

SPECIESISM AND ANIMAL TESTING

An Intervention to Influence the Consideration of Animals' Worth and Animal Testing

Ilse Cuperus (s2596709)

Department of Psychology, University of Twente

202000377 – Conflict, Risk and Safety BSc Thesis

Supervisor: Dr Mariëlle Stel

2nd supervisor: Dr Ir Peter de Vries

Word count: 6426

KEYWORDS: speciesism, animal testing, animal welfare, intervention, misconceptions

An Intervention to Influence the Consideration of Animals' Worth and Animal Testing

Animals are often taken advantage of by humans for our own benefit. This disadvantageous consideration and treatment of animals is explained by the construct of speciesism. Speciesism can result in the approval of animal suffering, for example in the food industry or the scientific field. However, speciesism can also have negative effects on society. Animals are allowed to be mistreated because they are thought to be less capable of experiencing life in comparison with humans, which results in a low consideration for animals' worth and moral status. Due to this, animals are continued to be tested on. This paper tests the influence of an intervention regarding speciesist and animal welfare attitudes, and behavioural intentions surrounding support of animal testing. As an intervention, some participants were shown a narrative video of a humanised bunny going through his day as a test animal and the aftermath of his workday. A total of 89 participants answered an online survey. Data of the participants from the intervention condition were compared to the data from the control condition to determine the effects of the video on Speciesist Attitudes, Animal Welfare Attitudes and Behavioural Intentions, as well as possible influencing variables Misconceptions, Perspective-Taking, Feelings of Injustice, and Awareness of Animal Testing. Regression analyses showed no significant effects of the video on the dependent variables. Therefore, the mediators and moderators were treated as additional dependent variables. The intervention did have a significant effect on Feelings of Injustice. Ways of improving the intervention are discussed, as well as ideas for follow-up research.

Introduction

Many people know the comfort of coming home to a pet. A companion that showers us with unconditional love, improves our mood and reduces our stress levels (Wein, 2018). In most cases, the favour is returned since these pets are loved and treated well by their owners. However, not all animals are fortunate enough to receive an unconditional love. Sometimes pets are viewed solely as property and are treated as such. The lives of other animals might be disrupted as people might take advantage of them. For example, we keep livestock for consumption, confine animals in zoos and circuses for our entertainment, exploit and abuse them for research and medicine, or harm them for fashion. Animals can be treated in such detrimental ways we would consider criminal if they were done to humans. This unequal treatment is related to the widespread belief that humans are intrinsically more valuable and thus superior to nonhuman species (Caviola et al., 2019). Such beliefs and unequal treatment are a form of *speciesism*. Horta (2010) defines speciesism as "...the unjustified

disadvantageous consideration or treatment of those who are not classified as belonging to one or more particular species” (p. 244).

The purpose of this paper is to investigate speciesism and its relation with people’s attitudes and behaviours with regard to animal welfare. First, we will look into the problem of speciesism, the effects of speciesism on animals and how it is present in society. Then, we will look into possible reasons for the continuation of speciesist attitudes and how acting on this behaviour can passively support animal suffering. Lastly, a research is presented that tests an intervention with an aim to influence speciesist and animal welfare attitudes and behaviours.

Speciesism

Considering animals are of different species than humans, their lives are considered to be less valuable, animals are considered of less moral worth, and animals are considered to be less capable than humans (Dhont et al., 2019). Even animals considered to be very similar to humans, namely chimpanzees who are known for their complexities and intelligence, would still receive lesser treatment than humans solely for the fact that they are not of the human species. Caviola et al. (2019), as well as Dhont et al. (2019), give the example of individuals valuing mentally disabled humans over chimpanzees, suggesting that species membership is of higher importance than capabilities. Furthermore, humans seem to categorise species based on their appearance or what they can mean to us. Due to their cute appearance, dogs would be considered companion animals whereas pigs would be considered food animals despite their high level of cognitive abilities (Caviola et al., 2019; Dhont et al., 2019). Wearing a coat made from a dog’s pelt seems cruel considering they are viewed as pets, whereas using wild animals such as mink fur and reptile skins is viewed as exotic and fashionable. In addition, our negative attitudes toward certain animal species can be noticed in our vocabulary. For example, rats are not commonly looked at for their intelligence, hygiene or social behaviours but rats are known to be pest animals, resulting in a connection with negative descriptive words like ‘disgusting’, ‘hateful’, and ‘betrayal’. When an individual is called a ‘rat’ there is a negative connotation as it is meant to dehumanize and therefore devalue this individual (Caviola, 2019).

The dangers of speciesism in society are its relation to other acts of upholding hierarchical inequality, such as racism and sexism (Jackson, 2019), and the possibility of an increase in criminal acts (Bègue, 2022; Sollund, 2013; Vollum et al., 2005). Empirical

research considers animal abuse as a precursor to problematic or violent behaviours and a factor in psychological disorders or interpersonal violence (Bègue, 2022; Flynn, 2011; Vollum et al., 2005). Many forms of animal cruelty are prohibited by animal welfare regulations (Vollum et al., 2005), yet, in some cases animal suffering is permitted due to societal benefits (Bègue, 2022; Cudworth, 2015). For example, the suffering and killing of animals for the food industry is permitted and even institutionalized globally (Cudworth, 2015). The most commonly shared view in society is that such cases of animal suffering and death are deemed necessary for societal welfare.

Animal Testing

Another example of institutionalized violence is animal experimentation. Despite the harm, suffering and even deaths of animals used for experimentation, it is considered necessary for societal welfare as it aids our education and research in diseases, and the effectiveness and safety of a variety of products, such as medicine, household cleaners, cosmetics, and more (Akhtar, 2015; HSI, n.d.). Ethically, animal testing is allowed if “the benefit and necessity of the tests outweigh the suffering of animals” (Liou, 2010; Netherlands Enterprise Agency, n.d.). Benefits for humans often outweigh the interest of the animal due to the low consideration of their moral status (Caviola et al., 2019; Liou, 2010). The instrumental use and consideration of animals as our property is socially justified because animal experiments have broadened our basic and applied knowledge. It is often supported and viewed as the gold standard of understanding and testing human health (Akhtar, 2015; Swami et al., 2008). Nevertheless, experts like Akhtar (2015) argue that experiments using animals are often unreliable with their results on human health due to the influence of an unnatural environment which causes stress responses in animals, or the incongruence between the manifestation of human diseases in humans and animals since they have to be artificially reproduced in the latter group. Due to differences between species, the results of animal tests can lead to trusting misleading data or disregarding useful data (Akhtar, 2015).

These negative aspects raise the question as to why animal testing is being continued. A poll made by Cruelty Free Europe (n.d.) from 2020 shows that 66% of respondents “agree that the EU should immediately end all animal tests” and 72% “agree that Europe should set targets and deadlines to phase out animal testing” (p. 16). Recently, the European Commission (2023) stated its intentions to increase animal welfare and reduce animal testing by protecting existing bans and supporting alternative methods. Yet, previous efforts have resulted in an average yearly decrease of 1% in animal testing between 1996 and 2016

(Cruelty Free Europe, n.d.). A possible reason for the slow descent of animal testing could be the context in which animals are tested. Namely, animal testing for cosmetic products is prohibited by EU regulations, however, animal testing is allowed in the context of chemical safety testing (European Commission, 2023). Furthermore, in the case that the benefits outweigh the animal suffering or if there is no alternative available, animal testing is authorised (Cruelty Free Europe, n.d.). Another reason could be transparency. For example, although animal testing for cosmetic products is prohibited in the EU, the EU does not prohibit the marketing of brands that allow animal testing for their products to be sold in other countries (Cruelty Free Europe, n.d.; European Commission, 2023). Therefore, if consumers financially support these brands, they are passively supporting animal testing.

Misconceptions

A lack of correct information can play a role in speciesism. This can be due to lacking the correct information or by being misinformed. For instance, Caviola et al. (2019) discuss three common misconceptions, namely that animals lack cognitive abilities compared to humans, that animals cannot be considered moral agents, and the inability for animals to feel and experience. Despite scientific evidence to the contrary, these misconceptions are used to devalue animals and to justify harmful behaviours towards them (Caviola et al., 2019). By actively devaluing animals' (moral) worth they are considered less deserving of protection (Bastian, et al., 2012; Caviola et al., 2019; Loughnan et al., 2010). Rothgerber and Rosenfeld (2019) explain that harmful behaviours can also be justified by actively avoiding information and remaining ignorant about situations. Believing misconceptions or choosing to remain ignorant are ways to protect oneself from conflicting feelings (*cognitive dissonance*) as a result of the belief that you would never hurt an animal while continuing a contradicting behaviour that passively harms animals (Rothgerber & Rosenfeld, 2019).

One way of protecting oneself is by avoiding correct information and remaining ignorant is the denial of animal sentience. An individual might avoid dissonance and moral responsibility through the thought that a group (animals) that cannot suffer, cannot be harmed (Gray et al., 2012; Rothgerber & Rosenfeld, 2019). However, this is a misconception. Similarities between humans and non-humans in their suffering can be found in neurological, physiological and behavioural responses. Vertebrates respond to harm through *nociceptors*, or 'pain-sensing neurons', which are receptors that receive a signal from damaged tissue, such as skin or joints (Dafny, 2020). Additionally, in mammals, a response to pain is also found in the forebrains (De Waal & Andrews, 2022; National Research Council (US), 2009). De Waal and

Andrews (2022) mention the similarities of muscular contractions between humans and chimpanzees when expressing emotions, a similar response to fear between humans and rats, and a similar endocrine response to stress or bonding situations amongst humans, mammals and invertebrates. Furthermore, De Waal and Andrews (2022) state that “although every animal species is distinct, science recognizes fundamental similarities when it comes to neurophysiology, cognition, emotions, and sentience.” (p. 1352). Nonetheless, this recognition is denied or ignored because an emphasis on similarities between humans and non-humans would result in moral conflict as a result of our treatment of non-humans (Bastian et al., 2012; De Waal & Andrews, 2022; Loughnan et al., 2010).

Present Study

Caviola et al. (2019) have looked into the previously mentioned misconceptions and how they relate to speciesism. In their study, they explained the construct of speciesism and created a *Speciesism Scale* to measure the attitudes of their participants. They tested the construct and their scale in five studies, however, they did not test a way of reducing speciesist attitudes. That is where this paper will continue. The present study aims to measure and influence speciesism as a result of misconceptions using an intervention. It will do so through a narrative video. McCormack et al. (2021) have studied significant factors surrounding the use of narrative videos to promote *pro-environmental behaviours*. They mention the importance of combatting resistance to persuasion, which can be done by absorbing the audience into the narrative, allowing them to take the perspective of the characters, and increasing the attractiveness of the message with humour. They further discuss the importance of identification with the character and the establishment of empathy for this character. It is important to encourage perspective-taking when attempting to change people’s attitudes about animals because it highlights the animal’s experience for the audience (McCormack et al., 2021; Petterson et al., 2022). Perspective-taking of animals can be improved by attributing familiar human characteristics to an animal (*humanization* or *anthropomorphisation*) because this accentuates the similarities between humans and animals (McCormack et al., 2021; Petterson et al., 2022). Accordingly, a video was chosen that takes these factors into account.

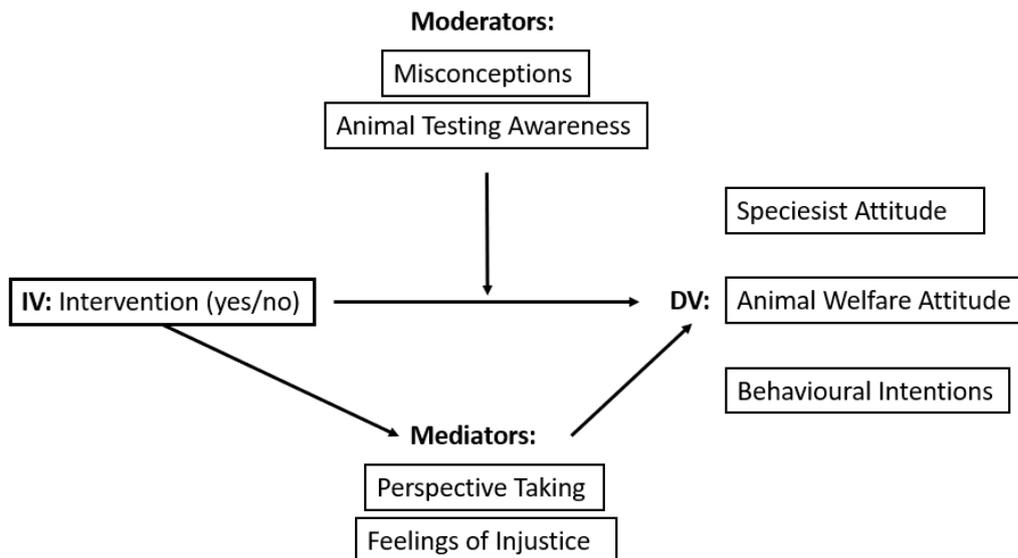
The narrative video, which shows a day in the life of a humanized test bunny, is used to clear up the misconception of animal sentience and to accentuate human and animal similarities. The video starts more humorous to allow the audience to lower their guard but grows more serious as the impact of animal testing is discussed and shown. The intervention

confronts participants with the similarities between humans and animals as sentient beings, and the harm that is inflicted upon animals as a result of people's (indirect) support of animal testing.

Thus, the first hypothesis of this study states that the intervention will reduce speciesist attitudes towards animals. Additionally, it is expected that the intervention will positively raise attitudes regarding animal welfare. This will be further proven by measuring participants' intention to change their behaviour concerning (passively) supporting animal testing. Lastly, some additional factors are taken into account, namely, knowledge of animals' capabilities, perspective-taking of animals, feelings of injustice for animals and knowledge of animal testing. A conceptual framework of the relations is provided below (Figure 1).

Figure 1

Conceptual Framework of Relations Between Variables



Methods

This research was approved by the Ethics Committee of the University of Twente, Netherlands (IRB approval code 231396). All participants gave written informed consent in accordance with the guidelines of the BMS Ethics Committee (Appendix A).

Design

This study used a quantitative methodology with a between-participants design. Participants were randomly assigned to an intervention condition or control condition. The main dependent variables were speciesist attitudes, attitudes toward animal welfare, and intentions to change behaviour. Possible mediating and moderating variables measured were participants' knowledge about animals' capabilities, their perspective-taking of animals, feelings of injustice, and their awareness of animal testing.

Participants

The sample size was a priori-determined. Based on previous studies (Caviola et al., 2019; Banach & Stel, 2023), a small to medium effect size was expected. A sensitivity analysis was conducted using G*Power 3.1.9.7 (Faul et al., 2007) with $d = 0.3$, 95% power, and $\alpha = .05$ (Banach & Stel, 2023). With the statistical test 'difference between two independent means' (t -test, two-tailed), 290 participants were needed per group (580 total).

Participants were recruited through volunteer sampling, opportunity sampling and snowball sampling. Students could volunteer via Sona Systems through which credits could be earned as a reward for their participation. Furthermore, attention for the study was raised by promoting the study during 1st and 2nd-year Psychology lectures at the University of Twente. Participants were also recruited via social media platforms, such as Instagram, LinkedIn and WhatsApp. Through this sampling method, individuals were asked to share the survey with people they knew. Participants could enter a draw for one €50,- gift card as a reward for their participation. The inclusion criteria for participants were to be at least 18 years old due to the content of the intervention video.

Due to time restrictions, the survey was closed after nearly two months of recruitment and it reached a total of 100 respondents. After deletion of some answers due to non-completion or exclusion of the criteria ($n = 11$), 89 of these respondents were included in the dataset, with ages ranging between 18-79 ($M = 25.93$, $SD = 11.11$). A total of 42 respondents (47.2%) ($M_{\text{age}} = 28.26$, $SD_{\text{age}} = 12.77$) were assigned to the intervention group and 47

(52.8%) ($M_{\text{age}} = 23.85$, $SD_{\text{age}} = 9.02$) were assigned to the control group. For the intervention group, a number of 12 participants (28.6%) were male and 30 participants (71.4%) were female. Whereas for the control group, there were 10 male participants (21.3%), 36 female participants (76.6%) and one participant (2.1%) who is non-binary/third gendered. For more descriptive statistics and variables, see Table 1.

Table 1*Descriptive Statistics Demographic Variables*

Variable	Intervention		Control		Total	
	n	%	n	%	n	%
Gender						
Male	12	28.6	10	21.3	22	24.7
Female	30	71.4	36	76.6	66	74.2
Non-binary/third gender	0	0	1	2.1	1	1.1
Nationality						
Dutch	20	47.6	28	59.6	48	53.9
German	20	47.6	11	23.4	31	34.8
Other	2	4.8	8	17	10	11.2
Diet						
Flexitarian	9	21.4	11	23.4	20	22.5
Omnivorous	21	50	29	61.7	50	56.2
Pescatarian	5	11.9	1	2.1	6	6.7
Vegan	1	2.4	2	4.3	3	3.4
Vegetarian	6	14.3	4	8.5	10	11.2
Owning pets						
Yes	20	47.6	29	61.7	49	55.1
No	22	52.4	18	38.3	40	44.9
Supporting animal organisations						
Yes	12	28.6	11	23.4	23	25.8
No	30	71.4	36	76.6	66	74.2

Notes. $N = 89$. Ages range between 18 – 79 ($M = 25.93$, $SD = 11.11$).

Intervention: $n = 42$ ($M_{\text{age}} = 28.26$, $SD_{\text{age}} = 12.77$).

Control: $n = 47$ ($M_{\text{age}} = 23.85$, $SD_{\text{age}} = 9.02$).

Procedure and Materials

The survey for this study was created on Qualtrics (Appendix B) and takes approximately 20 minutes to complete. Participants were presented with the informed consent form (Appendix A). Here, the participants read the focus and procedure of the research, information and data management, and risks and voluntariness. If participants agreed to partake in the study they would start the survey.

First, participants were asked to fill in demographic information, which included age, gender, nationality, type of diet, owning pets, and active support of animal welfare organisations. Next, participants were randomly but evenly assigned to one of the two conditions. Participants who were assigned to the intervention condition were first reminded that the video could elicit discomfort and/or distress and that they were free to stop watching if they decided so. Then, the video was presented via YouTube as shared with permission by “The Humane Society of the United States” (<https://www.youtube.com/watch?v=G393z8s8nFY>). It is a stop-motion animated video of 3 minutes and 53 seconds. The video shows an interview with Ralph, an anthropomorphic bunny, for a fictional documentary about a day in the life of a tester. Ralph tells the viewer about his life while he gets ready for work similar to how humans would. However, Ralph is plucked from his home and entrapped in a laboratory along with other test bunnies. The video shows how Ralph is tested on and how he deals with his ‘work-related’ injuries. Even though Ralph remains optimistic, he is visibly in pain due to his injuries and saddened when talking about his life expectancy. At the end of the video, his suffering is connected to consumers supporting the animal testing industry by purchasing cosmetic products by cynically thanking the viewer for giving him his job.

After (not) watching the video, all participants continued with the survey. The survey asked participants about their opinions on different scales, which will be explained below. Participants who watched the video were asked additional questions. Ultimately, participants were debriefed and they had the opportunity to leave any last remarks about the study, as well as join the raffle.

Dependent Variables

Speciesist Attitude (Cronbach’s $\alpha = .808$). To measure the effectiveness of the intervention on speciesism, the empirically validated and theoretically constructed *Speciesism Scale* developed by Caviola et al. (2019) was used. The Speciesism Scale consists of six items on a 7-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’. The items measure speciesism through the formation of attitudes concerning animals’ moral worth and what is acceptable concerning using animals for our benefit. After reverse coding one item, a higher score on the items indicates a high level of speciesism. For this study, the item that was recoded (“Chimpanzees should have basic legal rights such as a right to life or a prohibition of torture”) was brought forward to be the second item on the scale because of the chance it

might be looked over if it were kept as the second-to-last item of the scale since it is a reversed item.

Animal Welfare Attitude (Cronbach's $\alpha = .769$). To measure the extent to which participants care about animal welfare in general, this scale was added. Items for this scale were picked from the *Animal Welfare Scale* developed by Stel and Unterweger (n.d.). Of this six-item scale, four items were chosen that related to animals in general. The items are on a 7-point Likert scale ranging from 'strongly disagree' to 'strongly agree', with a higher score indicating a positive attitude toward animal welfare.

Behavioural Intentions (Cronbach's $\alpha = .809$). To measure the participants' intention to change their current behaviour, this scale was added. Five items were created to indicate an intent of positive behaviour or an intent to stop negative behaviour concerning supporting the animal testing industry. These items are: "I intend to buy cosmetic products for which animals were **NOT** tested on...", "I intend to buy medicines for which animals were **NOT** tested on...", "I intend to seek out information regarding animal testing...", "I intend to check for animal testing before buying a product...", and "I intend to support animal welfare organizations...". The answer options for this scale are as follows. 'I have not and will not' indicates negative behaviour and no change. 'Less than I currently do' indicates a negative change in behaviour. 'As much as I currently do' indicates no change. 'More than I currently do' indicates a positive behaviour change. 'Always from now on' indicates a positive change into positive behaviour. 'I have been and will always continue to do so' indicates positive behaviour and no change. In the results section, two values for this scale can be found because analyses were performed once more after removing the last answer option "I have been and will always continue to do so" to solely analyse the results that indicate a possibility for change. This means that the coding for the answers ranged from 1-5. These values are indicated as Behavioural Intentions*.

Additional Mediating Variables

Perspective (Cronbach's $\alpha = .810$). This scale was added to measure the extent to which participants felt like they could take the perspective of animals. Items for this scale were picked from the scale developed by Stel and Unterweger (n.d.). The items are on a 7-point Likert scale ranging from 'strongly disagree' to 'strongly agree', with a higher score indicating better perspective-taking of animals.

Feelings of Injustice (Cronbach's $\alpha = .932$). This scale measures the range and intensity of emotions participants were feeling. All six items started with the phrase "I feel..." followed by the emotions 'alarmed', 'bothered', 'angered', 'annoyed', 'disgusted', and 'saddened'. Participants could indicate the intensity of the emotion they were feeling at that current moment ranging from '1 – Not at all' to '7 – Extremely'. The higher the score the more negatively they experienced the emotion(s).

Additional Moderating Variables

Misconceptions (Cronbach's $\alpha = .698$). This scale was created to measure the knowledge participants have of animals and their capabilities. For this item, participants were instructed to "...consider animals, such as pets (e.g. cats, dogs, bunnies), livestock (e.g. cows, pigs, chickens) and zoo animals (e.g. elephants, chimpanzees).". By doing so, participants would think of companion animals, food animals and appealing wild animals (Dhont et al., 2019). The items are on a 7-point Likert scale ranging from 'strongly disagree' to 'strongly agree', with a higher score indicating more knowledge about animals' capabilities, thus fewer misconceptions.

Awareness (Cronbach's $\alpha = .846$). This scale was created to measure the awareness participants had of animal testing. The five items indicated awareness of certain aspects of the animal testing industry, namely: "I am aware of the common practices of how animals are being treated in the laboratory for (medical) experiments.", "I am aware of the animal deaths as a result of (medical) experiments.", "I am aware of the EU regulations about animal testing for cosmetics.", "I am aware of the medicines and cosmetics sold in the EU which have been tested on animals.", and "I am aware of the available alternatives to animal testing.". The items are on a 7-point Likert scale ranging from 'strongly disagree' to 'strongly agree', with a higher score indicating more awareness of the animal testing industry.

Video Questions

The participants of the intervention group ultimately received questions regarding the video they had watched. The questions asked whether the participant had watched the video completely and attentively. Furthermore, they were asked about the content of the video, including the injuries Ralph had sustained, what his day looked like and what cosmetic products were mentioned in the video. These questions were to test whether the participants had watched attentively and whether they were able to remember these details. Participants were also asked about their interpretation of the video and Ralph's life. Lastly, they were

asked about recognizing the voice actors because some known actors were involved in the video.

Results

For all variables, the assumptions of the analysis of variance (ANOVA) were tested to determine the usability of the data for inference. Skewness and kurtosis of the data were calculated to determine the distribution of the data. Although some variables were skewed somewhat positively or negatively, all skew values fit in between -2 and +2, meaning that the values are acceptable. The kurtosis values also deviated from 0, meaning that the negative values have a more leptokurtic distribution whereas positive values have a more platykurtic distribution. These calculated values can be found in Table 2 (Appendix C).

Next, outliers and homogeneity of variances were determined using Levene's test, as shown in Table 3 below (also found in Appendix D). For all variables, it was concluded that there are no significant differences as for all the Levene statistics the p -values were greater than .05, thus, the assumption of homogeneity of variance has not been violated.

Table 3

Levene Statistics and Outliers

	Levene Statistic	p -value	Outliers
Speciesist Attitude	$F(1, 87) = 2.068$	.154	1
Animal Welfare Attitude	$F(1, 87) = 0.048$	.827	2
Behavioural Intentions	$F(1, 87) = 0.906$	.344	5
Behavioural Intentions*	$F(1, 87) = 0.390$	.534	4
Misconceptions	$F(1, 87) = 0.174$	.677	0
Perspective Taking	$F(1, 87) = 1.443$	.233	1
Feelings of Injustice	$F(1, 87) = 1.944$	.167	0
Awareness of Animal Testing	$F(1, 87) = 2.081$	.153	0

Note. * For this, the last answer option "I have been and will always continue to do so" for the Behavioural Intentions scale was removed in order to solely analyse the results that indicate a possibility for change.

Dependent Variables

The descriptive statistics of the dependent variables (Speciesist Attitude, Animal Welfare Attitude, and Behavioural Intentions) per condition can be found in Table 4 (Appendix E.) The internal consistency of all variables was determined as the following:

Animal Welfare Attitude was deemed acceptable (Cronbach's $\alpha = .769$), while Speciesist Attitude and Behavioural Intentions were both considered good (Cronbach's $\alpha = .808$ and $\alpha = .809$ respectively).

To analyse the effect of the intervention on the dependent variables, a regression analysis was performed, which can be found in Table 5 (Appendix F). For none of the variables was a significant effect found since the p -value for all was greater than .05. Thus, no significant effect of the intervention was observed on the dependent variables. For the Speciesist Attitude, there was no significant difference between the control ($M = 2.56$, $SD = 1.24$) and intervention conditions ($M = 2.27$, $SD = 0.862$) since the effect of $\beta = -0.286$ had a p -value = .215. For the Animal Welfare Attitude, there was no significant difference between the control ($M = 6.01$, $SD = 0.888$) and intervention conditions ($M = 6.09$, $SD = 0.822$) since the effect of $\beta = 0.079$ had a p -value = .667. And lastly, for the Behavioural Intentions, there was no significant difference between the control ($M = 3.56$, $SD = 1.$) and intervention conditions ($M = 3.64$, $SD = 0.923$) since the effect of $\beta = 0.085$ had a p -value = .678. And although the removal of the last answer option for this scale showed some difference in comparison, since for the Behavioural Intentions* ($M_{\text{control}} = 3.29$, $SD_{\text{control}} = 0.81$, $M_{\text{intervention}} = 3.52$, $SD_{\text{intervention}} = 0.840$) the effect was greater $\beta = 0.238$, it still was not significant with a p -value = .177. A Multivariate Analysis of Variance (MANOVA test) was attempted as well, however, no significant effects were found. Therefore, the analysis is omitted from the results.

Mediators and Moderators

Four additional variables were chosen to determine the possible mediating or moderating effect of the intervention on the independent variables. However, due to there being no significant effect between the intervention and the dependent variables, these variables were instead treated as additional dependent variables and not as mediators or moderators.

The descriptive statistics of the variables (Misconceptions, Perspective Taking, Feelings of Injustice, and Awareness of Animal Testing) per condition can be found in Table 4 (Appendix E). The internal consistency of all variables was determined as the following: Misconceptions was deemed questionable (Cronbach's $\alpha = .698$), while Perspective Taking and Awareness of Animal Testing were both considered good (Cronbach's $\alpha = .810$ and $\alpha = .846$ respectively), and Feelings of Injustice was considered excellent (Cronbach's $\alpha = .932$).

The effect of the intervention on the additional variables was analysed as well using a regression analysis (see Table 5, Appendix F). Apart from one, no significant effect of the intervention was observed. For the Misconceptions there was no significant difference between the control ($M = 5.89$, $SD = 0.672$) and intervention conditions ($M = 5.90$, $SD = 0.649$) since the effect of $\beta = 0.003$ had a p -value = .982. For Perspective Taking there was no significant difference between the control ($M = 3.20$, $SD = 1.57$) and intervention conditions ($M = 4.68$, $SD = 1.29$) since the effect of $\beta = 0.260$ had a p -value = .251. And for the Awareness of Animal Testing, there was no significant difference between the control ($M = 3.91$, $SD = 1.38$) and intervention conditions ($M = 3.99$, $SD = 1.11$) since the effect of $\beta = 0.071$ had a p -value = .792. However, Feelings of Injustice did have a significant difference between the control ($M = 3.20$, $SD = 1.57$) and intervention conditions ($M = 4.68$, $SD = 1.29$) since the effect of $\beta = 1.48$ had a p -value $< .01$ (p -value = $5.77e^{-6}$).

Discussion

This study aimed to examine the influence of an existing narrative video about the harms of animal testing on people's attitudes towards species and animal welfare, and their behaviour with regard to (passively) supporting animal testing for products. The video was expected to negatively influence speciesist attitudes and positively influence animal welfare attitudes and behavioural intentions to stop buying products for which animals were tested. Furthermore, the influence of possible mediating and moderating factors was tested.

Dependent Variables

Concerning their Speciesist Attitudes, Animal Welfare Attitudes, and Behavioural Intentions, the results showed no significant effect for participants who watched the video. For this pool of participants, the video was deemed not powerful enough to cause a decrease in attitudes, nor was it able to cause a significant impact on the intent for behavioural change as compared to the control group. There could be two explanations for the lack of impact of the video.

Firstly, as explained in the 'Participants' section, a power analysis calculated the need for a total sample size of 580 participants. Since the data of only 89 respondents was used for this study, despite a recruitment period of two months, this is far too few participants to be able to speak of a powerful effect. Therefore, it would be advised to use the data of more participants when examining the influence of this particular video on speciesist attitudes, animal welfare attitudes, or behavioural intentions. In this calculation, 95% power was used

since this seemed to be the standard and because this was used by a similar study (Banach & Stel, 2023). However, 80% power might be more realistic as it would bring the needed participants down to a total of 352. Another similar study (Caviola et al., 2019) also used this calculation. Nonetheless, more participants are needed to be able to speak of an effect.

Secondly, the narrative video that was chosen for this study might not be able to influence speciesist attitudes, animal welfare attitudes, or behavioural intentions. Although the video was chosen as it seemed to fit the factors mentioned by McCormack et al. (2021), namely that the narrative allows for perspective-taking and the attractiveness of the message with humour, there are some problems with the video. McCormack et al. (2021) mention the importance of humour, although this could take away from the seriousness of the message. Ralph led the audience through his day using cynic humour while allowing for some moments of emotion and seriousness as well. Yet, these moments might not be long enough to cause an impact. The humour allows the audience to let their guard down, but when there is an imbalance between the humour and the seriousness of the message, the latter can be brushed off.

Moreover, the animation style of the video could result in a lack of perspective-taking from the audience since there are no real humans or bunnies depicted. Due to this, the effects of testing on animals might not be as impactful on the audience as they could have been if they were able to take the perspective of real living animals. This does not mean, however, that real living animals need to be used. The variable Perspective Taking was high for the intervention group, indicating that they were able to take the perspective of animals. Still, this might not have been the result of the video since the variable was also high for the control group, albeit slightly lower. Additionally, both groups seemed to have a moderate score on the variable Awareness of Animal Testing. There is no difference between groups in their knowledge of animal testing, meaning that the video did not give any additional information.

Thus, a better narrative video needs to balance the humour and seriousness of its message. It needs to induce empathic concern and perspective-taking of animals through the attribution of familiar human characteristics to the characters (McCormack et al., 2021; Petterson et al., 2022), while not losing its connection with the non-fictional animals which are being tested on. The video should provide more information about animal testing. Lastly, the narrative video needs to have clear action points for the audience so they feel able to make a change (McCormack et al., 2021).

A problem for the Behavioural Intentions scale specifically could be that the previous questions on the survey (Speciesist Attitude scale and Animal Welfare Attitude scale) could influence the participants. These first two scales could give the participants somewhat of an idea as to what they are ‘supposed’ to think. The influence of other scales on the control group could be solved through more deception, for example by adding questions about other topics.

Mediator Feelings of Injustice

Two possible mediating factors and two possible moderating factors were decided on, however, because the results of the dependent variables did not show any significant effects between the groups, no mediation analyses were performed. Instead, these factors were treated as additional variables.

A significant positive effect was found in the feelings of injustice participants felt after watching the video as compared to those who had not watched the video. This means that the video did impact participants by making them feel negative emotions. However, because there were no other significant effects and because this study did not examine actual behavioural change, it cannot be concluded whether participants were experiencing these negative emotions as a result of watching a video showcasing a sensitive subject matter or whether it is the result of this specific subject matter.

Strengths and Limitations

The present study is the first to test the effectiveness of the influence of an intervention on participants’ speciesist and animal welfare attitudes, as well as their behavioural intentions with a focus on animal testing. Previous studies, such as Caviola et al. (2019) have focused on the broader view of speciesism without testing any interventions, or they have focused on interventions aiming to change attitudes and behaviour surrounding the food industry (Banach & Stel, 2023; Bianchi et al., 2018). In this paper, the focus was put on the animal testing industry, which is seldom discussed but remains a big problem in society. Apart from the development of alternatives to animal testing, animal testing in itself should be reprimanded more. Society seems to agree that this problem should be phased out, yet, there seems to be little change in the past decade (Cruelty Free Europe, n.d.; European Commission, 2023).

It is important to inform people about animal testing since consumers are often not aware of their passive support of animal testing. Furthermore, people seem to lack the correct information or choose to remain ignorant about animals and animal testing (Caviola, et al., 2019; Gray et al., 2012; Rothgerber & Rosenfeld, 2019). The present study focuses on a common misconception, namely the inability of animals to feel and experience. The study used a narrative video of a humanized bunny to show the similarities between animals and humans. However, the video used for this study lacked the information needed to challenge any misconceptions a participant might have. A better intervention should be able to inform participants of the knowledge they lack or about the incorrect knowledge they do have, as well as teach them the correct information. It should do so in a way that challenges their possible speciesist view and allows them to take the perspective of animals. Follow-up research could focus on any or all of the common misconceptions suggested by Caviola et al. (2019).

Another topic tested by Caviola et al. (2019), which was briefly touched on in this paper due to its restrictions, is the relation between speciesism and other types of discrimination or its connection to social dominance orientation. In their study, Caviola et al. (2019) found a positive connection between speciesism and racism, sexism, and homophobia. The connection with these prejudicial attitudes shows that an individual who is discriminatory toward non-human species is likely to be discriminatory to other groups (race, sex, sexual orientation). This can be further researched, especially with an aim to change behaviour. However, for this, a specific population would be needed for follow-up research.

References

- Akhtar, A. (2015). The flaws and human harms of animal experimentation. *Cambridge Quarterly of Healthcare Ethics*, 24(4), 407-419.
<https://doi.org/10.1017/S0963180115000079>
- Banach, N., & Stel, M. (2023) *Reducing speciesism: An intervention towards changing people's attitudes and behavioural intentions*. Manuscript resubmitted for publication.
- Bastian, B., Loughnan, S., Haslam, N., & Radke, H.R.M. (2012). Don't mind meat? The denial of mind to animals used for human consumption. *Personality and Social Psychology Bulletin*, 38(2), 247-256.
- Bègue, L. (2022). Explaining animal abuse among adolescents: The role of speciesism. *Journal of Interpersonal Violence*, 37(7-8). DOI: 10.1177/0886260520959643
- Bianchi, F., Dorsel, C., Garnett, E., Aveyard, P., & Jebb, S.A. (2018). Interventions targeting conscious determinants of human behaviour to reduce the demand for meat: a systematic review with qualitative comparative analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 15(102). <https://doi.org/10.1186/s12966-018-0729-6>
- Caviola, L., Everett, J.A.C., & Faber, N.S. (2019). The moral standing of animals: Towards a psychology of speciesism. *Journal of Personality and Social Psychology*, 116(6), 1011-1029. <https://doi.org/10.1037/pspp0000182>
- Cruelty Free Europe. (n.d.). *Reducing and replacing animal experiments: Europe needs an action plan*. crueltyfreeeurope.org.
<https://crueltyfreeeurope.org/sites/default/files/Cruelty%20Free%20Europe%20Reducing%20and%20replacing%20animal%20experiments%20Europe%20needs%20an%20action%20plan%20%281%29.pdf>
- Cudworth, E. (2015). Killing animals: Sociology, species relations and institutionalized violence. *The Sociological Review*, 63(1), 1-18. <https://doi.org/10.1111/1467-954X.12222>

- Dafny, N. (2020). *Chapter 6: Pain Principles*. Neuroscience Online: an electronic textbook for the neurosciences.
<https://nba.uth.tmc.edu/neuroscience/m/s2/chapter06.html#:~:text=Nociceptors%20are%20sensory%20receptors%20that,%2C%20joints%2C%20bone%20and%20viscera.>
- De Waal, F.B.M., & Andrews, K. (2022) The question of animal emotions. *Science*, 375(6587), 1351-1352. DOI: 10.1126/science.abo2378
- Dhont, K., Hodson, G., Leite, A.C., & Salmen, A. (2019). The Psychology of Speciesism. In Kristof Dhont & Gordon Hodson (Eds.), *Why we love and exploit animals* (pp. 29-49). Routledge. https://www.researchgate.net/profile/Kristof-Dhont-2/publication/336604499_The_Psychology_of_Speciesism/links/62594a849be52845a905c4ba/The-Psychology-of-Speciesism.pdf
- European Commission. (2023, July 25). *Commission acts to accelerate phasing out of animal testing in response to a European Citizens' Initiative* [Press release].
https://ec.europa.eu/commission/presscorner/detail/en/ip_23_3993
- Faul, F., Erdfelder, E., Lang, A.-G. & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191.
- Flynn, C.P. (2011). Examining the links between animal abuse and human violence. *Crime, Law and Social Change*, 55, 453-468. <https://doi.org/10.1007/s10611-011-9297-2>
- Gray, K., Young, L., & Waytz, A. (2012). Mind perception is the essence of morality. *Psychological Inquiry*, 23(2), 101-124. DOI: 10.1080/1047840X.2012.651387
- Horta, O. (2010). What is speciesism? *Journal of Agricultural and Environmental Ethics*, 23, 243-266. DOI: 10.1007/s10806-009-9205-2
- Humane Society International (HSI). (n.d.). *About Animal Testing*. hsi.org.
<https://www.hsi.org/news-resources/about/>
- Jackson, L.M. (2019). Speciesism predicts against low-status and hierarchy-attenuating

- human groups. *Anthrozoös*, 32(4), 445-458. DOI: 10.1080/08927936.2019.1621514
- Liou, S. (2010). *The Ethics of Animal Experimentation*. Huntington's Outreach Project For Education at Stanford. <https://hopes.stanford.edu/animal-research/>
- Loughnan, S., Haslam, N., & Bastian, B. (2010). The role of meat consumption in the denial of moral status and mind to meat animals. *Appetite*, 55, 156-159. DOI: [10.1016/j.appet.2010.05.043](https://doi.org/10.1016/j.appet.2010.05.043)
- McCormack, C.M., Martin, J.K., & Williams, K.J.H. (2021). The full story: Understanding how films affect environmental change through the lens of narrative persuasion. *People and Nature*, 3(6), 1127-1296. DOI: 10.1002/pan3.10259
- National Research Council (US) Committee on Recognition and Alleviation of Pain in Laboratory Animals. (2009) *Recognition and Alleviation of Pain in Laboratory Animals*. National Academies Press (US). ISBN-13: 978-0-309-12834-6
- Netherlands Enterprise Agency, RVO. (n.d.). *Rules on animal testing and research*. Business.gov.nl. <https://business.gov.nl/regulation/animal-testing/>
- Petterson, A., Currie, G., Friend, S., & Ferguson, H.J. (2022). The effect of narratives on attitudes toward animal welfare and pro-social behaviour on behalf of animals: Three pre-registered experiments. *Poetics*, 94. <https://doi.org/10.1016/j.poetic.2022.101709>
- Rothgerber, H. & Rosenfeld, D.L. (2019). Meat-related cognitive dissonance: The social psychology of eating animals. *Social and Personality Psychology Compass*, 15(5). <https://doi.org/10.1111/spc3.12592>
- Sollund, R. (2013). Causes for speciesism: Difference, distance and denial. In R. White (Ed.), *Transnational Environmental Crime*, (1st edition, 75-96). Routledge. <https://doi.org/10.4324/9781315084589>
- Stel, M., & Unterweger, A. (n.d.). *Towards sustainability by changing the moral standing of animals: A prejudice-based intervention reducing people's speciesist attitudes and behaviors*. Manuscript resubmitted for publication.

- Swami, V., Furnham, A., & Christopher, A.N. (2008). Free the animals? Investigating attitudes toward animal testing in Britain and the United States. *Scandinavian Journal of Psychology*, 49, 269-276. DOI: 10.1111/j.1467-9450.2008.00636.x
- Vollum, S., Buffington-Vollum, J., & Longmire, D.R. (2005). Moral disengagement and attitudes about violence toward animals. *Society & Animals*, 12(3), 209-235. <https://www.animalsandsociety.org/wp-content/uploads/2015/11/vollum.pdf>
- Wein, H. (2018). *The Power of Pets: Health Benefits of Human-Animal Interactions*. NIH News in Health. <https://newsinhealth.nih.gov/2018/02/power-pets#:~:text=The%20unconditional%20love%20of%20a,U.S.%20households%20have%20a%20pet>

Appendix A

Informed Consent Form

UNIVERSITY OF TWENTE.

Welcome to this study!

Thank you for participating in this research. In the following, you will be informed about the focus of this research, the procedure, the data management, and risks and voluntariness.

Focus of this research. Focus of this research is to get insight into your opinions and behaviours that are related to animals.

Procedure of this research. This research consists of a survey. The survey starts with demographic questions regarding your lifestyle. You may be assigned to a group that is asked to watch a video before continuing with the questions. In this survey you are asked about your opinions and behaviours related to animals. There are no right or wrong answers, so we ask you to answer as honestly as possible. In total, your participation will take around 10-20 minutes.

At the end of the survey, you can enter a draw for **one** €50 Amazon giftcard. If you are interested in this, you get the chance to leave your email address, to which the giftcard can be send. Your contact information will be separate from your survey responses in order to maintain full anonymity.

Information and Data Management. Your data is handled with utmost confidentiality. Your individual responses cannot be traced back to you. Research results are solely reported in groups of gathered data.

Risks and Voluntariness. Participating in this research may elicit discomfort and distress. Part of the participants will watch a video about how testing animals can be treated which may elicit discomfort and/or distress. Because of this, you should be at least 18 years old. You are not

obligated to watch the full video or answer any questions that cause distress or discomfort. Participating in this research is entirely voluntary and can be terminated for any reason at any moment. If you decide to terminate this research, all your data will be fully deleted and omitted from the research results.

Questions or remarks regarding this research can be emailed directly to the main researcher Ilse Cuperus (i.cuperus@student.utwente.nl). Objections or concerns about the setup or method of this research can be emailed to the secretary of the Behavioural Management and Social Sciences Ethics Committee of the University of Twente (ethicscommittee-bms@utwente.nl).

Kind regards,
Ilse Cuperus and Marielle Stel

Hereby, I declare that I...

- agree to partake in the study and have read the above information, including that part of the participants will watch a video about how testing animals can be treated which may elicit discomfort and/or distress.
- do not consent.

Appendix B

Survey



If you are a student participating via Sona, please enter your Identity Code:

Note: credits cannot be granted if you do not fill in your Identity Code or if you do not participate in the survey.



To start the survey off, we ask you to provide us with some demographics about yourself by filling in the information below.

Age

Gender

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Nationality

- Dutch
- German
- Other:

What type of diet do you follow?

- Vegan
- Vegetarian
- Pescatarian
- Flexitarian
- Omnivorous

Do you own any pets? (multiple answers possible)

- No pets
- Dog
- Cat
- Bunny
- Hamster
- Guinea pig
- Bird
- Fish
- Other:

Do you actively support animal welfare organizations? (multiple answers possible)

- No
- I volunteer
- I donate
- I foster/adopt
- Other:

>>

Note. Intervention group only.



Video about a day in the life of a test bunny.

On the next page you can watch a video about a day in the life of a test bunny. It is a stop-motion animation of around 4 minutes. In the video, you meet Ralph who guides you through his daily routine as a "tester".

As a reminder, the video can elicit discomfort and/or distress as the video shows how testing animals can be treated. You are free to stop watching this video at any time!

Watch the video carefully, as later there will be questions asked about it.



Note. Intervention group only.



If the video does not work, please use this link

<https://youtu.be/G393z8s8nFY?si=pONquuq8DnpFz1EJ>

Note: this video was reprinted with permission from "The Humane Society of the UNITED STATES".

>>



In the following, your opinions and intentions will be asked.

>>

SPECIESISM AND ANIMAL TESTING

The following are questions regarding your opinions on animals.

Please indicate below to what extent you disagree or agree.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Morally, animals always count for less than humans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chimpanzees should have basic legal rights such as a right to life or a prohibition of torture.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Humans have the right to use animals however they want to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is morally acceptable to keep animals in circuses for human entertainment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is morally acceptable to trade animals like possessions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is morally acceptable to perform medical experiments on animals that we would not perform on any human.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Again, please indicate below to what extent you disagree or agree.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Animals should be treated better by humans than they are at this moment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animals have feelings people need to take into account	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animals need to be treated with more respect than they are at this moment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Any type of harm to an animal should be considered animal cruelty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



>>



Now we would like to ask you about your intentions for future behaviour as compared to your past behaviour.

Please indicate which answer applies to you.

	I have not and will not	Less than I currently do	As much as I currently do	More than I currently do	Always from now on	I have been and will always continue to do so
I intend to buy cosmetic products for which animals were NOT tested on...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I intend to buy medicines for which animals were NOT tested on...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I intend to seek out information regarding animal testing...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I intend to check for animal testing before buying a product...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
I intend to support animal welfare organizations...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

>>

SPECIESISM AND ANIMAL TESTING

The following are statements regarding animals' capabilities. Note that we ask about what you believe animals to be capable of, so there are no right or wrong answers.

Animals you can consider for this question are mammals, such as pets (e.g. cats, dogs, bunnies), livestock (e.g. cows, pigs, chickens) and zoo animals (e.g. elephants, chimpanzees).

Please indicate to what extent you disagree or agree with the statements below.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Animals are able to remember people and/or happenings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animals are able to experience emotions, such as happiness and sadness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animals can distinguish between what is right and wrong.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animals are able to suffer.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animals are able to process information that comes in via their senses (vision, hearing, touch, smell, and taste).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animals are able to have thoughts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SPECIESISM AND ANIMAL TESTING

The following are questions about your **current** thoughts and feelings about animals.

Please indicate to what extent you currently disagree or agree with the statements below.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I take the perspective of animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel emotionally involved with animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel empathy for animals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate to what extent you currently experience these emotions.

	1 - Not at all	2	3	4	5	6	7 - Extremely
I feel alarmed	<input type="radio"/>						
I feel bothered	<input type="radio"/>						
I feel angered	<input type="radio"/>						
I feel annoyed	<input type="radio"/>						
I feel disgusted	<input type="radio"/>						
I feel saddened	<input type="radio"/>						

>>

SPECIESISM AND ANIMAL TESTING

We would also like to know about your awareness with regard to animal testing. Again, note that we ask about the extent of your knowledge on this topic, so there are no right or wrong answers.

Please indicate to what extent you disagree or agree with the statements below.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am aware of the common practices of how animals are being treated in the laboratory for (medical) experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of the animal deaths as a result of (medical) experiments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of the EU regulations about animal testing for cosmetics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of the medicines and cosmetics sold in the EU which have been tested on animals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am aware of the available alternatives to animal testing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Note. Intervention group only.



These last questions are about the video you watched. Please answer them honestly to the best of your ability.

Did you watch the video until the end?

- No
- Yes

I watched the video attentively.

- | | | | | | | |
|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| Strongly disagree | Somewhat disagree | Disagree | Neither agree nor disagree | Agree | Somewhat agree | Strongly agree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

I did my best to take perspective of Ralph.

- | | | | | | | |
|-----------------------|-----------------------|-----------------------|----------------------------|-----------------------|-----------------------|-----------------------|
| Strongly disagree | Somewhat disagree | Disagree | Neither agree nor disagree | Agree | Somewhat agree | Strongly agree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

What is your interpretation of the message of the video?

Note. Intervention group only.

SPECIESISM AND ANIMAL TESTING

Should we continue to use animals, like Ralph, as test subjects? You may pick one or more options.

No, because...

Yes, because...

It depends on...

What does Ralph's life look like?

If Ralph was not a test bunny, what could his life look like?

What physical injuries can you remember from Ralph's day?

Note. Intervention group only.

What cosmetic products for which Ralph was used as a "tester" do you remember being mentioned in the video?

Did you recognize the voice actors?

- No
- Yes, namely



Thank you for participating in this study!

As we noted in the informed consent we were interested in investigating people's opinions and behaviours that are related to animals. You may or may not have watched a video about a day in the life of a test bunny. We were interested whether the contents and animation of this video influenced participants' awareness, attitudes and behavioural intentions towards reducing animal testing and speciesism.

Remarks concerning this survey can be left in the text box below. Questions or remarks concerning this study can be emailed directly to the researcher Ilse Cuperus (i.cuperus@student.utwente.nl). If you decide to withdraw your initial consent, please let us know as soon as possible so your response to the survey can be deleted.

To complete this survey, please continue.

Do you have any remarks about this study?

Your participation is very much appreciated. As a thank you for filling out this survey, you can be entered into a draw for one €50 Amazon gift card. If you agree to enter, you are asked to leave your email as contact information in case you win. Your contact information is separate from your survey response in order to maintain anonymity.

Do you want to enter the draw?

- Yes
- No

Appendix C

Table 2

Skewness and Kurtosis Per Condition

	Skewness		Kurtosis	
	Control	Intervention	Control	Intervention
Speciesist Attitude	1.024	0.244	0.440	-0.988
Animal Welfare Attitude	-0.993	-0.703	0.410	-0.291
Behavioural Intentions	0.151	-1.003	-0.074	1.162
Behavioural Intentions*	-0.291	-1.249	-0.174	1.672
Misconceptions	-0.489	-0.101	-0.622	-1.095
Perspective Taking	-0.638	-0.854	-0.748	0.870
Feelings of Injustice	0.358	-0.301	-0.994	-0.643
Awareness of Animal Testing	0.180	-0.136	-0.787	-0.460

Note. * For this, the last answer option “I have been and will always continue to do so” for the Behavioural Intentions scale was removed in order to solely analyse the results that indicate a possibility for change.

Appendix D

Table 3

Levene Statistics and Outliers

	Levene Statistic	<i>p</i> -value	Outliers
Speciesist Attitude	$F(1, 87) = 2.068$	.154	1
Animal Welfare Attitude	$F(1, 87) = 0.048$	.827	2
Behavioural Intentions	$F(1, 87) = 0.906$	.344	5
Behavioural Intentions*	$F(1, 87) = 0.390$	.534	4
Misconceptions	$F(1, 87) = 0.174$	.677	0
Perspective Taking	$F(1, 87) = 1.443$	.233	1
Feelings of Injustice	$F(1, 87) = 1.944$	.167	0
Awareness of Animal Testing	$F(1, 87) = 2.081$	.153	0

Note. * For this, the last answer option “I have been and will always continue to do so” for the Behavioural Intentions scale was removed in order to solely analyse the results that indicate a possibility for change.

Appendix E

Table 4

Descriptive Statistics and Cronbach's Alpha of the Dependent Variables and Mediators

	Mean	SD	Min	Max	Cronbach's α	Internal Consistency
Speciesist Attitude					.808	Good
Control	2.56	1.24	1	6.17		
Intervention	2.27	0.862	1	4		
Animal Welfare Attitude					.769	Acceptable
Control	6.01	0.888	3.5	7		
Intervention	6.09	0.822	4	7		
Behavioural Intentions					.809	Good
Control	3.56	1	1.2	5.8		
Intervention	3.64	0.923	1	5.2		
Behavioural Intentions*					.805	Good
Control	3.29	0.810	1.2	5		
Intervention	3.52	0.840	1	5		
Misconceptions					.698	Questionable
Control	5.89	0.672	4.33	7		
Intervention	5.90	0.649	4.5	7		
Perspective Taking					.810	Good
Control	5.45	1.14	3	7		
Intervention	5.71	0.962	2.67	7		
Feelings of Injustice					.932	Excellent
Control	3.20	1.57	1	6		
Intervention	4.68	1.29	1.67	7		
Awareness of Animal Testing					.846	Good
Control	3.91	1.38	1.6	6.6		
Intervention	3.99	1.11	1.6	6.2		

Note. * For this, the last answer option "I have been and will always continue to do so" for the Behavioural Intentions scale was removed in order to solely analyse the results that indicate a possibility for change.

Appendix F

Table 5

Regression Analysis With the Control Condition As Reference

	β	SE	<i>p</i> -value
Speciesist Attitude			
Control	2.56	0.158	<.001
Intervention	-0.286	0.229	.215
Animal Welfare Attitude			
Control	6.01	0.125	<.001
Intervention	0.079	0.182	.667
Behavioural Intentions			
Control	3.56	0.141	<.001
Intervention	0.085	0.205	.678
Behavioural Intentions*			
Control	3.29	0.120	<.001
Intervention	0.238	0.175	0.177
Misconceptions			
Control	5.89	0.096	<.001
Intervention	0.003	0.140	.982
Perspective Taking			
Control	5.45	0.155	<.001
Intervention	0.260	0.225	.251
Feelings of Injustice			
Control	3.20	0.211	<.001
Intervention	1.48	0.307	<.001**
Awareness of Animal Testing			
Control	3.91	0.184	<.001
Intervention	0.071	0.267	.792

Notes.

* For this, the first “I have not and will not” and last “I have been and will always continue to do so” answer options for the Behavioural Intentions scale were removed in order to solely analyse the results that indicate change.

***p*-value = $5.77e^{-6}$