

# Speciesism, generalized prejudice, and perceptions of prejudiced others

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## Abstract

Philosophers have argued there is a normative relationship between our attitudes towards animals (“speciesism”) and other prejudices, and psychological work suggests speciesism relies on similar psychological processes and motivations as those underlying other prejudices. But do laypeople perceive such a connection? We compared perceptions of a target who is high or low on speciesism with those of a target who is high or low on racism (Studies 1-2), sexism (Study 2), or homophobia (Study 3). We find that just like racists, sexists, and homophobes, speciesists were both evaluated more negatively and expected to hold more general prejudicial attitudes and ideologies (e.g. thought to be higher in SDO and more prejudiced in other ways). Our results suggest that laypeople seem intuitively aware of the connection between speciesism and ‘traditional’ forms of prejudice, inferring similar personality traits and general prejudicial attitudes from a speciesist just as they do from a racist, sexist, or homophobe.

*Keywords:* speciesism, prejudice; impression formation; animals

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## Speciesism, generalized prejudice, and perceptions of prejudiced others

Philosophers have long noted the inconsistency in how we treat animals, describing our relationship with animals as “speciesist” in a deliberate attempt to express a parallel with other forms of unjustified discrimination such as racism and sexism (e.g. Horta, 2010; Ryder, 2017; Singer, 1975, 2009; Singer & Mason, 2007). But to what extent can speciesism really be seen as a form of prejudice analogous to traditional forms of prejudice like racism and sexism, and – critically for this paper - do ordinary people perceive this connection?

What would it mean for speciesism to be a form of prejudice? Prejudice refers to “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). On the face of it, speciesism seems to fit, involving negative beliefs, emotions, and behaviour towards others based on their membership of a certain species group. We *believe* that some animals are less morally important than humans and that some species of non-human animals are more important than others; we fail to *feel* empathy for certain kinds of animals; and we *act* in harmful ways towards some animals that we would never countenance towards humans or other species of animals. More compelling psychological evidence, however, comes from considering a key feature of (traditional, human) prejudice: that it tends to be *generalized* so that a person is who prejudiced towards one group tends to be prejudiced toward another group, probably because different forms of prejudice are driven by similar *underlying ideologies*.

A long tradition in social psychology has posited that (at least ‘traditional’ kinds of) prejudices tend to run together, such that someone who is prejudiced in one way is likely to be prejudiced in another way – “if a person is anti-Jewish, he is likely to be anti-Catholic, anti-Negro, anti any out-group” (Allport, 1954, p. 68). Indeed - at least when it comes to the traditionally studied targets of prejudice - this general pattern of results seems consistent and highly replicable: individuals who are prejudiced towards one group are likely to be prejudiced towards other

groups (e.g. Akrami, Ekehammar, & Bergh, 2011; Bergh, Akrami, & Ekehammar, 2012; Duckitt & Sibley, 2007). To explain this, researchers often invoke social dominance orientation (SDO): a personality trait involving preference for group-based hierarchies and social inequalities (Pratto, 1999; Pratto, Sidanius, Stallworth, & Malle, 1994; Sidanius & Pratto, 1999). SDO is one of the most powerful predictors of negative intergroup attitudes like racism and sexism (Ho et al., 2012; Kteily, Ho, & Sidanius, 2012; Pratto et al., 1994), and it seems that the desire for group-based dominance can also explain the links between prejudice and other ideological systems like political conservatism (Sidanius, Pratto, & Bobo, 1996). ‘Traditional’ prejudices like racism and sexism seem to go together, seemingly because of underlying ideological beliefs in the form of SDO. So too, it seems, does speciesism. People who score higher in speciesism also score higher in racism, sexism, and homophobia (Caviola, Everett, & Faber, 2018), and according to the SD-HARM model the same socio-ideological beliefs in social dominance that legitimize hierarchies between human groups also legitimize hierarchies of humans over animals (Dhont, Hodson, Costello, & MacInnis, 2014; Dhont, Hodson, & Leite, 2016).

Philosophers have argued that, normatively, speciesism is a form of prejudice analogous to racism and sexism, and recent psychological work suggests that speciesism does share important psychological characteristics with other forms of prejudice, being driven by similar psychological mechanisms and underlying ideological beliefs (Caviola et al., 2018; Dhont et al., 2014, 2016). But do laypeople perceive such a connection? Do people perceive a speciesist in the same way as they perceive, say, a racist? Do people expect a speciesist to be more racist, and vice versa? No work has looked at perceptions of speciesists, but at least one paper has looked at perceptions of prejudiced individuals, showing that stigmatized groups (e.g., white women) can be threatened by prejudice towards members of an unrelated stigmatized group (e.g., black men) because they believe that prejudice has monolithic qualities: someone who is racist is also thought sexist because they are expected to be higher in social dominance orientation (Sanchez, Chaney, Manuel, Wilton, & Remedios, 2017). What about speciesists?

In this paper we explore perceptions of speciesists, testing whether - just like there are similarities in the psychological processes underlying speciesism and other forms of prejudice - there are similarities in how speciesists and other prejudiced people are perceived. For example, do participants stereotype a speciesist person with the same kind of character traits as a racist? Is someone that is racist expected also to be more speciesist, and vice versa? We presented participants with another person's purported responses on an established measure of prejudicial attitudes, manipulating 1) whether the type of prejudice was speciesism or some other kind of 'traditional' human-human prejudice; and 2) whether on the scale the person - henceforth, 'the target' - scored high (i.e. were prejudiced) or low (i.e. were non-prejudiced). To establish the robustness of our results and generalize our findings across different prejudice types, we conduct three studies, comparing perceptions of a target who is high or low on speciesism with those of a target who either scores high or low on racism (Studies 1 and 2), sexism (Study 2), or homophobia (Study 3).

Across studies we have a number of complementary dependent measures falling into two main categories. First, we look at perceived attitudinal and ideological generalization across different domains: do participants infer that someone who is more prejudiced in one way (e.g. sexism) will also be more prejudiced in a different way (e.g. speciesism)? Do they think that this person would have underlying ideological beliefs associated with different types of prejudice (e.g. SDO, political conservatism)? And do they infer demographic features (e.g. gender) that are associated with prejudice? Second, we look at evaluative judgments of the target: do participants believe that someone who is prejudiced is less moral, warm, and competent? Do they feel less positively towards them, and do they think they would make a less suitable social partner across different types of social roles? And finally in Study 3, in a behavioural economic game thought to measure social preferences (how much participants care about acting prosocially towards another person), do participants choose to act less prosocially towards a prejudiced person than a non-prejudiced person?

## Study 1

### Method

#### Open Science

We report all measures, manipulations, and exclusions we have taken, and all data, analysis code, experimental materials, and supplementary results and methods are available for download at: <https://osf.io/sehrn>. Our first study was primarily exploratory, and therefore was not pre-registered.

#### Ethics Statement

Relevant ethical guidelines were followed and all studies in this paper were approved through University of Oxford's Research Ethics Committee, with the reference number MSD-IDREC-C1-2014-133.

#### Participants

We recruited 301 participants based in the U.S. via Amazon Mechanical Turk (MTurk) in November 2017 and paid them \$1.20. Participants could not take part in the survey if they had participated in related studies by us in the past and were excluded from analysis if they did not complete the survey in full ( $N=2$ ), took the survey more than once ( $N=3$ ) or failed a simple attention check asking them to indicate the beliefs of the target ( $N=19$ ). This left us a final sample of 275 participants.

Our sample size of 300 was determined by a power analysis using G\*Power (Faul, Erdfelder, Buchner, & Lang, 2009), which indicated we would need at least 274 participants to detect a small-to-medium effect of  $f=0.17$ , taking an  $\alpha$  of .05 and power of .80.

The majority of participants identified as White ( $n=207$ ), followed by Hispanic ( $n=22$ ), Asian ( $n=21$ ), and Black ( $n=21$ ), and on a scale of 1 (very liberal) to 7 (very conservative), the mean ideology score was 3.19 ( $SD=1.60$ ). Overall, participants scored fairly low on both speciesism ( $M=3.06$ ,  $SD=1.38$ ; scale  $\alpha=.89$ ) and racism ( $M=2.67$ ,  $SD=1.52$ ; scale  $\alpha=.91$ ), and as in previous research these were significantly positively correlated ( $r=0.34$ ,  $p < .001$ ). All

participants were included in data analysis, regardless of ethnicity. Unfortunately, due to a coding error we did not collect data on participant's age, gender, or political affiliation.

### **Design**

This study had a 2 (Prejudice Type: Speciesism vs. Racism) x 2 (Target: Prejudiced vs. Non-Prejudiced) between-subjects design, where participants were asked to rate a target who expressed either racist, speciesist, non-racist or non-speciesist beliefs.

### **Procedure**

At the start of the study, participants completed a measure of their own prejudicial attitudes. Participants in the speciesism conditions completed the six-item ( $\alpha=.89$ ) speciesism scale (Caviola et al., 2018), and participants in the racism conditions completed a condensed four-item version ( $\alpha=.91$ ) of the modern racism scale (McConahay, 1986). Participants were then told that in a previous survey, we asked other MTurk participants to complete these same scale questions and their own task would be to indicate their perceptions of one such person ("the target"). Participants were always presented with the target's responses to three questions from the full list they had answered, where the target either agreed or disagreed with these items drawn from the scales (see supplementary method section for full details). To ensure that participants had read and understood this information, they were given two attention check questions in which they were required to report whether the target agreed or disagreed with the first two statements (e.g. *"Did the other person agree or disagree that 'Morally, animals always count for less than humans'?"*). Participants who answered either of these questions incorrectly were excluded from analysis.

### **Measures**

For evaluative ratings, participants first rated the target in terms of how moral, trustworthy, kind, warm, sociable, competent, capable, loyal, reliable, radical, and judgmental they were expected to be. The four items assessing how moral the target was thought to be (moral, kind, trustworthy, loyal) were combined into a single measure of perceived morality ( $\alpha=.93$ ), as were the two competence items (competent, capable:  $\alpha=.89$ ) and the two warmth items (warm,

sociable:  $\alpha=.82$ ). Second, participants rated how suitable the target would be for six social roles: friend, romantic partner, work colleague, boss, CEO, and political leader. These six items showed high internal consistency, and were combined into a single measure of perceived suitability as a social partner ( $\alpha=.96$ ). All ratings were on a 1-7 scale and analyses with each item individually can be seen in the supplementary results.

For attitudinal generalization, participants first indicated how politically liberal or conservative and how religious they thought the target would be, and second, rated how much the target would support three progressive “liberation”, or “rights” movements (gay rights, black rights, animal rights). Again, all ratings were on a 1-7 scale.

## Results

For both the speciesism and racism conditions we observed significant results for every dependent measure, with the single exception that the speciesist was not seen as more radical than the non-speciesist (see Table 1 for Ms, SDs, and results from one-way ANOVAs for the two prejudice types separately). Compared to a non-racist and non-speciesist, a racist and speciesist were seen as less moral, less warm, less competent, less reliable, and more judgmental. Participants felt less positive about both a racist and speciesist, and thought they were make a worse social partner across a variety of social roles. The racist and sexist were both expected to be less supportive of gay rights, black rights, and animal rights, and thought to be more religious and more conservative. These results were identical when conducting our pre-registered series of ANCOVAs in which we controlled for participants’ own levels of prejudice (on the recommendation of reviewers these are reported in the supplementary results at <https://osf.io/sehrn>, and we only report the ANOVA results without the covariate: see Table 1).

**Table 1a.** Perceived target qualities as a function of their presented speciesism (Study 1)

	Prejudiced		Non-Prej		ANOVA
	M	SD	M	SD	
Morality	3.14	1.34	5.68	1.05	$F(1,131)=148.82, p < .001, \eta_p^2=0.53$
Warmth	3.15	1.26	5.39	1.05	$F(1,131)=123.16, p < .001, \eta_p^2=0.48$
Competence	4.18	1.28	5.13	1.23	$F(1,131)=19.08, p < .001, \eta_p^2=0.13$
Reliable	3.85	1.49	5.22	1.28	$F(1,131)=32.68, p < .001, \eta_p^2=0.20$
Radical	4.14	1.61	4.07	1.53	$F(1,131)=0.05, p=.82, \eta_p^2=0.00$
Judgmental	5.32	1.28	4.91	1.61	$F(1,131)=2.61, p=.11, \eta_p^2=0.02$
Support Gay Rights	2.68	1.61	5.63	1.24	$F(1,131)=139.92, p < .001, \eta_p^2=0.52$
Support Black Rights	2.62	1.53	5.60	1.40	$F(1,131)=136.94, p < .001, \eta_p^2=0.51$
Support Animal Rights	1.44	1.17	6.72	0.79	$F(1,131)=933.92, p < .001, \eta_p^2=0.88$
Ideology	5.50	1.72	2.40	1.48	$F(1,131)=124.10, p < .001, \eta_p^2=0.49$
Religiosity	4.32	2.07	3.43	1.57	$F(1,131)=7.75, p=.01, \eta_p^2=0.06$
Overall Feelings	2.89	1.60	5.61	1.23	$F(1,131)=120.89, p < .001, \eta_p^2=0.48$
Overall Role Suitability	2.96	1.44	4.81	1.29	$F(1,131)=60.74, p < .001, \eta_p^2=0.32$

**Table 1b.** Perceived target qualities as a function of their presented racism (Study 1)

	Prejudiced		Non-Prej		ANOVA
	M	SD	M	SD	
Morality	3.25	1.44	4.96	1.37	$F(1,140)=52.89, p < .001, \eta_p^2=0.27$
Warmth	3.22	1.36	4.93	1.33	$F(1,140)=57.03, p < .001, \eta_p^2=0.29$
Competence	3.63	1.54	4.87	1.31	$F(1,140)=26.55, p < .001, \eta_p^2=0.16$
Reliable	3.48	1.58	4.71	1.52	$F(1,140)=22.36, p < .001, \eta_p^2=0.14$
Radical	4.51	1.62	3.83	1.64	$F(1,140)=6.22, p=.01, \eta_p^2=0.04$
Judgmental	5.96	1.31	3.94	1.79	$F(1,140)=59.30, p < .001, \eta_p^2=0.30$
Support Gay Rights	1.90	1.20	4.88	1.45	$F(1,140)=178.25, p < .001, \eta_p^2=0.56$



Support Black Rights	1.56	1.08	6.17	1.26	$F(1,140)=550.55, p < .001, \eta_p^2=0.80$
Support Animal Rights	3.16	1.66	4.62	1.33	$F(1,140)=33.21, p < .001, \eta_p^2=0.19$
Ideology	6.05	1.39	2.26	1.16	$F(1,140)=309.33, p < .001, \eta_p^2=0.69$
Religiosity	4.78	1.85	3.48	1.54	$F(1,140)=20.67, p < .001, \eta_p^2=0.13$
Overall Feelings	3.00	1.72	4.99	1.62	$F(1,140)=50.07, p < .001, \eta_p^2=0.26$
Overall Role Suitability	2.70	1.52	4.51	1.45	$F(1,140)=52.65, p < .001, \eta_p^2=0.27$

## Discussion

In Study 1, we investigated whether if, like for racial prejudice, someone who is speciesist is perceived more negatively than someone who is non-speciesist. For attitudinal and ideological generalization, we found that – like they do between racism and sexism (Sanchez et al., 2017) – participants expected a racist and speciesist to be similarly conservative and similarly less supportive for progressive rights movements, expecting a racist to be less supportive of animal rights and a speciesist to be less supportive of black rights. For evaluative judgments, we found that compared to the non-speciesist, the speciesist was seen as less moral, less warm, less competent, and more judgmental, was liked less, and expected to make a worse social partner across a variety of social roles. The exact same pattern was observed when looking at the racist vs. the non-racist, and there were only two significant differences in the strength of preference for the anti-prejudiced over the prejudiced target depending on the prejudice type (for perceived morality and the sub-item of suitability as a CEO). Put simply, we found that participants preferred a non-racist over a racist, and a non-speciesist over a speciesist, but there were almost no differences in perceptions of a speciesist and racist, or a non-racist and a non-speciesist.

## Study 2

In Study 2 we wanted to replicate the findings of Study 1 with racism and then 1) extend them findings to a different type of traditional prejudice, while 2) adding some new dependent measures and 3) collecting more demographic information about participants to look at in

analyses, all while 4) taking the opportunity to pre-register our design, analyses, and hypotheses to further enhance confidence in our findings.

First, we wanted to replicate and extend our findings to a different type of prejudice – sexism. Sexism is a prototypical type of prejudice as studied in social psychology, and recent work by Sanchez et al. (2017) has shown that people do perceive prejudice transfer between sexism and racism. Critically for our purposes, the perceived relationship between a target's sexism and speciesism remains unknown – though there are good reasons to assume there would be perceived prejudice transfer. A purported link between sexism and speciesism (e.g. as in descriptions of women as 'meat' or 'bitches') is often drawn by feminist thinkers and animal rights advocates (e.g. Adams, 2015; Dunayer, 1995; Glasser, 2011; Wyckoff, 2014), and meat-eating is often tied to masculinity (Rozin, Hormes, Faith, & Wansink, 2012; Ruby & Heine, 2011). Indeed, in previous work we have found – like with racism - significant correlations between participant sexism and speciesism (Caviola et al., 2018). Based on this previous work we expected that a racist and sexist would be perceived similarly, and based on our prior results expected that a speciesist would also be seen similarly to both a racist and sexist.

Second, we wanted to add two new dependent measures. We wanted to see whether participants would infer higher social dominance orientation from a speciesist target, like they do for a racist or sexist target (Sanchez et al., 2017). According to the SD-HARM model (Dhont et al., 2016), it is SDO that underlies the endorsement both of hierarchies between different human groups and the endorsement of a human hierarchy over animals, and we were interested in whether participants would intuit this. Similarly, we were interested in participants' expectations of the gender of the target. Previous work has suggested that men tend to be higher in SDO (e.g. Sidanius, Pratto, & Rabinowitz, 1994) and are more likely to report explicit prejudice (e.g. Ekehammar, Akrami, & Araya, 2003) – as well as being more speciesist (Caviola et al., 2018). Again, we were interested in whether participants would intuit this and assume a speciesist to be more likely to be male.

Third, we wanted to collect more demographic information from participants (e.g. age, gender, political party), allowing us to see both whether results were robust to controlling for these demographic variables, and whether there would be an interaction of political affiliation with the experimental conditions. Would more conservative Republican-identifying participants similarly perceive a speciesist, sexist, or racist in the same way as more liberal Democrat-identifying participants would?

## Method

### Open Science

As for all studies in this paper, report all measures, manipulations, and exclusions, and all data, analysis code, experimental materials, and supplementary results are available for download at: <https://osf.io/5wscp>. Our design, analysis plan, and hypotheses were pre-registered on the Open Science Framework. The pre-registration can be seen at: <https://osf.io/fyu6s>.

### Participants

We had 451 participants based in the U.S. complete the survey via MTurk in December 2017, and paid them \$1.20. Participants could not take part in the survey if they had participated in related studies by us in the past, and in accordance with the pre-registration were excluded from analysis if they did not complete the survey in full ( $N=6$ ), took the survey more than once ( $N=13$ ) or failed a simple attention check asking them to indicate the beliefs of the target ( $N=22$ ). This left us a final sample of 410 participants, which was sufficient to detect a small-to-medium size effect ( $f=0.16$ ), taking an  $\alpha$  of .05 and power of .80.

The majority of participants identified as White ( $n=297$ ), followed by Black ( $n=39$ ), Hispanic ( $n=36$ ), and Asian ( $n=21$ ). We had roughly equal numbers of female ( $n=197$ ) and non-female participants ( $n=213$ ), and the mean age was 41 years old. On average, participants were politically left-to-moderate ( $M=3.30$ ,  $SD=1.75$ ), with more participants identifying as Democrat ( $n=182$ ) or Independent ( $n=125$ ) than Republican ( $n=80$ ). Participants scored fairly low on racism ( $M=2.71$ ,  $SD=1.43$ ; scale  $\alpha=.93$ ), sexism ( $M=3.17$ ,  $SD=1.45$ ; scale  $\alpha=.94$ ), and speciesism ( $M=3.16$ ,

$SD=1.32$ ; scale  $\alpha=.87$ ). As in previous research, participants' speciesism was positively correlated with their racism ( $r=0.39, p < .001$ ) and sexism ( $r=0.37, p < .001$ ), and these were in turn positively correlated with each other ( $r=0.69, p < .001$ ). All participants were included in analysis regardless of their demographic features.

### **Design**

This study had a 3 (Prejudice Type: Speciesism vs. Racism vs. Sexism)  $\times$  2 (Target: Prejudiced vs. Non-Prejudiced) between-subjects design. The instructions and items used for the racism and speciesism conditions were identical to those used in Study 1. For participants in the sexism conditions, we used statements taken from the hostile sexism subscale of the Ambivalent Sexism Inventory (Glick & Fiske, 1996) (see supplementary materials for full details).

### **Measures**

The measures used in Study 2 were almost identical to those in Study 1, with a few exceptions. First, in the interests of time we removed four of the least relevant character ratings from Study 1 (radical, reliable, trustworthy, loyal), which seemed most redundant to other items included. Second, we added two new questions where we asked participants to a) guess the target's gender, and b) predict the target's social dominance by having them indicate how much they thought the target would agree or disagree with the statement that "It is probably a good thing that certain groups are at the top and other groups are at the bottom".

### **Results**

Our primary analysis looked at the effect of whether the target was prejudiced or not, for the three prejudice types separately. For each of the three prejudice types we observed significant results for every single dependent measure (see Table 2 for Ms, SDs, and results from one-way ANOVAs for the three prejudice types separately). Looking at evaluative judgments, compared to a non-speciesist, a non-racist, and non-sexist, a speciesist, racist, and sexist were seen as less moral, less warm, less competent, less reliable, and more judgmental. Participants felt less positively about the prejudiced person than the non-prejudiced person, and regardless of the prejudice type thought that the non-prejudiced person would make a better social partner

across a variety of social roles. Then looking at perceived attitude generalization, the speciesist, racist, and sexist were all expected to be less supportive of gay rights (see Fig. 1), black rights, women's rights, and animal rights, and were expected to be more religious, more conservative, and higher in social dominance orientation (see Fig. 2). As in Study 1, these results were identical when running an ANCOVA including participants' own prejudice (Analysis 1b), and when running an ANCOVA controlling for participants gender, age, education, ethnicity, political beliefs, and participants' own reported prejudice (Analysis 1c) (on the recommendation of reviewers these are reported in the supplementary results at <https://osf.io/5wscp>, and we only report the ANOVA results without covariates in the main text: see Table 2). Finally, most participants expected the prejudiced person to be male - for speciesism (70%), racism (61%), and sexism (87%). In contrast, less than 5% of participants indicated they expected the prejudiced person to be female, and the remainder thought it equally likely the prejudiced person was male or female (see Table 4 for full percentages).

**Table 2a.** Perceived target qualities as a function of their presented speciesism (Study 2)

	Prejudiced		Non-Prej		ANOVA
	M	SD	M	SD	
Morality	2.89	1.58	5.76	1.00	$F(1,135)=165.53, p < .001, \eta_p^2=0.55$
Warmth	3.48	1.32	5.40	1.05	$F(1,135)=89.50, p < .001, \eta_p^2=0.40$
Competence	4.22	1.33	5.18	1.23	$F(1,135)=19.28, p < .001, \eta_p^2=0.12$
Judgmental	5.27	1.41	4.61	1.50	$F(1,135)=7.03, p=.01, \eta_p^2=0.05$
Support Gay Rights	2.62	1.41	5.80	1.25	$F(1,135)=195.95, p < .001, \eta_p^2=0.59$
Support Black Rights	2.79	1.37	5.81	1.21	$F(1,135)=186.97, p < .001, \eta_p^2=0.58$
Supp. Women's Rights	2.49	1.39	5.93	1.13	$F(1,135)=255.99, p < .001, \eta_p^2=0.65$
Support Animal Rights	1.37	0.96	6.61	0.82	$F(1,135)=1188.69, p < .001, \eta_p^2=0.90$
Predicted SDO	5.62	1.66	1.95	1.44	$F(1,135)=192.10, p < .001, \eta_p^2=0.59$
Ideology	5.48	1.38	2.80	1.59	$F(1,135)=109.28, p < .001, \eta_p^2=0.45$
Religiosity	4.22	1.95	3.30	1.59	$F(1,135)=9.39, p = .002, \eta_p^2=0.07$
Overall Feelings	2.86	1.65	5.46	1.20	$F(1,135)=113.50, p < .001, \eta_p^2=0.46$
Overall Role Suitability	3.10	1.69	4.87	1.18	$F(1,135)=51.59, p < .001, \eta_p^2=0.28$

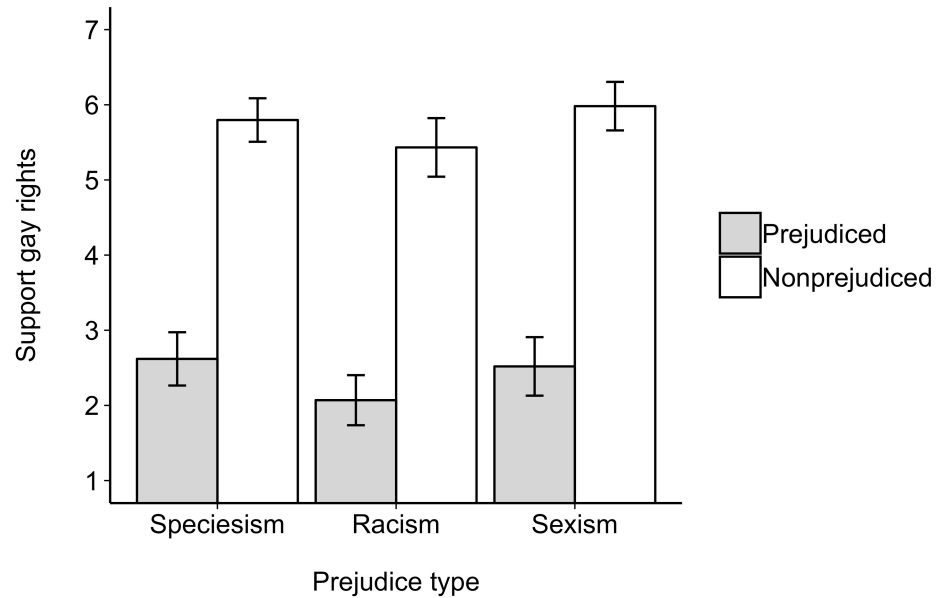
**Table 2b.** Perceived target qualities as a function of their presented racism (Study 2)

	Prejudiced		Non-Prej		ANOVA
	M	SD	M	SD	
Morality	2.72	1.44	5.32	1.32	$F(1,137)=121.95, p < .001, \eta_p^2=0.47$
Warmth	2.90	1.30	5.28	1.27	$F(1,137)=117.74, p < .001, \eta_p^2=0.46$
Competence	3.22	1.63	5.11	1.44	$F(1,137)=52.74, p < .001, \eta_p^2=0.28$
Judgmental	5.82	1.62	3.87	1.73	$F(1,137)= 47.21, p < .001, \eta_p^2=0.26$
Support Gay Rights	2.07	1.42	5.43	1.60	$F(1,137)=172.89, p < .001, \eta_p^2=0.56$
Support Black Rights	1.62	1.18	6.40	0.94	$F(1,137)=691.38, p < .001, \eta_p^2=0.83$

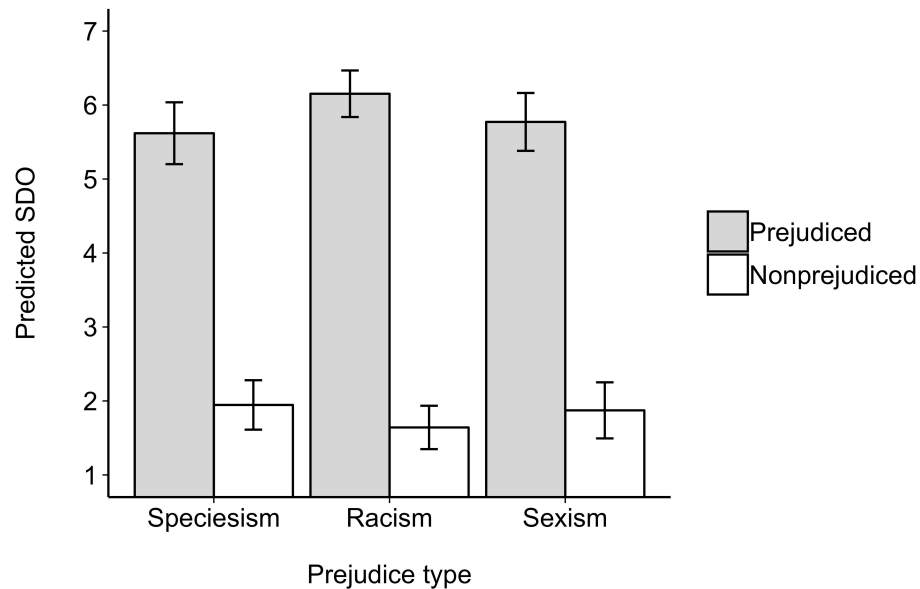
Supp. Women's Rights	1.97	1.23	5.49	1.34	$F(1,137)=259.92, p < .001, \eta_p^2=0.65$
Support Animal Rights	3.31	1.73	5.24	1.54	$F(1,137)=48.36, p < .001, \eta_p^2=0.26$
Predicted SDO	6.15	1.34	1.64	1.20	$F(1,137)=434.4, p < .001, \eta_p^2=0.76$
Ideology	6.06	1.43	2.60	1.46	$F(1,137)=198.92, p < .001, \eta_p^2=0.59$
Religiosity	5.07	1.40	3.72	1.58	$F(1,137)=28.61, p < .001, \eta_p^2=0.17$
Overall Feelings	2.51	1.49	4.99	1.59	$F(1,137)=89.35, p < .001, \eta_p^2=0.39$
Overall Role Suitability	2.39	1.39	4.61	1.64	$F(1,137)=74.84, p < .001, \eta_p^2=0.35$

**Table 2c.** Perceived target qualities as a function of their presented sexism (Study 2)

	Prejudiced		Non-Prej		ANOVA
	M	SD	M	SD	
Morality	3.43	1.57	4.94	1.47	$F(1,132)=31.32, p < .001, \eta_p^2=0.19$
Warmth	3.61	1.51	4.83	1.30	$F(1,132)=23.67, p < .001, \eta_p^2=0.15$
Competence	4.17	1.51	5.18	1.42	$F(1,132)=15.31, p < .001, \eta_p^2=0.10$
Judgmental	5.63	1.56	4.20	1.75	$F(1,132)=24.74, p < .001, \eta_p^2=0.16$
Support Gay Rights	2.52	1.74	5.98	1.19	$F(1,132)=164.13, p < .001, \eta_p^2=0.55$
Support Black Rights	2.57	1.48	5.95	1.06	$F(1,132)=210.06, p < .001, \eta_p^2=0.61$
Supp. Women's Rights	1.63	1.36	6.64	0.93	$F(1,132)=560.76, p < .001, \eta_p^2=0.81$
Support Animal Rights	3.05	1.68	6.33	0.82	$F(1,132)=179.57, p < .001, \eta_p^2=0.58$
Predicted SDO	5.77	1.75	1.87	1.40	$F(1,132)=189.19, p < .001, \eta_p^2=0.59$
Ideology	5.65	1.36	2.29	1.18	$F(1,132)=219.52, p < .001, \eta_p^2=0.62$
Religiosity	4.39	1.71	3.38	1.41	$F(1,132)=13.09, p < .001, \eta_p^2=0.09$
Overall Feelings	3.19	1.83	4.73	1.74	$F(1,132)=23.91, p < .001, \eta_p^2=0.15$
Overall Role Suitability	2.94	1.77	4.63	1.63	$F(1,132)=31.61, p < .001, \eta_p^2=0.19$



**Figure 1.** Perceived support for gay rights based on the target's speciesism, racism, and sexism (Study 2). Error bars represent 95% confidence intervals.



**Figure 2.** Perceived social dominance orientation based on the target's speciesism, racism, and sexism (Study 2). Error bars represent 95% confidence intervals.



Our second, more exploratory analysis – as listed in the pre-registration - was to include the interaction effect of the person and prejudice type conditions to explore if there were significant differences in the strength of the preference for the non-prejudiced target between the three prejudice types. We did this using both an ANOVA (Analysis 2a) and an ANCOVA controlling for participants' own prejudice (Analysis 2b), though again both yielded identical results. For overall feelings, overall suitability as a social partner, support for gay rights, predicted ideology, and predicted SDO, there were no differences in ratings between the speciesist, racist, or sexist, nor between the nonspeciesist, nonracist, or nonsexist: regardless of the prejudice type, the prejudiced person was felt less positively about, was expected to be a worse social partner, expected to support gay rights less, and thought to be more conservative and higher in SDO. We did, however, observe that for morality the sexist was seen as more moral than the racist, and the non-sexist more moral than the non-speciesist; that for warmth, the sexist was seen as more warm than the racist; for competence, the racist was seen as less competent than the sexist and speciesist; and for religiosity, the non-speciesist was thought to be less religious than the speciesist. Full results for these analyses can be seen in supplementary results.

Our third, most exploratory analysis (not listed in the pre-registration but added on the suggestion of a reviewer) looked at whether there was an interaction of the person and prejudice type conditions with self-reported political affiliation (only looking at self-identified Republicans or Democrats). For many variables we observed no three-way interaction with political affiliation: both Democrats ( $n=182$ ) and Republicans ( $n=80$ ) perceived the prejudiced person, across prejudiced types, to be less warm, less competent, less supportive of gay rights and animal rights, and less religious. For some variables we did, however, find that Republicans and Democrats responded differently. Democrat participants showed the expected pattern across all three prejudice types, feeling less positively about the prejudiced person and thinking they would make a worse social partner, and expecting the prejudiced person to be less moral, less supportive of black rights and women's rights, and more conservative and higher in SDO. Republicans also thought the prejudiced person, across all three prejudiced types, would support black rights and

women's rights less, and be higher in SDO, but the effects were weaker than those observed for Democrat participants. For ratings of morality, Republicans showed the predicted pattern for speciesism, but there was no difference between the nonracist or nonsexist and the racist and the sexist. For overall feelings, Republicans again showed the predicted pattern for speciesism, but did not like the non-racist more than the racist, and actually liked the sexist more than the non-sexist. For perceived political ideology, Republicans thought the racist and sexist would be more conservative than the non-racist and non-sexist, but perceived no difference between the speciesist and non-speciesist. Finally for partner suitability, Republicans had no preference for any prejudice type. Again, full results can be seen in the supplementary results.

### **Discussion**

In Study 2 we replicated and extended our findings from our first study in a new, pre-registered design with an additional prejudice type, refined dependent measures. Our results strongly confirmed those found in Study 1: regardless of whether the target's prejudice was revealed through their attitudes towards black people, women, or animals, a prejudiced target was evaluated much more negatively than a non-prejudiced one, and a target's prejudice was expected to generalise to other expressions of prejudice and social dominance. These results were robust to controlling for participants' own prejudice and demographic variables including gender, age, ethnicity, education, and political ideology.

Some nuance was obtained, however, when entering participants' own political affiliation (Republican or Democrat) as an additional independent variable (though caution should be noted given that we had substantially larger numbers of Democrats than Republicans, and our sample size was not calculated with this 3-way analysis in mind). Democrats showed the same predicted pattern as seen when looking at the whole sample, and for most variables so did Republicans. However, there were some exceptions. While Republicans did perceive the non-speciesist to be more moral than the speciesist and felt more positively towards them, this was not observed for the racist or sexist target. Republicans did not anticipate the speciesist to be more politically conservative (though they did expect the

racist and sexist to be), and for role suitability Republicans had no preference for any prejudice type. This suggests that both Republicans and Democrats expect a speciesist's prejudicial attitudes to transfer to other contexts and negatively evaluate them accordingly, however Republicans do not always evaluate the sexist or racists more negatively.

### Study 3

Across a whole range of dependent measures Studies 1 and 2 have yielded highly consistent results, whereby regardless of whether the prejudice was expressed as speciesism, racism, or sexism, a prejudiced target was seen much more negatively than a non-prejudiced one. But despite this, one potential concern might be that we have only measured self-report ratings and not explored the behavioural consequences for the target based on how the participants perceive them. To do this, we decided to have participants play a Dictator Game (DG: Forsythe, Horowitz, Savin, & Sefton, 1994; Kahneman, Knetsch, & Thaler, 1986). In the DG one player - the dictator (here, our participant) - makes a unilateral decision about how to divide an amount of money with a second player - the recipient (here, the target). The dictator can allocate any amount of money to the recipient - from nothing to the entire amount - and the recipient must accept this amount. The classic interpretation of behaviour in the DG is that it reflects a social motivation to improve the welfare of others, and correspondingly research has demonstrated that people do transfer more in the DG to those they feel more connected to (e.g. Charness & Gneezy, 2008). Would participants, then, not only perceive a speciesist more negatively, but also act less prosocially towards them?

In addition to obtaining a behavioural measure, in Study 3 we also wanted to take the opportunity to generalize our findings to another prototypical type of prejudice: prejudice based on sexual orientation, or homophobia. Homophobia is a classic form of prejudice as studied in social psychology, but moreover is one that on first glance lacks any direct societal discourse that link attitudes towards homosexuals and attitudes towards animals. While both racial outgroups and women are often dehumanized through linking them to animals (e.g. Jews as 'rats', black people as 'apes' or 'monkeys', and women as 'bitches'), in the English language

at least there are no widespread slurs used to connect homosexuals with animals. It is possible - but we think unlikely - that our results from Studies 1 and 2 by which participants similarly perceive a racist, sexist, and speciesist, are driven by derogatory metaphors in society that link black people and women with animals. In Study 3, then, we aimed to again replicate our earlier findings, this time extending to a different type of prejudice (homophobia), and also including a behavioural measure (transfers in a dictator game).

## **Method**

### **Open Science**

As for all studies in this paper, report all measures, manipulations, and exclusions, and all data, analysis code, experimental materials, and supplementary results are available for download at: <https://osf.io/fvux3>. Our design, analysis plan, and hypotheses were pre-registered on the Open Science Framework, and the pre-registration can be seen at: <https://osf.io/dp98h>.

### **Participants**

We had 432 participants based in the U.S. complete the survey via MTurk in January 2018, and paid them \$1.20. Participants could not take part in the survey if they had participated in related studies by us in the past, and in accordance with the pre-registration were excluded from analysis if they did not complete the survey in full ( $N=1$ ), took the survey more than once ( $N=8$ ) or failed a simple attention check asking them to indicate the beliefs of the target ( $N=20$ ). This left us a final sample of 403 participants. Our sample size was determined through a power analysis showing that we needed 340 participants to detect a small-to-medium size effect ( $f=0.16$ ), taking an  $\alpha$  of .05 and power of .80. Unfortunately, a typo in the set-up on MTurk meant we recruited 430 participants instead of 340 participants, but we did not conduct any analyses until the full data collection was complete, and this error in recruiting a larger sample than planned actually gave us more power to detect effects.

The majority of participants identified as White ( $n=306$ ), followed by Black ( $n=37$ ), Asian ( $n=29$ ), and Hispanic ( $n=20$ ). We had roughly equal numbers of female ( $n=194$ ) and non-female

participants ( $n=209$ ), and the mean age was 41 years old. On average, participants were politically left-to-moderate ( $M=3.38$ ,  $SD=1.70$ ), with more participants identifying as Democrat ( $n=178$ ) or Independent ( $n=118$ ) than Republican ( $n=78$ ). Participants scored fairly low on homophobia ( $M=2.69$ ,  $SD=1.88$ ; scale  $\alpha=.92$ ) and speciesism ( $M=3.02$ ,  $SD=1.33$ ; scale  $\alpha=.87$ ), and these were significantly positively correlated ( $r=.28$ ,  $p < .001$ ). All participants were included in analysis regardless of their demographic features.

### Design

This study had a 2 (Prejudice Type: Speciesism vs. Homophobia)  $\times$  2 (Target: Prejudiced vs. Non-Prejudiced) between-subjects design. The instructions and items used for the speciesism conditions were identical to those used in Studies 1 and 2, and for participants in the homophobia conditions we used statements taken from the 5-item Attitude Towards Gay Men scale (Herek, 1998) (see supplementary materials for full details).

### Measures

The measures used in Study 3 were almost identical to those used in Study 2. While we again measured perceptions of warmth, competence, and morality, given that our previous results were robust across the individual items, in the interests of space we only used a single item for each (moral; warm or cold; competent). Similarly, we again measured suitability for different social roles, but given that our previous results were robust across the individual items, for reasons of space used only four instead of six roles (suitability as a friend; romantic partner; boss; political leader: scale  $\alpha = .94$ ).

In the DG, participants were told that they had an additional bonus of \$0.30 and that they could choose to transfer some of this amount to the target, which would be paid to them as a bonus after the study. Choices were given in 5-cent increments, and participants were given the amounts that each target would receive in parentheses (e.g. "Give 0 (You 30, Other 0)"; "Give 5 (You 25, Other 5)"). At the end of the study, participants were actually paid based on their decision, receiving the \$0.30 bonus minus whatever they had chosen to transfer.

## Results

Our primary analysis looked at the effect of whether the target was prejudiced or not, for the three prejudice types separately. For all of the prejudice types we observed significant results for every single dependent measure, except for judgmental-ness and religiosity there was no effect for speciesism (see Table 3 for Ms, SDs, and results from one-way ANOVAs for both of the prejudice types separately). Compared to a non-speciesist and a non-homophobe, a speciesist and homophobe were seen as less moral, less warm, less competent, and less reliable. Participants felt less positively about the speciesist and homophobe than the non-speciesist and non-homophobe, and for both prejudice types participants thought that the non-prejudiced person would make a better social partner across a variety of social roles. Both the speciesist and homophobe were expected to be less supportive of gay rights, black rights, women's rights, and animal rights, more conservative, and higher in social dominance orientation (and the homophobe was additionally seen as more religious). As in Studies 1 and 2, these results were identical when running our pre-registered ANCOVA including participants' own prejudice (Analysis 1b), and when running an ANCOVA controlling for participants gender, age, education, ethnicity, political beliefs, and participants' own reported prejudice (Analysis 1c) (on the recommendation of reviewers these are reported in the supplementary results at <https://osf.io/fvux3>, and we only report the ANOVA results without covariates in the main text: see Table 3). Finally looking at predicted gender, most participants expected both the speciesist (72%) and homophobe (72%) to be male, with less than 3% of participants expecting the prejudiced person to be female, and the remainder thinking it equally likely the prejudiced person was male or female (see Table 4).

Our second, more exploratory analysis – as listed in the pre-registration - was to include the interaction effect of the person and prejudice type conditions to explore if there were significant differences in the strength of the preference for the non-prejudiced target between the three prejudice types. We did this using both an ANOVA (Analysis 2a) and an ANCOVA controlling for participants' own prejudice (Analysis 2b), though again both yielded identical results. For overall feelings, warmth, competence, transfers in the DG, overall role suitability, and

predicted social dominance orientation, we found only a main effect of target condition and no interaction effect: there were no differences in ratings between the prejudiced speciesist and homophobe, nor between the non-speciesist and non-homophobe. For perceptions of morality and predicted support for black rights, we observed an interaction effect but the only interesting pairwise comparisons that were significant were the main effect comparisons of whether each person was prejudiced or not. Therefore, regardless of the prejudice type, the prejudiced person was seen as less warm, less moral, and less competent, received fewer transfers in a DG, were felt less positively about and were thought to make a worse social partner, and thought to be higher in SDO, and less supportive of black rights. For the variables in which there was an interaction effect we - unsurprisingly given the manipulation - found the speciesist was thought to be less supportive of animal rights than the homophobe, and the homophobe was thought to be less supportive of gay rights than the speciesist. And finally, for predicted support for women's right and predicted ideology, we found significant differences between the speciesist and homophobe such that the homophobe was seen as significantly more conservative, and the speciesist was thought to support women's rights more than the homophobe. Full results for these analyses can be seen in supplementary results (<https://osf.io/fvux3>).

Our third, most exploratory analysis (not listed in the pre-registration but added on the suggestion of an anonymous reviewer) looked at whether there was an interaction of the person and prejudice type conditions with self-reported political affiliation (only looking at self-identified Republicans or Democrats). For many variables we observed no three-way interaction with political affiliation: both Democrats ( $n=178$ ) and Republicans ( $n=78$ ) perceived the prejudiced person, across prejudiced types, to be less supportive of gay rights, women's rights, and black rights; higher in SDO; and more politically conservative and religious. For some variables we did, however, find that Republicans and Democrats responded differently. Democrat participants showed the expected pattern across both prejudice types: feeling less positively about the prejudiced person and thinking they would make a worse social partner; expecting the prejudiced person to be less moral, less warm, less competent; to be less supportive

of animal rights; and transferring more money to the non-prejudiced person in the DG. For Republicans, the non-speciesist was seen as more moral and warmer than the speciesist; the non-speciesist received more transfers in the DG than speciesist; and the non-speciesist was thought to make a better social partner than a speciesist. There was, however, no difference for Republican participants in the homophobia conditions. For ratings of competence, Republicans showed no effects for either prejudice type, and for predicted support for animal rights, Republicans perceived no difference between the non-speciesist and non-homophobe (though the speciesist was thought to support animal rights less than a homophobe). Again, full results can be seen in the supplementary results.

**Table 3a.** Perceived target qualities as a function of their presented speciesism (Study 3)

	Prejudiced		Non-Prej		ANOVA
	M	SD	M	SD	
Morality	3.09	1.61	5.64	1.22	$F(1,199)=160.76, p < .001, \eta_p^2=0.45$
Warmth	2.68	1.57	5.49	1.20	$F(1,199)=202.75, p < .001, \eta_p^2=0.50$
Competence	3.87	1.48	5.14	1.24	$F(1,199)=43.54, p < .001, \eta_p^2=0.18$
Judgmental	4.87	1.33	4.57	1.62	$F(1,199)=1.98, p=.16, \eta_p^2=0.01$
Support Gay Rights	2.79	1.56	5.62	1.31	$F(1,199)=194.70, p < .001, \eta_p^2=0.49$
Support Black Rights	2.90	1.55	5.53	1.40	$F(1,199)=160.52, p < .001, \eta_p^2=0.45$
Supp. Women's Rights	2.69	1.42	5.61	1.31	$F(1,199)=229.15, p < .001, \eta_p^2=0.54$
Support Animal Rights	1.47	1.10	6.57	1.13	$F(1,199)=1059.73, p < .001, \eta_p^2=0.84$
Predicted SDO	5.64	1.41	1.90	1.34	$F(1,199)=372.23, p < .001, \eta_p^2=0.65$
Ideology	5.55	1.41	2.49	1.33	$F(1,199)=252.48, p < .001, \eta_p^2=0.56$
Religiosity	4.08	1.88	3.82	1.28	$F(1,199)=1.39, p=.24, \eta_p^2=0.01$
Transfers in DG (%)	11.56	20.50	22.65	26.29	$F(1,199)=11.05, p = .001, \eta_p^2=0.05$
Overall Feelings	2.88	1.67	5.29	1.19	$F(1,199)=140.03, p < .001, \eta_p^2=0.41$
Overall Role Suitability	2.83	1.53	4.62	1.20	$F(1,199)=85.93, p < .001, \eta_p^2=0.30$



**Table 3b.** Perceived target qualities as a function of their presented homophobia (Study 3)

	Prejudiced		Non-Prej		ANOVA
	M	SD	M	SD	
Morality	3.32	1.67	5.15	1.65	$F(1,200)=61.52, p < .001, \eta_p^2=0.24$
Warmth	2.70	1.47	5.45	1.29	$F(1,200)=201.09, p < .001, \eta_p^2=0.50$
Competence	3.60	1.66	5.31	1.42	$F(1,200)=62.62, p < .001, \eta_p^2=0.24$
Judgmental	6.00	1.46	2.36	1.42	$F(1,200)=322.20, p < .001, \eta_p^2=0.62$
Support Gay Rights	1.28	1.02	6.34	1.21	$F(1,200)=1029.90, p < .001, \eta_p^2=0.84$
Support Black Rights	2.56	1.24	5.85	1.06	$F(1,200)=411.35, p < .001, \eta_p^2=0.67$
Supp. Women's Rights	2.15	1.33	5.77	1.19	$F(1,200)=415.87, p < .001, \eta_p^2=0.68$
Support Animal Rights	3.34	1.58	5.88	1.07	$F(1,200)=180.57, p < .001, \eta_p^2=0.47$
Predicted SDO	5.71	1.30	1.98	1.33	$F(1,200)=405.72, p < .001, \eta_p^2=0.67$
Ideology	6.28	1.21	2.23	1.16	$F(1,200)=586.48, p < .001, \eta_p^2=0.75$
Religiosity	5.90	1.37	2.55	1.30	$F(1,200)=316.03, p < .001, \eta_p^2=0.61$

**Table 4.** Predicted gender of prejudiced or non-prejudiced individuals

		Prejudiced			Non-Prejudiced		
		Male	Female	Equally Likely	Male	Female	Equally Likely
Study 2	Speciesism	70%	2%	29%	7%	49%	45%
	Racism	61%	0%	39%	12%	21%	67%
	Sexism	87%	3%	10%	4%	75%	22%
Study 3	Speciesism	72%	1%	27%	4%	40%	56%
	Homophobia	72%	3%	25%	18%	30%	51%

## Discussion

In Study 3 we again replicated and extended our findings in a new pre-registered study, using a Dictator Game to obtain a behavioural measure of participants' responses towards the target, and using a different type of prejudice to ensure the generalizability of our findings. Our results strongly confirmed those found in Studies 1 and 2: regardless of whether the target's prejudice was revealed through their attitudes towards gay men or animals, a prejudiced target was evaluated much more negatively and received less money in a DG than a non-prejudiced one, and the target's prejudice was expected to generalise to other expressions of prejudice and social dominance. Again, these results were robust to controlling for participants' own prejudice and demographic variables including gender, age, ethnicity, education, and political ideology.

When looking at Republicans and Democrats separately, we found both Republicans and Democrats showed the predicted pattern for speciesism for every single dependent measure, with only one exception (Republicans did not perceive a non-speciesist to be more competent than a speciesist). While Republicans consistently evaluated the non-speciesist more positively than the speciesist, they did not differentially evaluate the homophobe and non-homophobe: they did not expect a non-homophobe to be more moral or warm, did not transfer more to them in a DG, and did not expect them to be a better social partner. Republicans and Democrats cohered when it came to perceived generalization of prejudice across different domains, but tended to diverge for evaluative judgments in the homophobia, but not speciesism, conditions. In short, Republicans tended to expect a homophobe to be more prejudiced in other ways, be more conservative, and be higher in social dominance – but didn't like them any less.

## General Discussion

In this paper we report three studies in which MTurk participants reported their perceptions of a target who either strongly agreed or disagreed with statements from scales developed to assess prejudicial attitudes. In Study 1, we found that participants perceive a (non-)speciesist and (non-)racist in the same way, a finding replicated and extended in Study 2 to

sexism, and then in Study 3 to homophobia. Across the three studies, we find almost no differences in perceptions of the prejudiced target based on the type of prejudice: across both evaluative ratings and expectations of other prejudiced attitudes, a speciesist is seen just the same way as a racist, a sexist, or a homophobe. Just like racists, sexists, and homophobes, speciesists were expected to hold more general prejudicial attitudes and ideologies, being expected to be more conservative and higher in SDO, and thought to be unsupportive of ‘liberation’ movements like women’s rights. Similarly, speciesists were seen as less moral, warm, and competent; rated as less suitable partners in various social roles; and received less transfers in an economic Dictator Game. These results were robust to controlling for participants’ own prejudice and a host of demographic variables including age, gender, education, and political ideology. Further, when breaking down by political affiliation Republicans and Democrats showed a very similar pattern – especially for expected attitudinal generalization across different domains of prejudice.

Philosophers have argued there is a normative relationship between our (prejudicial) attitudes towards animals and other prejudices (e.g. Ryder, 2010; Singer, 1975), and psychologists have presented evidence that our (prejudicial) attitudes towards animals rely on similar psychological processes and motivations as those underlying other types of prejudice (Caviola et al., 2018; Dhont et al., 2014, 2016). Our results add to this literature by showing that laypeople seem intuitively aware of this connection, inferring similar personality traits and more general prejudicial attitudes from a speciesist just as they do from a racist, sexist, or homophobe. Our results conceptually replicate and extend work demonstrating that people expect someone who exhibits racial prejudice to be more sexist and vice versa (Sanchez et al., 2017), while also providing suggestive evidence that this perceived attitudinal generalization extends beyond traditional prejudices like racism and sexism, and may also apply to our thinking about animals – our *speciesism*.

Our findings are particularly interesting given previous work indicating – contra the interspecies model of prejudice (Costello & Hodson, 2010, 2014a; Hodson, MacInnis, & Costello, 2014) – that laypeople do not perceive beliefs about animals as underlying human prejudice

(Costello & Hodson, 2014b). Instead, laypeople believe ethnic prejudice is most likely caused by close-mindedness and ignorance, and least likely caused by a belief in a human-animal divide. While at first blush these findings contrast with ours – potentially because they focus on judging causal psychological factors and we focus on judging people - we actually think there is meaningful coherence in the importance of personality traits in prejudice. They find that laypeople judge prejudice as coming most from personality factors, and we find that laypeople do seem to infer a consistent prejudiced personality from evidence of one kind of prejudice.

### **Limitations and Future Directions**

We can think of at least three theoretical objections to our claims. First, drawing on traditional social identity approaches to prejudice (e.g. Tajfel & Turner, 1979), prejudice might be said to require ingroup-outgroup distinctions and it is not clear that animals can even be considered a social group in this sense. But while animals probably do not have a social identity themselves (as per their diversity and also mental capability), it seems undeniable that we do treat animals as a lower-status social group(s) – both as a generic ‘animal’ group, and more specific groups based on species (e.g. dog vs. pig) and function (e.g. pet vs. meat) (Plous, 2003). Most importantly, recent work suggests that generalized prejudice is not about differentiating ingroups versus outgroups per se, but rather about devaluing lower-status groups (Bergh, Akrami, Sidanius, & Sibley, 2016).

Second, it has been argued that prejudice is better conceptualized as arising from ideological value-conflict and not (just) individual differences like SDO, so while conservatives are typically more biased when it comes to ‘traditional’ prejudices, social psychology ignores groups that liberals are more biased against (e.g. Brandt, Reyna, Chambers, Crawford, & Wetherell, 2014). To this, we just concede that yes, we have focused on traditional prejudices, and that no, people might not perceive a speciesist similarly to someone who is prejudiced in a liberal way. We focus on traditional prejudices here because the only existing work to look at perceptions of prejudiced people has focused on racism and sexism (Sanchez et al., 2017), speciesism as a philosophical concept was explicitly termed to draw a parallel with these kinds of biases (Ryder,

2010; Singer, 1975), and the existing work mapping links between people's own prejudicial attitudes has focused on the relationship between speciesism and these kinds of traditional prejudices (e.g. Caviola et al., 2018; Dhont et al., 2016). It is possible that speciesism is seen as similar to 'traditional' prejudices like racism and sexism and politically-neutral prejudices like anti-fat prejudice, but not 'liberal' prejudices against groups like Christians. It will be interesting for future work to explore this.

Third, it might be argued that different prejudices are not directly comparable to each other in strength. For example if we had replaced mention of animals with black people, women, or gay men for the items in the speciesism condition, we would likely have different results. Presumably, someone that disagreed that "Black people should have basic legal rights" would be extremely disliked, much moreso than when the items are presented in their original form. But this would not be representative of modern racism as exhibited in Western society, and not the kind of racism that activists typically have to fight against. Our claim is not that people would think it equally immoral to perform the same action (e.g. invasive and non-consensual experimentation) towards a black person or animal. Our claim is rather that when faced with the typical sexism, racism, and homophobia seen in society and as measured by well-established and commonly used scales in social psychology, participants perceive such a prejudiced person in a similar way to how they perceive a speciesist.

We note potential methodological limitations and directions for future research. First, like Sanchez et al. (2017), we matched the reported level of prejudice across the different types, the target either being very low (1.3) or high (6.7) in prejudice. We wanted to ensure that participants clearly viewed the target as prejudiced or unprejudiced, but it remains possible that different results would be observed when looking at a target who is only somewhat prejudiced.

Second, participants completed the prejudice measures themselves before seeing the target's responses, thus potentially highlighting the contrast between the target and participants' own judgments. We chose this procedure because we judged it might not make much sense for participants to see the target's responses without seeing the scale first and this was the only way

we could get participants' own unbiased scores on the scales, but it could be useful for future research to look at perceptions of the target before participants complete the prejudice scale themselves.

Third, it might be problematic that we use an MTurk sample, which tend to be younger and more liberal than most Americans (though they are older and more conservative than typical student samples). It is possible that such samples are especially biased against those who prejudiced and/or especially driven by social desirability concerns making them not want to report positive perceptions of a prejudiced person lest they be tainted by the same brush. It is important to note, however, that our results were robust when looking only at Republicans, who tended to score above the mid-point on the prejudice scales (and presumably had less qualms about appearing prejudiced). Nonetheless, it would be useful for future work to look at our effects with more prejudiced individuals.

Fourth, it would be interesting for future work to consider how speciesists are perceived in different cultures with different norms surrounding human-animal interactions. This would be particularly interesting when considering the different statuses that species have in different cultures – for example considering perceptions of speciesists in cultures who place higher importance on certain animals (e.g. cows in India) relative to others.

Finally, it would be interesting for future work to directly manipulate the target's endorsement of SDO to look at the causal role that SDO might play in perceptions of generalized prejudice: are speciesists thought to be more racist and vice versa *because* they are perceived to be higher in SDO?

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