Article

Liking but Devaluing Animals: Emotional and Deliberative Paths to Speciesism

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Abstract

We explore whether priming emotion versus deliberation affects speciesism—the tendency to prioritize certain individuals over others on the basis of their species membership (three main and two supplementary studies, four preregistered; $N = 3{,}288$). We find that the tendency to prioritize humans over animals (anthropocentric speciesism) *decreases* when participants were asked to think emotionally compared to deliberatively. In contrast, the tendency to prioritize dogs over other animals (pet speciesism) *increases* when participants were asked to think emotionally compared to deliberatively. We hypothesize that, emotionally, people like animals in general and dogs in particular; however, deliberatively, people attribute higher moral status to humans than animals and roughly equal status to dogs, chimpanzees, elephants, and pigs. In support of this explanation, participants tended to discriminate between animals based on likability when thinking emotionally and based on moral status when thinking deliberatively. These findings shed light on the psychological underpinnings of speciesism.

Keywords

speciesism, moral judgment, animals, dual-process

Most of us are speciesist. We value certain beings more than others simply on the basis of their species membership—a term that philosophers have coined *speciesism* (Singer, 1975). Speciesism manifests itself in two key ways. First, we usually value humans more than (other) animals. We exploit animals for consumption, medical experiments, hunt them for our entertainment, and do not grant even the most intelligent of them—chimpanzees—basic rights. Second, we value some animals more than others. For example, while we give love and devotion to pets such as dogs, other animals—such as pigs or chickens—live miserable lives in factory farms.

While philosophers have studied questions of how we treat and should treat animals for decades (e.g., Kagan, 2016; Regan, 1987; Singer, 1975), if not centuries (e.g., Bentham, 1780), psychologists have started to investigate the psychology of speciesism only in recent years (Amiot & Bastian, 2015; Caviola, Everett, & Faber, 2019; Dhont, Hodson, & Leite, 2016; Dhont, Hodson, Loughnan, & Amiot, 2019). Most of this research has focused on what we call *anthropocentric speciesism*: the fact that we value humans more than animals. This research has shown that anthropocentric speciesism shares properties with other forms of prejudice such as racism and sexism, in that it is underpinned by similar socio-ideological beliefs such as social dominance orientation (Caviola, Everett, & Faber, 2019; Dhont, Hodson, Costello, & MacInnis, 2014; Dhont et al., 2016; Everett, Caviola, Savulescu, & Faber, 2018).

Less research has focused on the second aspect of speciesism; the fact that we value certain nonhuman animals more than others. This aspect shows, for example, in the observation that we value pet animals over animals categorized as food, experimental subjects, wildlife, equipment, entertainment, or pests (Amiot & Bastian, 2015; Bratanova, Loughnan, & Bastian, 2011; Leite, Dhont, & Hodson, 2018). We will focus on the tendency to value pet animals (e.g., dogs) over other animals, which we refer to as *pet speciesism*. Previous work has shown that anthropocentric speciesism and pet speciesism are psychologically related (Caviola, Everett, & Faber, 2019). For example, anthropocentric speciesism, as measured by the Speciesism Scale, predicts a stronger tendency to help dogs than pigs. However, while items capturing pet speciesism correlated with anthropocentric speciesism, the correlation was only moderate, suggesting that the two factors are, to some extent, psychologically distinct.

In this article, we investigate anthropocentric and pet speciesist attitudes using a dual-process lens. Are people more or less speciesist when they think emotionally or deliberatively, respectively? Are anthropocentric and pet speciesist attitudes

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affected differently by emotional and deliberative thinking? And if so, how can we explain this difference? Answering these questions could shed light on the psychological mechanisms that underpin people's attitudes and behavior toward animals.

Previous research has investigated how moral judgments are driven by emotional (or intuitive) and deliberative processes, that is, the dual-process theory of moral judgment (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001). Most notably in the context of utilitarian psychology, it has been shown that people are less willing to engage in *instrumental harm* for the greater good (e.g., to harm one in order to save many) when they think emotionally than deliberatively (for review, cf. Capraro, 2019; Greene, Morelli, Lowenberg, Nystrom, & Cohen, 2008; Greene et al., 2001; Patil et al., 2018; Timmons & Byrne, 2019; Trémolière, Neys, & Bonnefon, 2012). In contrast, *impartial beneficence* remains unaffected by a manipulation that induces people to think emotionally or deliberatively (Capraro, Everett, & Earp, 2019). Impartial beneficence is another, psychologically distinct aspect of utilitarian psychology and captures the tendency to treat all beings equally (Kahane et al., 2018). This finding is relevant for our purpose since anti-speciesism—the tendency to not discriminate beings on the basis of their species membership—is an implication of impartial beneficence. This finding, therefore, could suggest that both forms of speciesism would also remain unaffected by such a manipulation. Similarly, previous meta-analyses found human altruism—toward an unspecified person measured through the anonymous dictator game—to be unaffected by cognitive process manipulations that induce either intuitive/emotional or deliberative thinking (Fromell, Nosenzo, & Owens, 2018; Rand, Brescoll, Everett, Capraro, & Barcelo, 2016). To the extent that anthropocentric anti-speciesism is a form of altruism (toward an unspecified animal), also this line of research seems to suggest that (at least) anthropocentric speciesism would remain unaffected by such manipulations.

Other research suggests that inducing emotional or deliberative thinking could affect speciesism. For example, the social heuristic hypothesis (Bear & Rand, 2016; Rand, 2016; Rand, Greene, & Nowak, 2012; Rand et al., 2014) assumes that people tend to be more cooperative (in social dilemmas such as the prisoner's dilemma and the public goods game, played [with other, unspecified, people] when thinking intuitively than deliberatively). To the extent that anthropocentric anti-speciesism is a form of cooperation (with generic, unspecified, animals), this framework suggests that emotional thinking would reduce (at least) anthropocentric speciesism. Finally, the fact that anthropocentric speciesism correlates negatively with empathy (Caviola, Everett, & Faber, 2019) may also suggest that more emotional thinking would *reduce* anthropocentric speciesism via increased empathic concern for animals.

In sum, it is not obvious whether thinking emotionally or deliberatively affects speciesism and, if it does, in which direction. Similarly, it is not obvious whether emotion and deliberation affect anthropocentric speciesism differently than pet speciesism.

The Present Research

This article presents three main experiments that test whether speciesism is affected by a conceptual priming manipulation that prompts people to think either emotionally or deliberatively. Study 1 relies on a moral prioritization dilemma in which it has to be decided whether to save a human versus a chimpanzee (anthropocentric speciesism) or a dog versus a pig (pet speciesism). Study 2 replicates the findings using a donation task and provides evidence that discrepancies in perceived likability and moral status attribution drive pet and anthropocentric speciesism, respectively. Study 3 replicates the findings using a broader range of measures and stimuli. Two additional studies, measuring anthropocentric speciesism by the Speciesism Scale, are reported in the Supplementary Material.

Open Science

Reports of all measures, manipulations, and exclusions as well as all data, analysis code, and experimental materials are available for download at https://osf.io/2es39/.

Ethics Statement

For all studies, relevant ethical guidelines were followed and the research was approved through University of Oxford's Central University Research Ethics Committee, with the reference number R56657/RE001.

Study 1

In the first study, we aimed to investigate whether and how emotional or deliberative thinking affects both anthropocentric and pet speciesism. As in Caviola, Schubert, Kahane, & Faber (2019), we relied on a moral dilemma in which participants had to decide which of two beings they would rather save: a choice between a human or a highly intelligent chimpanzee, or between a dog or a pig.

In two supplementary studies, we found that anthropocentric speciesism, as measured by the Speciesism Scale (Caviola, Everett, & Faber, 2019), is reduced when participants are asked to think emotionally compared to deliberatively. We therefore hypothesized that prioritization of the human over the chimpanzee (anthropocentric speciesism) increases under deliberation compared to emotion. At the same time, we hypothesized that prioritization of dogs over pigs (pet speciesism) does *not* increase under deliberation compared to emotion. This is because we assumed that under deliberation, people would consider pigs and dogs to be of similar moral status.

The study had a 2 (condition: emotion vs. deliberation) × 2 (speciesism: anthropocentric vs. pet) between-subjects design and was preregistered at https://aspredicted.org/pm2br.pdf.

Method

Participants

We recruited 805 U.S. American participants online via MTurk. They received US$0.18 (in line with U.S. minimum wage) for their participation. One hundred forty-five participants were excluded for failing the manipulation check, leaving a final sample of 660 people (358 female, $M_{age} = 38.74$, $SD_{age} = 11.96$). A priori power analysis showed that 651 participants were required to detect an effect size of $f = 0.11$ with an α of .05, power of .80, and four groups. We aimed to recruit 800 participants to account for any exclusions.

Procedure

Participants were randomly assigned to either the emotion or deliberation condition. They were first presented with the manipulation, which was based on Levine, Barasch, Rand, Berman, and Small (2018). It was explained that "sometimes people make decisions by using logic and relying on their reason. Other times, people make decisions by using feelings and relying on their emotions." In the emotion condition, they were then encouraged to rely on emotion when answering the following questions, since "many people believe that emotion leads to good decision-making." In the deliberation condition, they were encouraged to rely on reason when answering the following questions, "since many people believe that reason leads to good decision-making."

Next, participants were presented with a moral dilemma (cf. Caviola, Schubert, Kahane, & Faber, 2019) in which they could only save one of the two beings:

> In some difficult situations, one cannot help everyone. Sometimes one can only save the life, treat the illness, or relieve the pain of some but not of others. (. . .) Imagine a situation in which you could only help one of these two beings.

In the human condition, participants had to decide between saving either a human or a chimpanzee with a very high level of intelligence. In the dog condition, they had to decide between saving either a dog or a pig. Participants responded on a 7-point scale (1 = *definitely human/dog*, 4 = *flip a coin to decide*, and 7 = *definitely chimpanzee/pig*; scores reported in reverse below). Finally, participants responded to demographic questions.

Results

The results showed that people in general had a strong tendency to prioritize the human over the chimpanzee and the dog over the pig (Figure 1). The tendency to prioritize the human over the chimpanzee was stronger than the tendency to prioritize the dog over the pig, $F(1, 656) = 20.95$, $p < .001$, $\eta_p^2 = .03$, 95% confidence interval (CI) [0.01, 0.06].

There was a significant interaction effect, $F(1, 656) = 38.69$, $p < .001$, $\eta_p^2 = .06$, 95% CI [0.03, 0.09]. The tendency to prioritize a human over a chimpanzee was stronger in the deliberation ($M = 6.42$, $SD = 1.20$) compared to the emotion condition ($M = 5.97$, $SD = 1.57$). In contrast, the tendency to prioritize a dog over a pig was stronger in the emotion ($M = 6.15$, $SD = 1.13$) condition compared to the deliberation condition ($M = 5.23$, $SD = 1.69$).

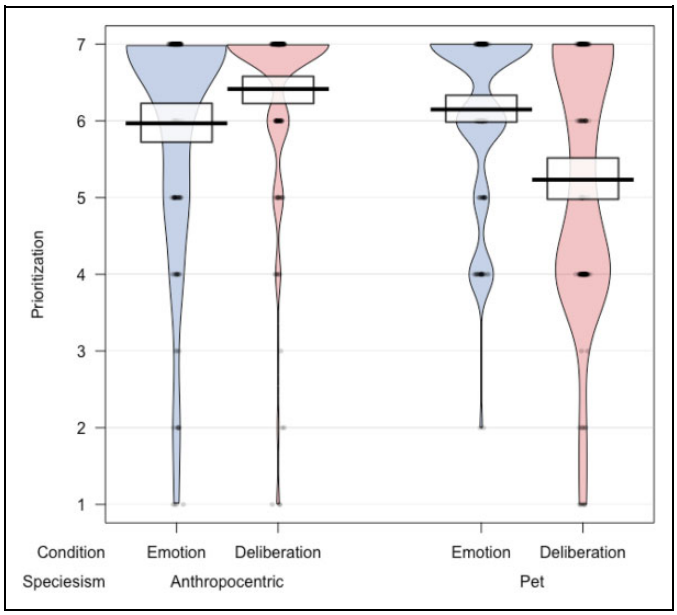

Figure 1. The tendency to prioritize a human over a chimpanzee was stronger when participants were asked to rely on deliberation compared to emotion. In contrast, the tendency to prioritize a dog over a pig was stronger when participants were asked to rely on emotion compared to deliberation. 1 = *Prioritizing the "inferior" species (chimpanzee or pig)*, 4 = *flip a coin to decide*, and 7 = *prioritizing the "superior" species (human or dog)*. Black points represent raw data, horizontal bars represent means, rectangles represent confidence intervals, and "violins" represent smoothed densities.

Discussion

This first study provides initial evidence that anthropocentric speciesism increases under deliberation compared to emotion and that pet speciesism decreases under deliberation compared to emotion. In Study 2, we explore this interaction effect in more detail.

Study 2

Study 2 had two aims. First, we wanted to test whether the interaction effect would replicate in a charitable giving context, which is more realistic than the hypothetical prioritization dilemma of Study 1. Our first hypothesis was that people would donate more to a charity helping humans instead of animals under deliberation than under emotion and that people would donate more to a charity helping dogs instead of pigs under emotion than under deliberation.

Second, we aimed to better understand the interaction effect. Our hypothesis was that when people think emotionally, they

primarily base their decision on how much they personally like the respective beings, but when people think deliberatively, they primarily base their decision on how much moral status they believe the respective beings deserve. We hypothesized that the two can come apart. The extent to which people like a being might be determined by more emotional factors (e.g., empathy) and the extent to which people attribute moral status to a being might be determined more by deliberative factors or "reasons" (e.g., what mental capacities the being has or to what species it belongs to; Caviola, Schubert, et al., 2019; Haslam, Bastian, Laham, & Loughnan, 2012). This could also explain why people are willing to eat animals despite generally liking animals (Piazza & Loughnan, 2016).

Similar to Study 1, this study had a 2 (condition: emotion vs. deliberation) × 2 (speciesism: anthropocentric vs. pet) between-subjects design and was preregistered at https://aspredicted.org/vm6m4.pdf.

Method

Participants

We recruited 595 U.S. American participants online via MTurk. They received US$0.18 for their participation. Eighty-seven participants were excluded for failing the manipulation check, leaving a final sample of 508 people (282 female, $M_{age} = 41.05$, $SD_{age} = 12.26$). A priori power analysis showed that 467 participants were required to detect an effect size of $f = 0.13$ with an α of .05, power of .80, and four groups. We aimed to recruit 600 participants to account for any exclusions.

Procedure

The emotion/deliberation manipulation was identical to the one in the previous studies. Next, participants were presented with a donation task. Participants were asked how they would distribute US$100 between two charities. Charity A focused on helping humans (dogs) and Charity B focused on helping animals (pigs). Note that in contrast to the previous study, this study used "animals" instead of "chimpanzees." The amounts donated to the two charities had to add up to 100. Next, participants responded to the same manipulation check as in the previous studies.

Next, they were asked two follow-up questions. First, likability: "Personally, which type of beings do you like more—animals [pigs] or humans [dogs]?" on a 7-point scale (1 = *I like animals [pigs] much more*, 4 = *I like both equally*, and 7 = *I like humans [dogs] much more*). Second, moral status attribution: "From a purely ethical perspective, which types of beings should matter more morally—animals [pigs] or humans [dogs]?" on a 7-point scale (1 = *animals [pigs] should matter much more*, 4 = *both should matter equally*, and 7 = and *humans [dogs] should matter much more*). Finally, participants responded to demographic questions.

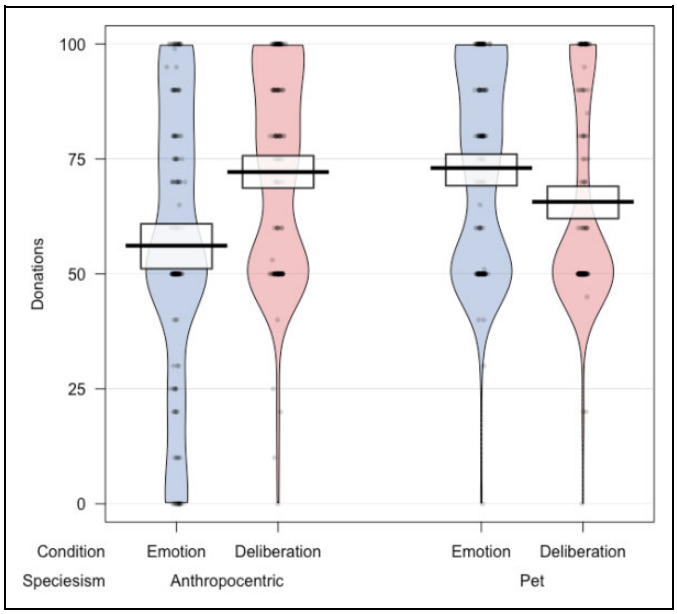

Figure 2. Participants donated more to help humans than animals when thinking deliberatively compared to emotionally. In contrast, participants donated more to help dogs than pigs when thinking emotionally compared to deliberatively. Fifty means that participants split their donations equally to both charities. Amounts higher than 50 mean that they donated more to help humans (or dogs) than animals (or pigs). Black points represent raw data, horizontal bars represent means, rectangles represent confidence intervals, and "violins" represent smoothed densities.

Results

The results replicated the findings of Study 1. In general, participants donated more to help humans than animals and more to help dogs than pigs. Relative donations to help dogs were greater than relative donations to help humans, $F(1, 504) = 5.09$, $p = .02$, $\eta_p^2 = .01$, 95% CI [0, 0.03].

There was a significant interaction effect, $F(1, 504) = 44.29$, $p < .001$, $\eta_p^2 = .08$, 95% CI [0.04, 0.13] (Figure 2). The tendency to donate more to help humans than animals was stronger in the deliberation condition ($M = 72.86$, $SD = 22.54$) compared to the emotion condition ($M = 55.2$, $SD = 30.74$). In contrast, the tendency to donate more to help dogs than pigs was stronger in the emotion ($M = 74.36$, $SD = 21.21$) condition compared to the deliberation condition ($M = 63.31$, $SD = 21.77$).

Participants liked humans and animals roughly equally ($M = 4.11$, $SD = 1.68$), $t(254) = 1.08$, $p = .28$, $d = 0.07$, 95% CI [−0.05, 0.18]. However, participants believed that humans deserve much higher moral status than animals ($M = 5.25$, $SD = 1.39$), $t(254) = 14.35$, $p < .001$, $d = 0.90$, 95% CI [0.76, 1.03]. The reverse was true in the pet speciesism conditions. Participants liked dogs much more than pigs ($M = 5.7$, $SD = 1.23$), $t(254) = 21.86$, $p < .001$, $d = 1.37$, 95% CI [1.19, 1.50]. However, participants believed that, from an ethical perspective, dogs deserve only slightly higher moral status than pigs ($M = 4.48$, $SD = 0.93$), $t(254) = 8.20$, $p < .001$, $d = 0.51$, 95% CI [0.40, 0.64].

Table 1. Unstandardized Coefficients of Regression Analysis for the Full Sample or the Two Condition Samples Separately (Study 2).

Sample	Full	Deliberation	Emotion
R^2	.52	.33	.63
Likeability	11.18** [10.04, 12.31]	3.69** [2.29, 5.09]	11.18** [10.09, 12.26]
Moral status	4.19** [2.61, 5.77]	8.97** [7.14, 10.79]	4.19** [2.68, 5.69]
Condition	4.50* [1.66, 7.35]		
Likability × Condition	−7.48** [−9.24, −5.73]		
Moral Status × Condition	4.78** [2.43, 7.13]		

Note. Square brackets display 95% confidence intervals. The continuous predictors were mean-centered. The *emotion condition* was coded as 0 and the *deliberation condition* as 1.
*$p < .05$. **$p < .001$.

Using linear regression, we found that both likability and moral status significantly predicted donations (Table 1). Crucially, we found that the signs of the interaction terms for (a) likability and condition and (b) moral status and condition went in opposite directions. Specifically, in the deliberation condition, moral status predicted donations more strongly than likability, and that in the emotion condition, likability predicted donations more strongly than moral status. We decomposed the interaction by conducting two additional regressions without the interaction term with the two condition samples separately. In the deliberation condition, the moral status coefficient was much greater than the likability coefficient, and in the emotion condition, the moral status coefficient was much smaller than the likability coefficient.

Discussion

The findings confirm that anthropocentric speciesism is reduced under emotion compared to deliberation, but that pet speciesism is increased under emotion compared deliberation. This study demonstrates that this tendency does not only show in hypothetical prioritization dilemmas but also in more real-world charitable giving behavior.

Furthermore, the findings propose an explanation for this effect. When thinking emotionally, people prioritize the types of beings that they personally like more. When thinking deliberatively, people prioritize the types of beings that they believe deserve higher moral status. People attribute much higher moral status to humans than animals despite liking both about equally. In contrast, people attribute almost the same moral status to dogs and pigs despite liking dogs much more than pigs.

Study 3

In Study 3, we aimed to replicate the findings from the previous studies with a broader range of stimuli and measures in order to increase reliability. While we relied on 1-item measures in the previous studies, in this study, we relied on 3-item ad hoc scales to measure prioritization tendencies in moral dilemmas, likability, and moral status attribution. Further, while we previously measured the two types of speciesism with just a single species-contrast (e.g., dogs vs. pigs for pet speciesism), in this study, we relied on three species-contrasts each to measure the two types of speciesism. More specifically, we contrasted either humans (anthropocentric speciesism) or dogs (pet speciesism), respectively, with chimpanzees (animals most similar to humans), elephants (wildlife), or pigs (food animals).

Similar to the previous two studies, this study had a 2 (condition: emotion vs. deliberation) × 2 (speciesism: anthropocentric vs. pet) between-subjects design and was preregistered at https://aspredicted.org/y4vf6.pdf.

Method

Participants

We recruited 468 U.S. American participants online via MTurk. They received US$0.4 for their participation. Thirty-three participants were excluded for failing the manipulation check, leaving a final sample of 435 people (206 female, $M_{age} = 41.72$, $SD_{age} = 11.86$). A priori power analysis showed that 403 participants were required to detect an effect size of $f = 0.14$ with an α of .05, power of .80, and four groups. We aimed to recruit 460 participants to account for any exclusions.

Procedure

The emotion/deliberation manipulation was identical to the one in the previous studies. Next, participants were presented with three separate blocks in randomized order involving three moral dilemmas each. Similarly to the dilemma of Study 2, each dilemma pitted either humans or dogs against another animal: either chimpanzees, elephants, or pigs, depending on the block. One dilemma focused on saving the life of one of the two beings, another dilemma focused on prioritizing helping one of the two harmed beings, and one dilemma focused on donating to a charity that either helps one of the two types of beings.

Next, participants were asked follow-up questions similar to Study 2. Again, there were three blocks in randomized order for each of the three animals, in which participants were asked 3 items to measure likability and 3 items to measure moral status attribution. Likability was measured by asking which beings they "like more," "care more about," or "have stronger feelings about." Moral status attribution was measured by asking which

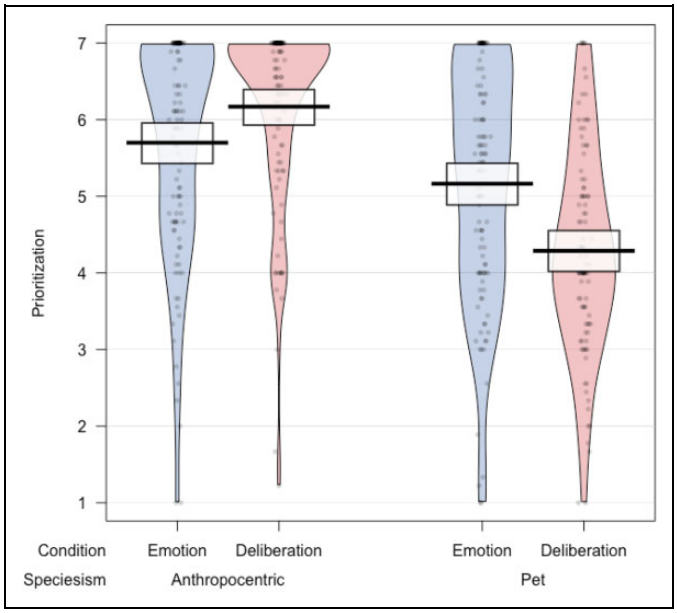

Figure 3. The tendency to prioritize humans over animals (chimpanzees, elephants, pigs) was stronger when participants were asked to rely on deliberation compared to emotion. In contrast, the tendency to prioritize dogs over other animals (chimpanzees, elephants, pigs) was stronger when participants were asked to rely on emotion compared to deliberation. 1 = *Prioritizing the "inferior" species (chimpanzees, elephants, pigs)*, 4 = *flip a coin to decide*, and 7 = *prioritizing the "superior" species (humans or dogs)*. Black points represent raw data, horizontal bars represent means, rectangles represent confidence intervals, and "violins" represent smoothed densities.

type of being "matters more morally," "should be given higher moral status," or "is morally more valuable." Participants responded to all questions on 7-point response scales. Finally, participants responded to demographic questions.

Results

Internal reliability for the aggregated dilemma responses was high ($\alpha_{chimpanzees} = .92$, $\alpha_{elephants} = .94$, $\alpha_{pigs} = .91$, $\alpha_{combined} = .85$). For the analysis, we relied on the combined scores.

The tendency to prioritize a human over the three animals (chimpanzees, elephants, pigs) was stronger in the deliberation ($M = 6.17$, $SD = 1.21$) compared to the emotion condition ($M = 5.70$, $SD = 1.44$). In contrast, the tendency to prioritize a dog over the three other animals was stronger in the emotion ($M = 5.16$, $SD = 1.55$) condition compared to the deliberation condition ($M = 4.29$, $SD = 1.34$). There was a significant interaction effect between the two factors, $F(1, 431) = 25.25$, $p < .001$, $\eta_p^2 = .05$, 95% CI [0.02, 0.10] (Figure 3). Overall, the tendency to prioritize the human over the three animals was stronger than the tendency to prioritize the dog over the three other animals, $F(1, 431) = 78.361$, $p < .001$, $\eta_p^2 = .15$, 95% CI [0.10, 0.21].

Internal reliability for the aggregated likability ($\alpha_{chimpanzee} = .96$, $\alpha_{elephant} = .96$, $\alpha_{pig} = .97$, $\alpha_{combined} = .87$) as well as for the aggregated moral status attribution was high ($\alpha_{chimpanzee} = .98$, $\alpha_{elephant} = .97$, $\alpha_{pig} = .98$, $\alpha_{combined} = .93$). For the analysis, we relied on the combined scores. Participants liked humans more than animals ($M = 5.45$, $SD = 1.41$), $t(222) = 15.34$, $p < .001$, $d = 1.03$, 95% CI [0.86, 1.19] and they believed that humans deserve much higher moral status than animals ($M = 5.61$, $SD = 1.24$), $t(222) = 19.26$, $p < .001$, $d = 1.29$, 95% CI [1.11, 1.47]. Participants also liked dogs more than the other animals ($M = 5.45$, $SD = 1.27$), $t(211) = 16.60$, $p < .001$, $d = 1.14$, 95% CI [0.97, 1.31]. However, participants believed that dogs deserve the same moral status as the other animals ($M = 4.06$, $SD = 0.83$), $t(211) = 1.08$, $p = .28$, $d = 0.07$, 95% CI [−0.06, 0.21].

Table 2. Unstandardized Coefficients of Regression Analysis for the Full Sample or the Two Condition Samples Separately (Study 3).

Sample	Full	Deliberation	Emotion
R^2	.56	.60	.51
Likeability	.65** [.54, .76]	.32** [.19, .45]	.65** [.54, .76]
Moral status	.26** [.14, .38]	.70** [.58, .82]	.26** [.13, .38]
Condition	−.17 [−.36, .03]		
Likability × Condition	−.33** [−.50, −.16]		
Moral Status × Condition	.45** [.28, .62]		

Note. Square brackets display 95% confidence intervals. Continuous predictors were uncentered. The continuous predictors were mean-centered. The *emotion condition* was coded as 0 and the *deliberation condition* as 1.
*$p < .05$. **$p < .001$.

As in the previous study, linear regression revealed that the signs of the interaction terms of (a) likability and condition and (b) moral status and condition went in opposite directions (Table 2). Again, this means that in the deliberation condition, moral status predicted donations more strongly than likability, and that in the emotion condition, likability predicted donations more strongly than moral status.

Discussion

This study replicates the findings of the previous two studies and demonstrates the robustness of our interpretation. Under deliberation compared to emotion, people's tendency to prioritize humans over animals (anthropocentric speciesism) is increased. In contrast, under emotion compared to deliberation, people's tendency to prioritize dogs over other animals (pet speciesism) is increased. As in Study 2, we found that under emotion people's prioritization tendencies are most strongly associated with the extent to which they like the respective beings. Under deliberation, people's prioritization tendencies are most strongly associated with the extent to which they attribute moral status to the respective beings.

General Discussion

Moral philosophers who have argued that speciesism cannot ethically be justified have done so by relying on reason (e.g.,

Regan, 1987; Singer, 1975). Our studies suggest that laypeople's thinking partly deviates from that of philosophers. In contrast to philosophers, people's anthropocentric speciesist attitudes increased when thinking deliberatively (using reason) compared to thinking emotionally. Their tendency to prioritize humans over animals, such as chimpanzees, elephants, or pigs, became stronger when they were prompted to think deliberatively compared to emotionally. The opposite was the case for pet speciesism. In line with the reasoning of philosophers, people's tendency to prioritize dogs over other animals became weaker when they were prompted to think deliberatively compared to emotionally. This asymmetric effect of cognitive processing on speciesism can be explained by differences in how much people personally liked the respective beings on the one hand and the moral status they attributed to them on the other hand. Despite liking animals as much as humans, people believed that humans deserve much higher moral status than animals. In contrast, despite liking dogs much more than pigs, people believed that dogs and pigs deserve roughly equal moral status.

Likability and Moral Status

Our findings suggest that there are (at least) two underlying factors that are associated with how people treat beings of different species: likability and moral status attribution. When instructed to rely on emotion, participants tend to rely on likability more than moral status; and when instructed to rely on reason, participants tend to rely on moral status more than likability. Why is this?

One possibility is that liking or disliking a being is an automatic and purely emotion-driven process that does not require advanced cognition. Likability could be a function of various evolutionary-based or culturally and individually acquired intuitions about animals. Such intuitions may include a preference for animals to which people feel socially connected, a preference for particularly charismatic animals, or an aversion against disgusting or dangerous animals (Amiot & Bastian, 2017; Amiot, Sukhanova, & Bastian, 2019; Loughnan & Piazza, 2018). In the context of meat consumption, for example, it has been shown that emotional reactions toward animals mediate willingness to eat them: People are more reluctant to eat animals that trigger empathy, such as cute and baby animals (Bastian & Loughnan, 2016; Piazza, McLatchie, & Olesen, 2018; Zickfeld, Kunst, & Hohle, 2018). As we have seen in our studies, most people like animals in general and pet animals—such as dogs—in particular. This could explain why pet speciesism, but not anthropocentrism speciesism, increases under emotion when people primarily rely on likability.

In contrast, thinking about the moral status of a being is a cognitively more demanding process. It involves reflecting on one's beliefs about the reasons for which a being deserves a certain moral status. These reasons can go beyond pure intuition and are perhaps more susceptible to change as a result of reflecting on moral arguments.

One reason may be the belief that humans deserve categorically higher moral status than other beings. People may partly believe that humans are the most valuable species in an absolute sense or that humans have a duty to prioritize members of their own species over others (Caviola, Schubert, et al., 2019). Since this factor only applies to humans but not to dogs, it could explain why anthropocentric speciesism, but not pet speciesism, increases under deliberation, when people primarily rely on moral status attribution.

Another reason may be the belief that animals with higher mental capacities (intelligence and sentience) deserve higher moral status than animals with lower mental capacities (Caviola, Schubert, et al., 2019). People believe that dogs and pigs have roughly similar mental capacities (Caviola, Everett, Faber, 2019)—a fact that people disregard when justifying their meat consumption (Bastian, Loughnan, Haslam, & Radke, 2012; Piazza & Loughnan, 2016). This, in turn, may lead people to realize that they have no grounds to justify giving moral priority to dogs over pigs. As a consequence, pet speciesism decreases under deliberation, when people primarily rely on moral status attribution.

Implications, Limitations, and Future Research

Previous research showed that impartial beneficence remains unaffected by inducing either emotional or deliberative thinking (Capraro et al., 2019). We, in contrast, found that when thinking emotionally compared to deliberatively, people become more impartial with regard to anthropocentrism speciesism and less impartial with regard to pet speciesism. The social heuristic hypothesis (Rand, 2016), which assumes that people become more cooperative when thinking intuitively, therefore, is in line with the former of the two effects. But how can it be reconciled with the fact that people become even more partial toward pet animals when thinking emotionally? One answer that we have put forward is that this is due to the asymmetric relative strength in likability and moral status that people hold in the case of anthropocentric and pet speciesism. However, more research is required to directly link likability and moral status to the social heuristic hypothesis.

In a supplementary study, we found that relative to a control condition (i.e., when no explicit prompt is given), anthropocentric speciesism both significantly increased in the deliberation condition and significantly decreased in the emotion condition. This suggests that deliberation can even be counterproductive when trying to reduce anthropocentric speciesism. Future research could explore whether there are alternative deliberative paths to reduce anthropocentric speciesism such as by presenting moral arguments for why speciesism cannot be justified ethically.

Our conceptual priming technique has its limitations. The technique does not ensure that people actually think emotionally or deliberatively. Instead, it is possible that they simply respond in the way that they *believe* is emotional or deliberative (Capraro, Everett, & Earp, 2019; Kvarven et al., 2019; Rand, 2016). However, in a supplementary study, we found that even when participants were not explicitly prompted to

think in a particular manner, anthropocentric speciesism was still higher in those who indicated that they thought deliberatively than in those who indicated that they thought emotionally. This supports the usefulness of our manipulation and further shows that individual differences in anthropocentric speciesism are related to individuals' typical use of cognitive processes.

Another limitation of our priming technique is that it did not specify on which emotion participants should rely on. If it were assumed that most of the animals in our studies generally exhibit positive emotions, it would be plausible to conclude that participants generally relied on emotions such as empathy. This is further supported by the fact that likability predicted judgments particularly strongly in the emotion conditions. However, it is also plausible that other animals such as rats, spiders, or hyenas might trigger more negative emotions in people, such as anger, contempt, or disgust.

Conclusion

We find that people's tendency to prioritize humans over animals (anthropocentric speciesism) decreases under emotion compared to deliberation. In contrast, people's tendency to prioritize dogs over other animals, such as chimpanzees, elephants, or pigs (pet speciesism), increases under emotion compared to deliberation. These findings show that anthropocentric speciesism and pet speciesism are psychologically partly distinct and driven by different cognitive processes.

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Supplemental Material

The supplemental material is available in the online version of the article.

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