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

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Master in Psychology of Intercultural Relations

Supervisor:
PhD Ricardo Borges Rodrigues, Invited Assistant Teacher

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"Where there is power, there is resistance."

Michele Foucault

# Acknowledgments

# 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 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 went through a prejudice reduction intervention in the form of 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 with 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

# Resumo

Há uma história de análise das relações entre diferentes preconceitos, incluindo a interconexão do racismo, sexismo e especismo. Da mesma forma, vários estudos sugeriram que os preconceitos têm as mesmas causas subjacentes, sendo uma das mais significativas a Orientação para a Dominância Social (ODS; i.e., crença na legitimidade e desejabilidade das hierarquias). Portanto, se os preconceitos têm uma raiz comum (na ODS), lidar com apenas um deles deve resultar num efeito de redução do preconceito para todos os outros. O estudo atual examinou essa ideia testando o efeito de um desenho de intervenção para reduzir preconceitos em relação às mulheres, negros, e animais não-humanos, e testando a ODS como mediador. Os participantes foram aleatoriamente colocados numa de quatro condições (especismo, sexismo, racismo ou controlo), onde passaram por uma intervenção de redução do preconceito na forma de um contato imaginado. Os participantes expressaram fortes intercorrelações entre as atitudes SDO, sexismo, racismo e especismo. Contudo, as intervenções mostraram-se estatisticamente não significativas, assim como a mediação da ODS. Discutem-se as limitações do estudo e apresentam-se orientações para estudos futuros.

*Palavras-chave*: redução generalizada do preconceito, especismo, sexismo, racismo, orientação para a dominância social, relações homem-animais

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# 1. Introduction

Prejudice is a driving force and an essential starting point of the majority of discrimination in the world. Gordon Allport (1954) said that if a person is prejudiced towards one group, he/she is most likely to feel the same towards the other diversity typologies; thus, if an individual is anti-homosexual, he/she is likely to be anti-immigrant, anti-feminist etc. Since that statement, several authors (Akrami et al., 2011; Bergh et al., 2012; Duckitt & Sibley, 2007) approached this topic. After seeing that prejudices towards different groups are interrelated, multiple studies (Pettigrew, 2009; Schmid et al., 2012) proved the possibility that intervention on one of the prejudice categories can also lead to the reduction in others, *seemingly*, unconnected categories. For example, contact with immigrants as a primary group resulted in prejudice reduction to the secondary group of homosexuals and Jewish people (Schmid et al., 2012). In fact, research has found prejudice toward various targets to be significantly correlated, and factor analyses yielded a generalized prejudice factor explaining 50% to 60% of the variance (Ekehammar & Akrami, 2003). Since then, researchers explained this phenomenon with individual differences such as right-wing authoritarianism (Altemeyer, 1981) and social dominance orientation (Sidanius & Pratto, 1999).

One model that took non-human animals into consideration is the Social Dominance Human-Animal Relations model (Dhont et al., 2016). It suggests that the generalized effect of prejudice occurs because of their common root in *social dominance orientation* (SDO), the preference for group-based dominance and inequality. If prejudices have a common root, tackling one of them should result in a generalized prejudice reduction effect, or in other words, lower all of the other prejudices. If so, what is the best typology to tackle by a prejudice reduction intervention in order to reduce them all?

Following the Social Dominance Human-Animal Relations model (Dhont et al., 2016; SD-HARM), this research is concentrated on measuring the influence of reducing racism, sexism or speciesism to see if an intervention on each one of those dimensions exhibits the generalized prejudice reduction effect on the other two typologies. As proposed by the previously mentioned

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model, it is expected that SDO, as a root of the prejudices, mediates this effect. Thus, the present study constitutes a new perspective with both theoretical and practical implications.

## 1.1. Literature review

### 1.1.1. Sexism

One of the most prevalent forms of prejudices is the one towards women. Glick & Fiske (1996) defined sexism as a multidimensional construct that encompasses two sets of sexist attitudes: hostile and benevolent, which are the two sides of a same coin. The first one is directed as a sexist antipathy, while the latter represents in tone positive (for sexist men) orientation towards women. Because of the opposing evaluative implications (e.g. *Woman should be protected* and *Women are incompetent at work)* Glick and Fiske (1996) labeled it as the Ambivalent Sexism Inventory (ASI). ASI predicts attitudes towards women and it encompasses different specters of sexism, such as: paternalism, gender differentiation and heterosexuality (Glick & Fiske, 1996).

*Paternalism* is defined as treating others in a manner a father would treat children (Random House College Dictionary, 1973), and it relates to both *domination* and *affection and protection*. In other words, sexists that are high on paternalism view women as not fully competent adults, who need males to function. On the other hand, *gender differentiation* is associated to the belief that different genders possess qualities that other ones do not. It can either be *competitive* or *complementary*. The first one is expressed in the belief that only men are having the traits necessary to govern important social institutions (Glick & Fiske, 1996). This creates a relation which implies that women need to serve. Complementary gender differentiation, conversely, is conveyed as compensation for favorable traits that men stereotypically lack, thus needing their "better half".

Even though "heterosexual relationships are the source of joyful and cherished feelings (Hatfield, 1988), romantic relationships between men and women also appear as the greatest threat of violence toward women (Unger & Crawford, 1992). And despite the fact that men see heterosexual romantic relationships as one of the top sources of happiness in life (Berscheid & Peplau, 1983; Brehm, 1992), it also creates a strange situation where the relatively more powerful group is dependent on the minority group. For that reason, sexist men can turn to desires of psychological closeness called *heterosexual intimacy*, and/or to the hostile belief that women use men through the sexual alluring, which is labeled as *heterosexual hostility*.

Both hostile and benevolent sexism serve to justify men's structural power (Glick & Fiske, 1996). "Hostile sexist beliefs in women's incompetence at agentic tasks characterize women as unfit to wield power over economic, legal, and political institutions, whereas benevolent sexism provides a comfortable rationalization for confining women to domestic roles" (Glick & Fiske, 1996, p. 492). In fact, similar ideologies have been used in the past to justify racist oppression and different forms of slavery and colonialism (see Tajfel, 1969).

### 1.1.2. Racism

Alongside with the social norms, racism evolved, and it had different periods in a course of time (see Duckitt, 1992). Racism can be defined as "an organized system of privilege and bias that systematically disadvantages a group of people perceived to belong to a specific race" (Dovidio et al., 2010, p. 312). It has three defining elements: a) the belief that races exist and can be identified through specific physical characteristics, b) that those characteristics make one or more groups inferior and c) that it includes negative beliefs, attitudes and the social power to create inequalities (Dovidio et al., 2010).

Moreover, there are different ways racism can be measured. For example, the Aversive Racism Scale measures ethnic prejudice even in individuals that regard themselves as nonprejudiced, but still demonstrate negative feelings and beliefs about Blacks that are rooted in basic psychological processes such as social categorization (Gaertner & Dovidio, 1986). In a similar manner Pettigrew and Merteens (1995) quantified subtle prejudice in their Subtle & Blatant Prejudice scale, in which they as well incorporated traditional and direct forms of racism.

Nevertheless, a long time ago, McConahay and Hough (1976) developed a Modern Racism Scale, through the Symbolic racism theory, which is still widely used today. This scale weighs the core beliefs of prejudiced individuals, their personal values that are connected to racism and their discrimination of Black people. The Modern racism scale challenges the elements such as the belief that Blacks get more than they deserve, the acceptance of meritocracy and individualism, alongside with the rejection of affirmative action (McConahay & Hough, 1976). In other words, this type of racism is a set of "abstract moral assertions about Blacks' behavior as a group, concerning what Blacks deserve, how they ought to act, whether or not they are treated equitably, and so on" (Sears & McConahay, 1973, p. 138). Symbolic racism has a

crucial weight, because Black people have consistently attracted the greatest prejudice based on their group membership (Sears, 1998).

### 1.1.3. Speciesism

While racism and sexism are well-acknowledged in academia and public opinion, speciesism is still largely underexplored. There has even been a debate on the denial of speciesism as a type of prejudice (see Plous, 2003). However, suppose we define prejudice as "any attitude emotion, or behavior toward members of a group, which directly or indirectly implies some negativity or antipathy toward that group" (Brown, 2010, p. 7); in that case, it is clear that it encompasses speciesism as a category also. As speciesism is defined as a failure, in attitude or practice, to accord any nonhuman being equal consideration and respect (Dunayer, 2004). In a similar manner, the author of the groundbreaking work *Animal Liberation,* Peter Singer (2015)determined speciesism as "a prejudice or attitude of bias in favor of the interests of members of one's own species and against those of members of other species" (p. 6). It is, just like other prejudices, a relatively stable construct that persists over time (Caviola et al., 2019).

Speciesism was also measured in different formats; as an attitude assessment (Caviola et al., 2019; Herzog et al., 1991) or in a form of behavioral intentions (Auger & Amiot, 2019). However, the latter one needs more evidence regarding its systematization (Auger & Amiot, 2019).

Justifications of oppression of non-human animals are usually based on the assumptions that animals are cognitively inferior to humans, do not have moral agency, and cannot have the same amount of suffering as humans (Caviola et al., 2019). At the same time, if we even take aside that humans define those concepts, some of the species that suffer the most under human oppression have very similar sentience and suffering capacity as ours; some species and individuals of animal kingdom score more on intelligence tests than some humans or other relatively non oppressed animals and behave in a more moral way defined by human guidelines (see Dunayer, 2004). Furthermore, the evidence of speciesism is the fact that humans generally would not even support the same types of exploitation of mentally challenged persons (see Caviola et al., 2019; Singer, 2015).

Even though speciesism usually revolves around the thought that humans have fundamentally more significant inherent value than the other animals, it is not solely present in that dichotomy. Dogs and pigs, who have very similar cognitive and emotional abilities (Mendl

et al., 2010), are incomparable for most of the Global North people. We love and cherish one, while we support exploitation and killing of the other (see Joy, 2011). Nevertheless, speciesism, just as racism and sexism, is not just limited to one country or nationality; it can be observed across different cultures, only the target of prejudice sometimes varies (see Amiot & Bastian, 2015).

At the same time, the omnipresence of this ideological system allows people to use animals for human pleasure or consumption in terms of food, clothing, entertainment, experimentation or medicine (Caviola et al., 2019). Consequently, more animals die in the span of three days than humans have been killed in wars in the whole recorded history (Heinrich Böll Foundation & Friends of the Earth Europe, 2014; Hedges, 2003). This is excused by the arguments of *normality*, *neutrality* and *necessity* of speciesism, the same myths that have been used to justify racism and sexism (Joy, 2011, 2019). In truth, speciesism, racism, and sexism seem to have a lot in common.

### *1.1.4. Interconnection of speciesism, sexism and racism*

Interconnection of speciesism with racism (see e.g. Patterson, 2002) and sexism (see e.g. Adams, 2000) has been mentioned in philosophy for some time now, but it has relatively recently gained empirical support. For example, Allcorn and Ogletree (2018) research supported *linked oppression thesis* that gender and animal attitudes are connected. With the empirical study, they (Allcorn & Ogletree, 2018) measured ambivalent sexism and belief in gender norms, alongside with the attitudes towards the animals (Herzog et al., 1991) and meat-eating justification (Rothgerber, 2013); on the sample of both female and male university students in Texas. Results showed that the pro-meat-eating attitudes are connected to the sexist beliefs and support for the strictly traditional gender roles, while a pro-animal stance negatively correlates with the benevolent/hostile sexism score and traditional gender attitudes (Allcorn & Ogletree, 2018).

Not only do different forms of oppression, like sexism, have considerable consequences on human behavior towards animals (Glasser, 2018), but speciesist attitudes have a repercussion on devaluation of other human outgroups. The Interspecies Model of Prejudice (Costello & Hodson, 2014; Hodson & Costello, 2012; Hodson et al., 2013) proposes that seeing humans as different and superior to other animals leads to the dehumanization of black people and immigrants. When someone aims to scapegoat or devalue marginalized individuals or minority

groups, they typically label them as different animals. Therefore, women are being called "chicks", Jewish people were portrayed as "rats", and Blacks as "apes". Stripping humans to the non-human animals' level causes people to exclude outgroups from their moral consideration (Bandura, 1999; Bar-Tal, 1989; Costello & Hodson, 2014). The big revelation comes in the statement that treating outgroups like animals would lose its meaning if the animals were treated well in the first place (Plous, 2003). Not only that these ideas are up in the air just for the purpose of intellectual debates, but we see their practical implications on each step. For example, the belief in the justness of hierarchies leads to dehumanization and devaluation (see Costello & Hodson, 2014). Thus, since we acknowledge the burden of hierarchies, the next step would be to see how we can eliminate them or at least how can we question their validity. To add to that, speciesism is very much associated with the prejudices against low-status groups that are at the bottom of social hierarchy (Jackson, 2019).

In fact, research has shown that sexism, speciesism, and racism correlate with each other (Caviola et al., 2019; Dhont et al., 2016; Everett et al., 2019), thus strengthening the notion that all of those dimensions have the same origin. Caviola et al. (2019) demonstrated that speciesism was positively associated with racism, sexism and homophobia in an US sample. Likewise, Everett et al. (2019) portrayed positive association in the UK, Belgium and US sample as well.

One study conducted in Canada (Jackson, 2019) demonstrated that "people who endorsed speciesism to a stronger degree had less positive attitudes than others toward a wide range of human groups varying in ethnicity, sexual orientation, ability, and social-political standing" (p. 454). Worth mentioning is the fact that in that study speciesism did not predict positive attitudes toward groups that the majority of participants identified with (Canadians and university students), which suggesting the speciesism to rather be associated with the social 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.

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### *1.1.5.  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) hypothesizes that prejudiced beliefs within human-human and human-animal relations have the same origin in ideological preference for group-based dominance and inequality. Numerous studies found a correlation between speciesism and other prejudices like sexism, racism and homophobia. However, consistent with the model, the correlation was reduced and appeared to be statistically nonsignificant after SDO was taken into account as a control factor that underpins prejudices (Dhont et al., 2014a; Dhont et al., 2016). Dhont et al. (2016) offered a systemic three studies that tested this hypothesis in the US, Belgium and UK. They proposed SDO as a key factor responsible for the significant positive association between ethnic outgroup attitudes and speciesist attitudes towards animals, even after accounting for other ideological variables such as right-wing authoritarianism and political conservativism. Social dominance orientation was the one playing a focal role. In other studies, such as the one from Caviola et al. (2019) and Dhont et al. (2014), speciesism (alongside with racism, sexism and homophobia in the first, and ethnic prejudice in the latter study) was positively associated with the SDO as well.

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 seem to be multiple ways to lower the SDO. They range from the university exposure to social sciences (Dambrun et al., 2008), the role of helping others (Brown, 2011; Kuchenbrandt et al., 2013), feminist identity acquisition (Foels & Pappas, 2004), all the way to the intergroup contact (Dhont et al., 2013; Shook et al., 2015). And, as we will discuss in the subsequent section, one form of engaging in intergroup contact is through imagination.

### 1.1.6. *Imagined contact*

The seminal hypothesis proposed by Allport (1954) suggests that contact, if performed under certain conditions, can reduce prejudice between two conflictual groups. Allport (1954) advocated that contact will be successful in lowering intergroup conflict if the groups have an *equal status within the contact situation*, *intergroup cooperation*, *common goals* and *institutional support*. Some years later, it was discovered that, although with a smaller effect, prejudice during contact is lowered even if these prerequisite features are not met (see Dovidio et al., 2017; Pettigrew & Tropp, 2008). Moreover, contact does not even have to be direct and in person. It can be extended, virtual, vicarious or just imagined (Dovidio et al., 2017). Prejudice can be diminished with the help of imagination when individuals actively engage in mental simulation of a positive contact experience (Crisp & Turner, 2009). This form of contact is especially efficient for individuals who do not have regular contact or the opportunity for it in daily life (Crisp et al., 2008; Fujioka, 2005). Additionally, imagined contact is more effective in changing behavioral intentions, but it can also change attitudes when an elaborative approach is used (Auger & Amiot, 2019; Husnu & Crisp, 2010). While imagined contact had in fact shown to reduce prejudice towards that particular outgroup, it can also have spillover or secondary effects on other social categories. Harwood et al. (2011) portrayed that imagined contact changed attitudes towards various outgroups that were not covered by the initial intervention. In that study, though, only categories that were somehow related were affected by this operation. To be more detailed, a prejudice intervention with illegal immigrants as a target reduced prejudices towards legal immigrants, political refugees, Black people etc., but not towards women or White people (Harwood et al., 2011). What may be the reason for this is the fact that, opposed to present study, Harwood et al. (2011) only used the imagined contact method without additional layers of other approaches like counter-stereotypic behavior.

So, even though these findings point to a crucial pathway, it is not clear yet whether reducing one type of those prejudices also reduces *all* of the others. A particularly unexplored notion is the potential spillover effect of speciesism as a prejudice, in connection to the others. That kind of evidence of inseparability of, in this case, speciesism, sexism and racism would have significant implications, not just in theory but also in practice.

## 1.2. 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:

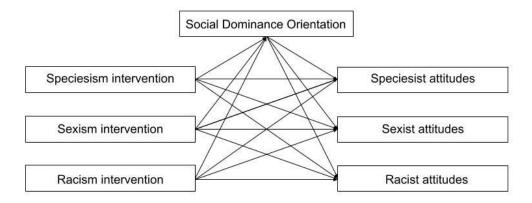**H2**: Prejudice reduction interventions targeting racism, sexism, or speciesism lead to less prejudice towards other targets compared to a control condition.

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*

## 2. Method

### 2.1. 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 $F = 0.24$[1], taking an α of .05 and power of .95.

Participants are allocated in different parts of the USA, with most of them being from South (*n*=72) and Northeast (*n*=52), followed by West (*n*=43) and Midwest (*n*=27); while only a few (*n*=6) participants reside outside of USA. 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) (see Table 1).

**Table 1**

*Degree of Education*

| | | Frequency | Percent | Cumulative Percent |
|---|---|---|---|---|
| Valid | Less than high school degree | 2 | 1.0 | 1.0 |
| | High school graduate | 31 | 15.4 | 16.4 |
| | Some college but no degree | 31 | 15.4 | 31.8 |
| | Associate degree in college | 14 | 7.0 | 38.8 |
| | Bachelor's degree in college | 59 | 29.4 | 68.2 |
| | Master's degree | 48 | 23.9 | 92.0 |
| | Doctoral degree | 15 | 7.5 | 99.5 |
| | Postdoctoral | 1 | .5 | 100.0 |
| | Total | 200 | 100.0 | |

---

[1] 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.

## 2.2. 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).

## 2.3. Measures

### 2.3.1. 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 ($\alpha = 0.86$). 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*).

### 2.3.2. 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 ($\alpha = .94$) 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*.

### 2.3.3. 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.

### 2.3.4. 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.

### 2.3.5. 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*.

### 2.3.6. 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*).

## 2.4. 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.

### 2.4.1. Sexism and racism interventions

The interventions for racism and sexism are very same in their content, only the target differs:

> *"While you walk through the nearby park you encounter a woman/black man that is sitting on the bench. He/She is visibly deeply shaken. Your eyes meet and you can see a deep pain in them, so you decide to sit next to him/her and ask what is wrong.*
>
> *After hesitating to answer for a while, he/she decided to explain to you that he/she is a university professor and that she is being treated in a bad way by his/her colleagues. He/She has a PhD in Business & Leadership and his/her lectures are ranked as one of the best based on students' feedback. Recently, he/she found out that there was an open call for a more prestigious teaching position, which was concealed from him/her. Also, he/she is being talked behind his/her back by some of his/her (male) colleagues. The man/woman explains to you that he/she had filed a complaint concerning his/her working conditions, but he/she hasn't heard from the office for 6 months now. At the same time, you know that this is something quite typical and largely prevalent rather than exception. When you finish talking, you notice that he/she is relieved because you've listened to him/her."*

### 2.4.2. Speciesism intervention

On the other hand, the cow was portrayed in a similar, but of course, different manner, with cautiousness to follow all the objectives of the manipulation:

> *"While you walk through the nearby road you encounter a cow that is chained and confined to a small space behind the fence. Your eyes meet and you can see a deep pain in them. As you try to approach her through the gate, she backs away and starts to shake*

*with fear. After that scene, you decide to stay there and connect with her. You try to communicate with her. After few attempts of going back and forth, she finally lets you pet her. Suddenly you see the radical change in her emotions and after a few pats you could even see that she is relieved.  After cuddling, you turn around only to see that there are many cows that are in the same conditions as her.  You were caught up, so you didn't even notice that she is just part of a big farm. You can clearly see that the farm is not following regulations, but you know it is something quite typical and largely prevalent rather than exception."*

### 2.4.3.   Control intervention

A neutral task, the imagined contact with a neglected building in an area, will be used as a control intervention. Like in the other conditions, participants will be asked to close their eyes and reflect on the situation. And they are also going to be asked in the open-ended question what they would do next in a given situation. The control intervention has a similar length and format as the other conditions, as follows:

*"While you walk through the nearby road you come across the building that catches your attention. It's a nice building but there seems to be something wrong with the facade. You decide to come closer and take a further look. You feel a certain connection with this building. The building seems nice and pleasant from the inside and gives you the strong feelings, however the exterior is neglected by people. The interior is nicely designed with a variety of furniture, glamorous stairs and fence. However, the outside part is without paint, with weeds on the walls and bad-looking tags. You then notice that the building is just one of the many and that there is a whole neighborhood with similar building and the same problems. At the same time, you know that this is something quite typical and largely prevalent rather than exception."*

### 2.5. Procedure

Before conducting the study, 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.

# 3. 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.

## 3.1. 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.

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The mean of the Speciesism scale ($M = 3.40$) and the Ambivalent Sexism Inventory ($M = 3.53$, $SD = 1.22$) was close to the average grade, while the Modern Sexism scale ($M = 2.69$, $SD = 1.48$) and the Social Dominance Orientation scale ($M = 2.38$, $SD = 1.25$) score was somewhat lower (see Table 2).

## 3.2. Intra-target prejudice reduction model

### 3.2.1. 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 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.

### 3.2.2. 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.

### 3.2.3. 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.

### 3.3. Generalized prejudice reduction model

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

### 3.3.1. 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.

### 3.3.2. 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.

### 3.3.3. 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)].

### 3.3.4. 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)].

### 3.3.5. Racism intervention on the speciesist attitudes

For this analysis 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].

### 3.3.6. 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 the 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)].

# 4. Discussion

## 4.1. Overview

The present study examined speciesism alongside with the other forms of prejudices (sexism and racism) and sought to lower them all. Several studies (e.g., (Caviola et al., 2019; Dhont et al., 2014a; Dhont et al., 2016), have shown that prejudices are interrelated to some extent, which suggest that there may be underlying factors. Consistently, there is evidence that reducing prejudice in one domain through an intervention may generalize to other domains (Pettigrew, 2009; Schmid et al., 2012). With that idea, we tried to find out if the spill-over effect persists and lowers all of the analyzed prejudices at the same time. Speciesism is underrepresented in these kinds of studies, even though it is an omnipresent ideology in that manifests in the everyday life routines (consumption of animals for food, visiting aquariums and zoos, buying fur etc.). Consistent with previous studies and SD-HARM model (Dhont et al. 2016), that states that both the prejudices towards human and non-human animals lies in the Social Dominance Orientation, we hypothesized that SDO would mediate the effect of generalized prejudice reduction.

In line with the previous research (Caviola et al., 2019; Dhont et al., 2014a; Dhont et al., 2016), this study measured an extremely significant correlation of speciesism, sexism and racism, which once again pointed out that they have a lot in common. Racism and sexism had a strong correlation with each other, while they had a moderate to strong correlation with speciesism, according to Cohen (1998). Also, they had a strong relationship with the social dominance orientation, as expected. Social Dominance Orientation had a moderate to strong with speciesism and sexism, and a strong correlation with racism. The difference in the effect can be explained by the critique (Dovidio et al., 2010) that the Modern Racism Scale (McConahay, 1986), used to measure racism, is now viewed as a more blatant expression of the prejudice, because of the change in the historical and social context, whereas the other two scales measure more contemporary expressions of prejudice. Furthermore, the results showed that, in line with previous studies (Dhont et al., 2016), higher levels of conservatism (measured as political orientation) were associated with higher levels of speciesism, racism and sexism. This finding should not surprise us because of the support for status quo and opposing the social change which would be needed to abolish previously mentioned systems. The results, however, suggest the wider consequences of general dominance strivings by emphasizing the associations with different prejudices and support for inequality in both human intergroup relations (in a form of

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racism and sexism) and human–animal relations (speciesism). Social Dominance Orientation, as a possible root of these worldviews plays a significant role in the impact of these results. Not only in the relation towards the other sentient beings, but also to the Planet Earth itself, demonstrating an interrelation of all the exploitation and the will for domination. For instance, previous research has shown that those higher in SDO are more likely to support exploitative practices depleting natural resources and to deny climate change (Häkkinen & Akrami, 2014; Hoffarth & Hodson, 2016; Jylhä & Akrami, 2015; Milfont et al., 2013). These theoretical advancements provide us with important practical solutions that should not be overlooked in tackling problems such as racial and gender discrimination, animal cruelty and climate change. Previously mentioned studies, alongside with this one, bring us closer to an understanding of 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 human-nature behavior.

Generalized prejudice reduction between these three dimensions would suggest that all these prejudices have something in common and that, in practice, we can reduce all by tackling just one. Though spillover effect is not a new idea, it usually only has a significant effect in the context of similar social groups (e.g. spill-over in prejudice reduction from immigrants to Black people, but not to women; Harwood et al., 2011); that is why this study had multiple layers (e.g. counter-stereotypic behavior with the opportunity to help the outgroup) inside of the interventions themselves. To test this, we first had to test the intra-target prejudice reduction models.

Auger and Amiot (2019) are the first authors that explored the notion of imagined contact with both valued (dogs) and devalued (cows) animals. In their study (Auger & Amiot, 2019), participants successfully changed their behavioral intentions, but the change in their attitudes was not present, which supported the well-established rule that imagined contact is more effective in behavioral regards (Miles & Crisp, 2014). Imagined contact studies with Black people and with women are lacking in the literature because participants often have the opportunity to engage in a contact with them in a real-life setting which undermines the role of imagined contact (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. To be clearer, we used an intervention with an elaborative approach (Husnu & Crisp, 2010) and further involved various aspects of prejudice reduction interventions inside the imagined contact, which served as a subordinate contextual unit. Therefore, more explicit empathy and perspective-taking elements were induced (see Beelmann & Heinemann, 2014), and participants had a chance to help the individual during the imagination (Brown, 2011; Kuchenbrandt et al., 2013), while prejudice targets had both warm and competent characteristics (Brambilla et al., 2011). Also, victims were portrayed as counter-stereotypical (Dasgubta & Asgiri, 2004; Taschler & West, 2017). 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 shown 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 outliners 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 emphasize 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.

### 4.2. 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 lays 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. As well, 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 sample. As well, children priorities humans over animals less than adults do (Wilks et al., 2020).

Further studies may go in different directions. First, a recommendation lays 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 lays 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 partialling out conservativism, 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 (Dasgupta & 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.

### 4.3. 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.

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**Informed Consent**

**Welcome to the research study!**

We are interested in understanding **how imagination affects attitudes**. You will be presented with information relevant to the study topic and asked to answer some questions about it. Please be assured that your responses will be completely anonymous and be kept completely confidential. The data collected will be used only for research purposes, merely for statistical processing and no answer will be analyzed or reported individually.

If you agree to participate the study should take you around 10 to complete, and you will receive 1.50£ for your participation. Your participation in this research is voluntary and there are no significant expected risks associated with it.

You have the right to withdraw at any point during the study, for any reason, and without any prejudice. In that case, please return your submission on Prolific by selecting "Stop without completing" button.

If you would like to contact the researcher to discuss this study, please e-mail Dusan Pajovic at Dusan_Pajovic@iscte-iul.pt

By clicking the button below, you acknowledge that your participation in the study is voluntary, you are at least 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

Institutional information - This research is being conducted in the context of a master thesis at ISCTE IUL with the support of CIS IUL.

**Please note that this survey will be best displayed on a laptop or desktop computer.** Some features may be less compatible for use on a mobile device.

○ I consent, begin the study

○ I do not consent, I do not wish to participate

**Prolific ID**

Before you start, please please turn off your notifications/music/e-mail so you can focus on this study.

Thank you!

Please write your **Prolific ID** here:

${e://Field/PROLIFIC_PID}

**Intro to Interventions**

# Take a minute to read the story and try to imagine yourself in the following situation.

**Speciesism Intervention**

While you walk through the nearby road you encounter a cow that is chained and confined to a small space behind the fence. Your eyes meet and you can see a deep pain in them. As you try to approach her through the gate, she backs away and starts to shake with fear. After that scene, you decide to stay there and connect with her.

You try to communicate with her. After few attempts of going back and forth, she finally lets you pet her. Suddenly you see the radical change in her emotions and after a few pats you could even see that she is relieved. After cuddling, you turn around only to see that there are many cows that are in the same conditions as her. You were caught up, so you didn't even notice that she is just part of a big farm. You can clearly see that the farm is not following regulations, but you know it is something quite typical and largely prevalent rather than exception.

**In the following questions you will be asked to imagine the details of the situation, so please make sure that you have read the text carefully. When you finish, please click on the "Next" button down bellow.**

**Sexism Intervention**

While you walk through the nearby park you encounter a woman that is sitting on the bench. She is visibly deeply shaken. Your eyes meet and you can see a deep pain in them, so you decide to sit next to her and ask what is wrong.

After hesitating to answer for a while, she decided to explain to you that she is a university professor and that she is being treated in a bad way by her colleagues. She has a PhD in Business & Leadership and her lectures are ranked as one of the best based on students' feedback. Recently, she found out that there was an open call for a more prestigious teaching position, which was concealed from her. Also, she is being talked behind her back by some of her male colleagues. The woman explains to you that she had filed a complaint concerning her working conditions, but she hasn't heard from the office for 6 months now. At the same time, you know that this is something quite typical and largely prevalent rather than exception. When you finish talking, you notice that she is relieved because you've listened to her.

**In the following questions you will be asked to imagine the details of the situation, so please make sure that you have read the text carefully.**

**When you finish, please click on the "Next" button down bellow.**

**Racism Intervention**

While you walk through the nearby park you encounter a Black man that is sitting on the bench. He is visibly deeply shaken. Your eyes meet and you can see a deep pain in them, so you decide to sit next to him and ask what is wrong.

After hesitating to answer for a while, the Black man decided to explain to you that he is a university professor and that he is being treated in a bad way by his colleagues. He has a PhD in Business & Leadership and his lectures are ranked as one of the best based on students' feedback. Recently, he found out that there was an open call for a more prestigious teaching position, which was concealed from him. Also, he is being talked behind his back by some of his department colleagues. The Black man explains to you that he had filed a complaint concerning his working conditions, but he hasn't heard from the office for 6 months now. At the same time, you know that this is something quite typical and largely prevalent rather than exception. When you finish talking, you notice that he is relieved because you've listened to him.

**In the following questions you will be asked to imagine the details of the situation, so please make sure that you have read the text carefully.**

**When you finish, please click on the "Next" button down bellow.**

**Control Intervention**

While you walk through the nearby road you come across the building that catches your attention. It's a nice building but there seems to be something wrong with the facade.

You decide to come closer and take a further look. You feel a certain connection with this building. The building seems nice and pleasant from the inside and gives you the strong feelings, however the exterior is neglected by people. The interior is nicely designed with a variety of furniture, glamorous stairs and fence. However, the outside part is without paint, with weeds on the walls and bad-looking tags. You then notice that the building is just one of the many and that there is a whole neighborhood with similar building and the same problems. At the same time, you know that this is something quite typical and largely prevalent rather than exception.

**In the following questions you will be asked to imagine the details of the situation, so please make sure that you have read the text carefully.**

**When you finish, please click on the "Next" button down bellow.**

---

**Imagine**

# Please close your eyes for the next 30 seconds and imagine the details of the situation and reflect on them. <ins>It is really important that you do this for 30 seconds. Now please close your eyes and try to visualize the situation.</ins>

---

**What would you do?**

Please consider the situation that was just described. Indicate in 2 or 3 short sentences what would you do next in that situation.

```
[                                                                    ]
[                                                                    ]
[                                                                    ]
[                                                                    ]
```

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**Manipulation check**

The main protagonist of the story you've previously read is:

○ A cow

○ A woman

○ A Black man

○ A building

---

Please indicate to a what extent was the individual in the story distressed?

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| Not at all 1 | 2 | 3 | 4 | Very much 5 |
|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ |

## SDO

**Some groups of people are just more worthy than others.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**To get ahead in life, it is sometimes necessary to step on other groups.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**No one group should dominate in society.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**We must increase social equality.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Superior groups should dominate inferior groups.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**It would be good if all groups could be equal.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## Sexism

**Many women have a quality of purity that few men possess.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Women should be cherished and protected by men.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Women seek to gain power by getting control over men.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Every man ought to have a woman whom he adores.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Men are incomplete without women**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Women exaggerate problems they have at work.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**When women lose to men in a fair competition, they typically complain about being discriminated against.**

| Strongly disagree 1 | Disagree 2 | Somewhat 3 | Neither agree or 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|

| 1 | 2 | disagree 3 | disagree 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Many women get a kick out of teasing men by seeming sexually available and then refusing male advances.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Women, compared to men, tend to have a superior moral sensibility.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Men should be willing to sacrifice their own well being in order to provide financially for the women in their lives.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Feminists are making unreasonable demands of men.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## Speciesism

**Instructions:** Below you'll find several statements. Please indicate how much you 'disagree' or 'agree' with each statement by selecting a number from 1 to 7 on the scale below.

**Morally, animals always count for less than humans.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Humans have the right to use animals however they want to.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**It is morally acceptable to keep animals in circuses for human entertainment.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**It is morally acceptable to trade animals like possessions.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Chimpanzees should have basic legal rights such as a right to life or a prohibition of torture.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**It is morally acceptable to perform medical experiments on animals that we would not perform on any human.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## Racism

**Instructions:** Below you'll find several statements. Please indicate how much you 'disagree' or 'agree' with each statement by selecting a number from 1 to 7 on the scale below.

**Discrimination against blacks is no longer a problem in the United States.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**It is easy to understand the anger of black people in America.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Blacks have more influence upon school desegregation plans than they ought to have.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Blacks are getting too demanding in their push for equal rights.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Blacks should not push themselves where they are not wanted.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Over the past few years, blacks have gotten more economically than they deserve.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**Over the past few years, the government and news media have shown more respect to blacks than they deserve.**

| Strongly disagree 1 | Disagree 2 | Somewhat disagree 3 | Neither agree or disagree 4 | Somewhat agree 5 | Agree 6 | Strongly agree 7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## Demographics

Next follow some sociodemographic questions.

### Sex:

○ Male

○ Female

○ Other

○ Prefer not to say

### Age:

[        ]

### What ethnic group do you belong to?

○ White

○ Black

○ Asian

○ Hispanic

○ Mixed

○ Other

[_____]

## In which state do you currently reside?

[ ▼ ]

## Please indicate how do you see yourself regarding your political views using a 7-point scale ranging from extremely liberal (left) to extremely conservative (right).

| Extremely liberal<br>1 | 2 | 3 | 4 | 5 | 6 | Extremely<br>conservative<br>7 |
|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## What is the highest level of education / degree you have completed / received?

○ Less than high school degree

○ High school graduate (high school diploma or equivalent including GED)

○ Some college but no degree

○ Associate degree in college

○ Bachelor's degree in college

○ Master's degree

○ Doctoral degree

○ Postdoctoral

## Please indicate below your 2020 household income (before taxes).

○ under $15,000

○ $15,000 to $24,999

○ $25,000 to $34,999

○ $35,000 to $49,999

○ $50,000 to $74,999

○ $75,000 to $99,999

○ $100,000 to $149,999

○ $150,000 to $199,999

○ $200,000 or above

## To what extent do you think your income is enough for you to live on?

| Not at all adequate<br>1 | Can meet necessities only<br>2 | Can afford some of the things I want but not all I want<br>3 | Can afford about everything I want<br>4 | Can afford about everything I want and still have enough money left |
|---|---|---|---|---|

44

over
5
○          ○          ○          ○          ○