.

Moreover, it is important to note that participants went through only one reading that is done in less than a minute. For comparison, Taschler and West (2016) wrote about reducing sexism with frequent and higher-quality contact with counter-stereotypical women. Some other studies as well (e.g. Vezzali et al., 2011) opted for the more longitudinal approach when reducing ethnic prejudice. This may be especially true with the counter-stereotypic groups, in order not to be excluded as outliers and for the intervention to succeed

even though individual members of a group (e.g. women) are encountered in everyday life.

We can also argue that, since we focused on different methods of prejudice, neither of them proved to be strong enough to actually make an impact. Because we used several methods it is possible that the emphasis on each was not sufficient to truly make a change. Making a mix of different approaches should be additionally revised, tested and compared to single-approach interventions. Another possible explanation for the ineffectiveness of intervention is that we conducted an online study with Prolific participants that might be less motivated to engage in imagined contact.

Limitations and Further Research

Several limitations of this study require further investigation. First, in the speciesism intervention we included only one type of animal (a cow). It is clear, however, that people have multiple categorization criteria for different animals. For instance, people are less concerned about food animals than about companion animals and some wild ones (e.g., dolphins; Krings et al., 2021). This type of *moral divide* is greater for those participants who score high on human supremacy beliefs (Krings et al., 2021). So, it may mean that encounters with different animals work in a distinct manner on a different group of people.

Secondly, another limitation lies in the very concept of how people approach Social Dominance Orientation as a concept. It is unclear whether participants that score high in SDO because of accepting domination of animals per se, or because they value higher hierarchical distance from them, as a preference for inequality in intergroup relations (Dhont et al., 2016). However, this does not mean that those two processes can be operating simultaneously (see Jylhä & Akrami, 2015).

Thirdly, it is not clear whether people take animals into consideration when they are asked about the social groups mentioned in the Social Dominance Orientation scale (Pratto et al., 1994), especially due to the fact that the Speciesism scale (Caviola et al., 2019) was administered after the SDO one.

Fourthly, the current study was done on the US sample only. Even though some societal practices persist across cultures, it would be important to test the racism, speciesism, and sexism correlations and interventions on the Global South samples, with the special attention to the prejudice underpinnings (such as SDO), due to the different views on hierarchical

stances. Additionally, participants were adults (from 18 to 65 years old). The imagined contact effect, however, is stronger for children than for adult participants (Miles & Crisp, 2014), which may lead further studies towards the sample. As well, children prioritize humans over animals less than adults do (Wilks et al., 2020). In addition, only White male participants were included in the study, as they are the only targets who do not fall under the prejudice categories under investigation. However, it is important to recognize that the findings of this study can be extended to include individuals of other genders and ethnicities, as there is a possibility of internalized sexism and/or racism across different groups.

Further studies may go in different directions. First, a recommendation lies in the fact that prejudice reduction interventions should be ideally repeated several times in the span of a certain time. Secondly, instead of the attitudes, researchers may measure the behavioral intentions, which already proved to be more malleable when it comes to contact (Miles & Crisp, 2014). For example, Caviola et al., (2019) developed an assessment that is focused on the amount of resources which can be put in the charity of various kinds (human and non-human animal areas) by individuals. As well, Auger and Amiot (2019) adapted an Amiot's and Bastian's (2017) collective action intentions scale to fit the behavioral intentions towards animals. When it comes to sexism, behavioral items from the Attraction to Sexual Aggression Scale (Malamuth 1989) may be used, while for racism researchers can use one of the methods that is used to measure Aversive Racism (Gaertner & Dovidio, 1986), such as selecting Black or White candidates for the job.

Thirdly, instead of focusing on each prejudice dimension individually, future research may tackle social dominance orientation directly, which, if appears significant, would again test the interconnection between different prejudices. Although SDO is relatively stable (Dhont et al., 2014b; Pratto et al., 1994), increased outgroup contact is effective at lowering SDO levels over time. This adds to the previously mentioned argument that repetitive interventions could have possibly gave us the needed results to confirm the hypotheses. In line with that, SDO may also be reduced through providing help to the outgroups (Brown, 2011), so the future study would ideally combine both the contact and helping in an immigration camp, women's shelter for domestic violence abuse and volunteering in an animal sanctuary.

Another area according to which new interventions can be formed lies in the subordinate identity acquisition. Superordinate identity refers to incorporating outgroups (e.g., non-human animals) into a more inclusive and

encompassing ingroup (Gaertner et al., 1993; Gaertner et al., 1990; Greenaway et al., 2015). Encouraging superordinate identities in a form of humanity improves perceptions of human groups that are usually highly discriminated against (Gaertner & Dovidio, 2005). Therefore, making a subordinate identity of sentient beings or Earthlings (inhabitants of the Planet Earth) can create a positive effect in prejudice reduction to both human and non-human animals. To illustrate, in the previous studies (Costello & Hodson, 2010) anti- immigrant prejudice was lowered by closing the divide between animals and humans, both in high and low scorers on the SDO. So, future interventions may be designed to emphasize traits, interests and goals that are all shared by both humans and animals.

Finally, there are other variables that have already proved to be interesting in relation to speciesism and other prejudices that should be included in the analysis as well. The most prominent being right-wing authoritarianism (RWA) and system justification (Caviola et al.,2019). RWA and system justification may play a pivotal role when talking about exploitative practices of specific animals that are connected to traditions and social norms within a certain culture (e.g. bullfighting in Portugal), but also in perpetuating the status quo of racial and sexist injustices. Secondly, an important concept that may be included is *vegetarianism threat* since those who see vegetarianism as a threat to their lifestyle are more likely to care less about animals and exhibit stronger speciesism (Dhont & Hodson, 2014). This type of threat still persists even after partialing out conservatism, SDO and RWA (Dhont et al., 2016), so it should be controlled and treated as a dimension of its own. Thirdly, another control variable worth mentioning is feminist identity acquisition (Shi & Zheng, 2020), that proved to mediate the relationship with sexism (possibly with other prejudices like speciesism, due to the linked oppression hypothesis, but that is unexplored). Fourthly, some prejudices are negatively correlated with open-minded thinking and empathetic concern (Caviola et al., 2019), therefore these two traits are worth taking into consideration. Finally, control variables that should be taken into an account are previous contact with counter-stereotypic outgroups (Daspupta & Asgari, 2004), alongside with the previous contact with animals (Auger & Amiot, 2019), both of which strongly influences expressed attitudes towards mentioned social categorize and individuals.

On the other hand, as far as activism is concerned, this study can strengthen and provide valuable insights into alternative approaches to advocating for animal liberation. As highlighted in some of the earlier works

(see Dominick, 1997) and confirmed by more recent research (see Joy, 2019), animal rights activists should prioritize the dismantling of hierarchies as such, leading to the veganarchist perspective, which advocates for combining animal liberation with the advocacy of other interconnected struggles. The present study highlights the importance of this approach and offers the pathway of translating abstract concepts (such as the abolition of hierarchy) into concrete action. This can be achieved through engaging in contact, whether imagined or direct, with individuals from various marginalized groups (including non-human animals) in order to reduce prejudice as such.

Conclusion

The current study found extremely significant correlations between speciesism, sexism, racism and Social Dominance Orientation. On the other hand, since contact intervention did not work on the intra-target prejudices, this research needs to be replicated with different types of prejudice reduction models, in a more longitudinal manner or on another type of participants. In any case, this study does not dispute the effectiveness of generalized prejudice reduction among speciesism, racism and sexism and further research is needed to approve or disapprove this claim. However, current study provided us with important insights on what works or does not work in the prejudice reduction domain.

References

Adams, C. J. (2000). *The sexual politics of meat: A feminist-vegetarian critical theory* (10th anniversary ed.). New York: Continuum.

Akrami, N., Ekehammar, B., & Bergh, R. (2011). Generalized prejudice: Common and specific components. *Psychological Science, 22*, 57–59. https://doi.org/10.1177/0956797610390384

Allcorn, A., Ogletree, S. M. (2018). Linked oppression: Connecting animal and gender studies. *Feminism & Psychology, 28*(4), 457-469. https://doi.org/10.1177/0959353518759562

Allport, G. W. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.

Altemeyer, B. (1981). *Right-wing authoritarianism*. Winnipeg, Manitoba, Canada: University of Manitoba Press.

Amiot, C. E., & Bastian, B. (2015). Toward a psychology of human–animal relations. *Psychological Bulletin, 141*(1), 6.

Auger, B., & Amiot, C. E. (2019). The impact of imagined contact in the realm of human-animal relations: Investigating a superordinate generalization effect involving both valued and devalued animals. *Journal of Experimental Social Psychology, 85*, 11. https://doi.org/10.1016/J.JESP.2019.103872

Bandura, A. (1999). Moral disengagement and the perpetration of inhumanities. *Personality and Social Psychology Review, 3*, 193–209. https://doi.org/10.1207/s15327957pspr0303_3

Bar-Tal, D. (1989). Delegitimization: The extreme case of stereotyping. In D. Bar-Tal, C. F. Grauman, A. Kruglanski & W. Stroebe (Eds.), *Stereotyping and prejudice: Changing conceptions* (pp. 169–182). New York: Springer.

Beelmann, A., & Heinemann, K. S. (2014). Preventing prejudice and improving intergroup attitudes: A meta-analysis of child and adolescent training programs. *Journal of Applied Developmental Psychology, 35*, 10–24. http://dx.doi.org/10.1016/j.appdev.2013.11.002

Bergh, R., Akrami, N., & Ekehammar, B. (2012). The personality underpinnings of explicit and implicit generalized prejudice. *Social Psychological and Personality Science, 3*, 614– 621. https://doi.org/10.1177/1948550611432937

Bordeleau, J. N. (2021). Can imagined contact really be delivered through the web? A preregistered test of web-delivered imagined contact with Muslim Americans. [Bachelor's thesis, Royal Military College of Canada]. Research Gate. https://www.researchgate.net/publication/354689697_Can_Imagine d_Contact_Really_Be_Delivered_Through_the_Web_A_Preregister ed_Test_of_Web-Delivered_Imagined_Contact_with_Muslim_Americans

Brambilla, M., Ravenna, M., & Hewstone, M. (2011). Changing stereotype content through mental imagery: Imagining intergroup contact promotes stereotype change. *Group Processes & Intergroup Relations, 15*(3), 305–315. https://doi.org/10.1177/1368430211427574

Brown, M.A. (2011). Learning from service: The effect of helping on helpers' social dominance orientation. *Journal of Applied Social Psychology, 41*, 850-871. https://doi.org/10.1111/j.1559-1816.2011.00738.x

Brown, R. (2010). *Prejudice: Its social psychology*. Chichester, UK: John Wiley & Sons.

Caviola, L., Everett, J. A., & Faber, N. (2019). The moral standing of animals: Towards a psychology of speciesism. *Journal of Personality and Social Psychology, 116*(6), 1011– 1029. https://doi.org/10.1037/pspp0000182

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. New York, NY: Routledge Academic.

Costello, K., & Hodson, G. (2014). Explaining dehumanization among children: The interspecies model of prejudice. *British Journal of Social Psychology, 53*, 175–197. https://doi.org/10.1111/bjso.12016

Crisp, R. J., & Turner, R. N. (2009). Can imagined interactions produce positive perceptions?: Reducing prejudice through simulated social contact. *American Psychologist, 64*(4), 231– 240. https://doi.org/10.1037/a0014718

Crisp, R. J., Stathi, S., Turner, R. N., & Husnu, S. (2008). Imagined intergroup contact: Theory, paradigm and practice. *Social and Personality Psychology Compass, 3*(1), 1–18. https://doi.org/10.1111/j.1751-9004.2008.00155.x

Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*(4), 349-354. https://doi.org/10.1037/h0047358

Dambrun, M., Kamiejski, R., Haddadi, N., & Duarte, S. (2008). Why does social dominance orientation decrease with university exposure to the social sciences? The impact of institutional socialization and the mediating role of "geneticism." *European Journal of Social Psychology, 39*(1), 88–100. https://doi.org/10.1002/ejsp.498

Dasgupta, N., & Asgari, S. (2004). Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping. *Journal of Experimental Social Psychology, 40*(5), 642-658.

Dhont, K., & Hodson, G. (2014). Why do right-wing adherents engage in more animal exploitation and meat consumption? *Personality and Individual Differences, 64*, 12–17. doi:10.1016/j. paid.2014.02.002.

Dhont, K., Hodson, G., & Leite, A. C. (2016). Common ideological roots of speciesism and generalized ethnic prejudice: The social dominance human–animal relations model (SD- HARM). *European Journal of Personality, 30*, 507–522. https://doi.org/10.1002/per.2069

Dhont, K., Hodson, G., Costello, K., & MacInnis, C. C. (2014a). Social dominance orientation connects prejudicial human–human and human–animal relations. *Personality and Individual Differences, 61–62*, 105–108. https://doi.org/10.1016/j.paid.2013.12.020

Dhont, K., Van Hiel, A., & Hewstone, M. (2013). Changing the ideological roots of prejudice: Longitudinal effects of ethnic intergroup contact on social dominance orientation. *Group Processes & Intergroup Relations, 17*(1), 27–44. https://doi.org/10.1177/1368430213497064

Dhont, K., Van Hiel, A., & Hewstone, M. (2014b). Changing the ideological roots of prejudice: Longitudinal effects of ethnic intergroup contact on social dominance orientation. *Group*

Processes & Intergroup Relations, 17(1), 27–44.
https://doi.org/10.1177/1368430213497064

Dominick, B. A. (1997). Animal Liberation and Social Revolution. *The Anarchist Library*. https://theanarchistlibrary.org/library/brian-a-dominick-animal-liberation-and-social-revolution

Dovidio, J. F., Gaertner, S. L., & Kawakami, K. (2010). Racism. In J. F. Dovidio, M. Hewston, P. Glick, & V. M. Esses (Eds.), *The Sage handbook of prejudice, stereotyping, and discrimination* (pp. 312-327). London, England: Sage.

Dovidio, J. F., Love, A., Schellhaas, F. M., & Hewstone, M. (2017). Reducing intergroup bias through intergroup contact: Twenty years of progress and future directions. *Group Processes & Intergroup Relations, 20*(5), 606–620.
https://doi.org/10.1177/1368430217712052

Duckitt, J., & Sibley, C. G. (2007). Right wing authoritarianism, social dominance orientation and the dimensions of generalized prejudice. *European Journal of Personality, 21*, 113– 130.
https://doi.org/10.1002/per.614

Dunayer, J. (2004). *Speciesism*. Derwood, MD: Ryce.

Ekehammar, B., & Akrami, N. (2003). The relation between personality and prejudice: A variable and a person-centred approach. *European Journal of Personality, 17*, 449–464.

Everett, J.A.C., Caviola, L., Savulescu, J., & Faber, N. S. (2019). Speciesism, generalized prejudice, and perceptions of prejudiced others. *Group Processes & Intergroup Relations, 22*(6), 785–803.
https://doi.org/10.1177/1368430218816962

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior research methods, 41*(4), 1149–1160.
https://doi.org/10.3758/BRM.41.4.1149

Foels, R., & Pappas, C. J. (2004). Learning and unlearning the myths we are taught: Gender and social dominance orientation. *Sex Roles, 50*(11/12), 743–757.
https://doi.org/10.1023/b:sers.0000029094.25107.d6

Fujioka, Y. (2005). Black media images as a perceived threat to African American ethnic identity: Coping responses, perceived public perception, and attitudes towards affirmative action. *Journal of Broadcasting & Electronic Media, 49*(4), 450–467.
https://doi.org/10.1207/s15506878jobem4904_6

Gaertner, S. L., & Dovidio, J. F. (2005). Understanding and addressing contemporary racism: From aversive racism to the common ingroup identity model. *Journal of Social Issues, 61*(3), 615-639.

Gaertner, S. L., Dovidio, J. F., Anastasio, P. A., Bachman, B. A., & Rust, M. C. (1993). The common ingroup identity model:

Recategorization and the reduction of intergroup bias. *European Review of Social Psychology, 4*(1), 1-26.

Gaertner, S. L., Mann, J. A., Dovidio, J. F., Murrell, A. J., & Pomare, M. (1990). How does cooperation reduce intergroup bias? *Journal of Personality and Social Psychology, 59*(4), 692704.

Glasser, C. L. (2011). Tied oppression: An analysis of how sexist imagery reinforces speciesist sentiment. *The Brock Review, 12*(1), 51–68. https://doi.org/10.26522/br.v12i1.333

Glick, P., & Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology, 70*, 491–512. https://doi.org/10.1037/0022-3514.70.3.491

Good, J. J., & Woodzicka, J. A. (2010). Reducing approval of benevolent sexism: An educational intervention. *The New School Psychology Bulletin, 7*(1), 16-30. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.962.7192&rep=rep1&type=pdf

Greenaway, K. H., Wright, R. G., Willingham, J., Reynolds, K. J., & Haslam, S. A. (2015). Shared identity is key to effective communication. *Personality and Social Psychology Bulletin, 41*(2), 171-182.

Häkkinen, K., & Akrami, N. (2014). Ideology and climate change denial. *Personality and Individual Differences, 70*, 62–65. doi:10.1016/j.paid.2014.06.030.

Harwood, J., Paolini, S., Joyce, N., Rubin, M., & Arroyo, A. (2011). Secondary transfer effects from imagined contact: Group similarity affects the generalization gradient. *British Journal of Social Psychology, 50*(1), 180–189. https://doi.org/10.1348/014466610x524263

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: The Guilford Press.

Hedges, C. (2003). *What every person should know about war*. New York, NY: Free Press.

Heinrich Böll Foundation, & Friends of the Earth Europe. (2014). *Meat Atlas: Facts and figures about the animals we eat*. Retrieved from https://www.foeeurope.org/sites/default/files/publications/foee_hbf_meatatlas_jan2014.p df

Herzog, H. A., Betchard, N. S., & Pittman, R. (1991). Gender, sex role identity and attitudes toward animals. *Anthrozoös, 4,* 184–191. doi:10.2752/089279391787057170.

Ho, A. K., Sidanius, J., Pratto, F., Levin, S., Thomsen, L., Kteily, N., & Sheehy-Skeffington, J. (2012). Social dominance orientation: Revisiting the structure and function of a variable predicting social

and political variables. *Personality and Social Psychology Bulletin, 38*, 583–606. https://doi.org/10.1177/0146167211432765

Hodson, G., & Costello, K. (2012). The human cost of devaluing animals. *New Scientist, 2895*, 34-35. https://doi.org/10.1016/S0262-4079(12)63189-3

Hodson, G., MacInnis, C. C., & Costello, K. (2014). (Over)valuing "humanness" as an aggravator of intergroup prejudices and discrimination. In P. G. Bain, J. Vaes, & J.-P. Leyens (Eds.), *Humanness and dehumanization* (pp. 86–110). New York, NY: Psychology Press.

Hoffarth, M. R., & Hodson, G. (2016). Green on the outside, red on the inside: Perceived environmentalist threat as a factor explaining political polarization of climate change. *Journal of Environmental Psychology*, 45, 40–49. doi:10.1016/j.jenvp.2015.11.002.

Husnu, S., & Crisp, R. J. (2010). Imagined intergroup contact: A new technique for encouraging greater inter-ethnic contact in Cyprus. *Peace and Conflict: Journal of Peace Psychology, 16*(1), 97–108. https://doi.org/10.1080/10781910903484776

Husnu, S., & Crisp, R. J. (2011). *Enhancing the imagined contact effect. The Journal of Social Psychology, 151*(1), 113–116. https://doi.org/10.1080/00224541003599043

Jackson, L. M. (2019). Speciesism predicts prejudice against low-status and hierarchy- attenuating human groups. *Anthrozoös, 32*(4), 445-458. https://doi.org/10.1080/08927936.2019.1621514

Joy, M. (2011). *Why we love dogs, eat pigs, and wear cows: An introduction to carnism*. Berkeley, CA: Conari.

Joy, M. (2019). *Powerarchy: understanding the psychology of oppression for social transformation*. Oakland, CA: Berrett-Koehler Publishers.

Jylhä, K., & Akrami, N. (2015). Social dominance orientation and climate change denial: The role of dominance and system justification. *Personality and Individual Differences, 86*, 108–111. doi:10.1016/j.paid.2015.05.041.

Kteily, N. S., Ho, A., & Sidanius, J. (2012). Hierarchy in the mind: The predictive power of social dominance orientation across social contexts and domains. *Journal of Experimental Social Psychology, 48*, 543–549. https://doi.org/10.1016/j.jesp.2011.11.007

Kuchenbrandt, D., Eyssel, F., & Seidel, S. K. (2013). Cooperation makes it happen: Imagined intergroup cooperation enhances the positive effects of imagined contact. *Group Processes & Intergroup Relations, 16*(5), 635–647. https://doi.org/10.1177/1368430212470172

Malamuth, N. (1989). The attraction to sexual aggression scale: Part one. *Journal of Sex Research, 26*(1), 26–49. doi:10. 1080/00224498909551491.

McConahay, J. B. (1986). Modern racism, ambivalence, and the Modern
    Racism Scale. In J. F. Dovidio & S. L. Gaertner (Eds.), *Prejudice,
    discrimination, and racism* (pp. 91–125). San Diego, CA: Academic
    Press.

Mendl, M., Held, S., & Byrne, R. W. (2010). Pig cognition. *Current
    Biology, 20*(18), R796- R798.

Miles, E., & Crisp, R. J. (2014). A meta-analytic test of the imagined
    contact hypothesis. *Group Processes & Intergroup Relations, 17*(1),
    3–26. https://doi.org/10.1177/1368430213510573

Milfont, T. L., Richter, I., Sibley, C. G., Wilson, M. S., & Fischer, R.
    (2013). Environmental consequences of the desire to dominate and
    be superior. *Personality and Social Psychological Bulletin, 39*,
    1127–1138. doi:10.1177/0146167213490805.

Paluck, E. L., & Green, D. P. (2009). Prejudice reduction: What works? A
    review and assessment of research and practice. *The Annual Review
    of Psychology, 60*, 339-367.
    https://doi.org/10.1146/annurev.psych.60.110707.163607

Patterson, C. (2002). *Eternal Treblinka: our treatment of animals and the
    Holocaust*. New York: Lantern Books.

Pettigrew, T. F. (2009). Secondary transfer effect of contact. *Social
    Psychology, 40*(2), 55–65. https://doi.org/10.1027/1864-
    9335.40.2.55

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact
    reduce prejudice? Meta- analytic tests of three mediators. *European
    Journal of Social Psychology, 38*(6), 922– 934.
    https://doi.org/10.1002/ejsp.504

Plous, S. (2003). Is there such a thing as prejudice towards animals? In S.
    Plous (Ed.), *Understanding prejudice and discrimination* (pp. 509–
    528). New York, NY: McGraw- Hill.

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social
    dominance orientation: A personality variable predicting social and
    political attitudes. *Journal of Personality and Social Psychology,
    67*, 741–763. https://doi.org/10.1037/0022-3514.67.4.741

Rollero, C., Glick, P., & Tartaglia, S. (2014). Psychometric properties of
    short versions of the Ambivalent Sexism Inventory and
    Ambivalence Toward Men Inventory. *TPM-Testing, Psychometrics,
    Methodology in Applied Psychology, 21*(2), 149–159.

Rothgerber, H. (2013). Real men don't eat (vegetable) quiche: Masculinity
    and the justification of meat consumption. *Psychology of Men &
    Masculinity, 14*(4), 363–375. doi:10.1037/a0030379

Schmid, K., Hewstone, M., Küpper, B., Zick, A., & Wagner, U. (2012).
    Secondary Transfer Effects of Intergroup Contact. *Social
    Psychology Quarterly, 75*(1), 28–51.
    https://doi.org/10.1177/0190272511430235

Shi, X., & Zheng, Y. (2020). Perception and tolerance of sexual harassment: An examination of feminist identity, sexism, and gender roles in a sample of Chinese working women. *Psychology of Women Quarterly, 44*(2), 217–233. https://doi.org/10.1177/0361684320903683

Shook, N. J., Hopkins, P. D., & Koech, J. M. (2015). The effect of intergroup contact on secondary group attitudes and social dominance orientation. *Group Processes & Intergroup Relations, 19*(3), 328–342. https://doi.org/10.1177/1368430215572266

Sidanius, J., & Pratto, F. (1999). *Social dominance: An intergroup theory of social hierarchy and oppression*. New York, NY: Cambridge University Press.

Singer, P. (2015). *Animal liberation.* London, UK: The Bodley Head.

Taschler, M., & West, K. (2017). Contact with counter-stereotypical women predicts less sexism, less rape myth acceptance, less intention to rape (in men) and less projected enjoyment of rape (in women). *Sex Roles: A Journal of Research, 76*(7-8), 473-484. https://doi.org/10.1007/s11199-016-0679-x

Vezzali, L., Capozza, D., Giovannini, D., & Stathi, S. (2011). Improving implicit and explicit intergroup attitudes using imagined contact: An experimental intervention with elementary school children. *Group Processes & Intergroup Relations, 15*(2), 203–212. https://doi.org/10.1177/1368430211424920

Wilks, M., Caviola, L., Kahane, G., & Bloom, P. (2021). Children Prioritize Humans Over Animals Less Than Adults Do. *Psychological Science, 32*(1), 27–38. https://doi.org/10.1177/0956797620960398

Yetkili, O., Abrams, D., Travaglino, G.A., & Giner-Sorolla, R. (2018). Imagined contact with atypical outgroup members that are anti-normative within their group can reduce prejudice. *Journal of Experimental Social Psychology, 76,* 2