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RESEARCH

Friends, food or worth fighting for? A proposed stereotype content model for nonhuman animals

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Abstract

The human perception of nonhuman animals is a burgeoning area of anthrozoology, with the past decade seeing an increase in work within the field. This study attempted to assess people's social perceptions about various nonhuman animals. Food animals, for example, have often been classified as being less sentient and have been historically devoid of rights and moral concern due to their nature as a consumable commodity. Advancements in social psychology have allowed the general hypothesis that some key theories might be transferrable toward understanding how people perceive animals. This study borrows from work on the Stereotype Content Model (SCM) and attempts to replicate the social perceptions of animals along the warmth-competence dimensions among a Singaporean sample (N = 325) of vegetarians, animal activists, and those who regarded themselves as neither. Ratings on the scales of warmth and competence for 16 animals were subjected to multidimensional scaling analysis. Results indicate people hold different social perceptions congruent to the various animal species. Four main clusters were identified, and these were named, 'Love', 'Save', 'Indifferent', and 'Dislike' based on the expectancy of how participants might feel toward the animals. The ethical ideology of participants was also measured, with vegetarians and animal activists holding more 'absolutist' beliefs. When factored into the scaling process, ethical ideology had little impact on participants' social perceptions of nonhuman animals.

Keywords: warmth-competence, stereotype content model, nonhuman animals, morality, consumption

Friends, food, or worth fighting for? A proposed stereotype content model for nonhuman animals

As we continue to uncover the ever more minute details of social engagements and perceptions we hold about other people, human-nonhuman-animal interaction research has been keeping pace, especially within the last decade (Amiot and Bastian, 2015; Hosey and Melfi, 2014; Rodriguez et al., 2021). Herzog (2010) observes that many behavioral scientists find research in such domains trivial and mundane, and insists this is a wrong-headed attitude. Although the proliferation of research is evident, human relationships with nonhuman animals often lack clear demarcation. Nonhuman animals are seen to feed, clothe, work and stand in for humans during the scientific study, they provide us emotional support through being domesticated house pets or therapy animals and are in some instances a source of annoyance and displeasure as pests (Pollan, 2006; Serpell, 2009). The title of Herzog's (2010) seminal text, however, serves as an apt summary of humankind's prevailing sentiments toward nonhuman animals; *Some We Love, Some We Hate, Some We Eat.*

The field of anthrozoology brings to existing academia an integrated approach that considers such key issues of morality and consumption that shape many interactions between humans and nonhuman animals. These two issues remain especially salient when judgments are seen to be made about nonhuman beings. Podberscek et al. (2005) have observed seemingly disparate attitudes toward animals at individual and common group levels. A person thus might disagree with killing animals for fur or consuming *foie gras* but might practice fishing as a hobby and support vivisection research for medical purposes. Knight et al. (2004) observe how belief in the animal mind (BAM), or the internal attributions people believe animals to have, is a powerful and consistent predictor over the attitudes they hold toward nonhuman animal 'use'. The treatment of animals has become an increasingly contentious social issue, especially within the past three decades. Disagreements about the moral status and treatment of nonhuman species are commonplace and such debate has

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become a veritable hotbed for opinionated responses across the breadth of human society; from policymakers and activists to the general, unassuming consumer (Knight and Herzog, 2009). Early psychologically based human-animal research has nevertheless revealed a largely unanimous agreement that nonhuman animals should not be intentionally mistreated. About half of an American sample drawn by Herzog et al. (2001), however, continued to feel that biomedical research with animals was justified. Herzog et al. also documented the triple-fold increase over the past few decades in food animal production; that is, animals bred solely for the harvesting of flesh to supply human consumption. With a multitude of nonhuman animals pervading many facets of human life and having varied rights and privileges; it is not uncommon for current anthrozoological research to borrow key theories from the well-established field of social psychology.

REDEFINING THE SOCIAL ANIMAL

Gosling and John (1999) employed the Five Factor Model personality trait theory in their pioneering study of personality perceptions people might have about animals. They conducted a literary analysis of the numerous studies they had reviewed, organizing and standardizing any qualitative and quantitative data that might exist that describe the personality traits of nonhuman animals. Their results revealed that descriptions of animals by their handlers, owners, or participant observers highlighted a genuine personality reality of the beings, not mere anthropomorphic projections. The octopi under observation in Mather and Andersen's (1993) study thus held traits of discernible Neuroticism and Extraversion, according to Gosling and John. Additionally, research by Morris et al. (2012) focusing on animal handlers found that familiarity with animals was imperative toward the beliefs about the emotional capacity of animals and BAM in general.

In the same vein, researchers have hypothesized the extension of 'social value' judgments with regard to human perceptions of nonhuman animals. Dubois and Beauvois (2011) describe social value as evaluative and internalized knowledge gained via implicit personality and trait judgments. Calculation of social value proves to be indispensable during social engagements as it allows individuals to make sense of a complex and often confusing social world. Shortcut cognitive processes such as trait attribution and stereotyping are commonly employed when attributing social value (Carlsson and Björklund, 2010). Cognitively summarizing another's social value allows for one to determine the other agent's intention and capability to pursue that intention, making such evaluations, especially adaptive Cuddy, Fiske, and Glick (Cuddy et al., 2008). Asch (1946) was the first to posit a warm-cold continuum of social judgment, opening research to the concept that Gestalt clusters might exist in personality perceptions. Though researchers cannot seem to agree on their names, research has now revealed two universal dimensions that social value judgments are based on. Osgood (1962) christened the terms value and dynamism, Abele and Wojciszke (2007) termed them communion and agency, Cuddy, Fiske and Glick (Cuddy et al., 2007) deem them as warmth and competence and Dubois and Beauvois (2011) named them social desirability and social utility. The first of these dimensions and the most primary judgment; value, communion, warmth, or social desirability respectively; is noted to be highly evaluative, but not very descriptive. These are traits described as warm, nice, pleasant, and the like. The secondary dimension of dynamism, agency, competence or social utility is contrived by judgments about how capable (or intelligent, active etc.) the agent is in pursuing its intent (Dubois and Beauvois, 2011).

DIFFERENT STROKES FOR DIFFERENT (NONHUMAN) FOLKS

Fiske et al. (2002) proposed a Stereotype Content Model (SCM) of cognitive processing based on the dual dimensions of warmth and competence. Via this model, Fiske et al. have observed that varying combinations of stereotypic warmth and competence result in unique intergroup emotions directed toward the various groups of people in society. Out-groups, thus, could be placed in one of four clusters, based on measures of the two dimensions. Each cluster is seen to reflect a specific prejudicial emotion. Low scores on the competence dimension paired with high scores on the warmth dimension led to samples feeling pity (groups included the disabled and elderly), high competence but low warmth led to envy (e.g., successful Asian minorities), high warmth paired with high competence led to admiration (e.g., doctors and professionals) and low scores on both dimensions resulted in contempt (e.g., free-loading welfare recipients and addicts) (Cuddy et al., 2007). Additionally, the social identity approach, as a framework enunciated by Hogg and McGarty (1990) showcases how the formation of social groups and resultant conflict may occur. Van Eeden et al. (2019) employed this approach with nonhuman animals, with regard to the management of Australian 'wildlife' or 'pests'.

In their work on stereotypes, Lee et al. (2013) take a totemic approach to stereotypes as representing spiritual and social systems of accurately defining natural and social categories and consider them to be best understood under the broad umbrella of perceptual, cognitive and cultural psychology. The matter of nonhuman animals being considered as social objects has also been explored in several studies based on the SCM (Sevillano and Fiske, 2016a, 2016b, 2019a, 2019b). These studies established a similarity in social perceptions of humans and animals, and thereby also established the legitimacy of presenting animals as targets of social perception research.

A key aim of the current study is to test if the SCM can be applied to nonhuman animals according to ethical ideals and moral principles. Research has highlighted the evolutionary continuity between human and nonhuman animals, and that this continuity would provide a basis for universal personality dimensions across a wide range of species (Gosling, 2008; Gosling and John, 1999). The dual dimensions that form social value might be the elusive coupling between humans and the social perceptions we hold about our nonhuman counterparts. Serpell (2004) conducted a substantial literary review and concluded that people rate animals on dimensions of effect or love they feel for the creature and the utility it might provide. This hypothesis, however, remains empirically untested. Though such a test might shed light on the relationship between nonhuman animals and people, it fails to accommodate the inherent value of the creature itself, making perceptions deeply subject to anthropomorphic tendencies.

MANAGING MORALITY

Bulliet (2005) traces the ever-evolving nature of nonhuman animals and their place in the moral psyche of society today. He argues that the more distant humans become from the creatures that produce consumable products for us; food, fiber and the like; the closer we forge bonds with nonhuman animals we deem our 'pets'. Our guilt, shame, and disgust at the way we treat certain animals as mere 'commodities' are seen to produce ever stronger moral sentiments in people today, with rising numbers of individuals joining largely nonprofit animal welfare and protection societies or subscribing to 'moral vegetarianism'. Herzog (2010) summarizes this situation: "we are bearing the moral cost that comes with shifting animals from 'them' to 'us'" (p. 57). Gilquin and Jacobs (2006) consider this the move from 'thingness' to 'beingness'. Previous research, such as that by Signal and Taylor (2007), has indicated that participants belonging to animal welfare groups had significantly different attitudes toward animals and also greater scores on human-empathy scales than participants with no animal welfare involvement. Furthermore, Rozin (1996) highlighted that the practice of vegetarianism ofttimes has an intimate moral ideology surrounding it. 'Moral vegetarians' thus associate meat with animal cruelty and commonly find it easier than vegetarians who avoid meat for health reasons to resist temptations to consume meat (Fessler

et al., 2003). Galvin and Herzog Jr. (1992) observed animal activist samples to be more 'absolutist' in their ethical position. Participants in this group believed in overarching universal moral principles and the fact that adhering to them would undoubtedly lead to the betterment and protection of welfare for all beings equally (Forsyth et al., 1988; Gilligan, 1982). 'Moral principles' were operationalized as high scores on Idealism and Relativism in the Ethics Position Questionnaire by Forsyth (1980).

With the world witnessing ever-increasing concern about nonhuman animal welfare and treatment, Orwell's prominent statement from *Animal Farm* can perhaps be taken most ironically as literal: "All animals are equal, but some animals are more equal than others" (Orwell, 1946, p. 133). The work by Knight et al. (2009, 2010) considered the views of scientists, animal welfarists, and laypersons with regard to animal use and BAM. Knight et al. (2009) observed polarizing views between the samples based on the phylogenetic scale that animals fell on, enunciating the complex nature of such value judgments.

In his satirical article on the ethical treatment of animals, Norcross (2004) observed the outrage and disgust of readers when he described how puppies were killed and harvested in the production of a fictional chemical (cocoamone) meant to reinvigorate his protagonist's (Fred) lost the ability to taste chocolate. Responses arguing against his analogy (e.g., Harris and Galvin, 2012) highlight such reactivity. Fred is often described as having committed a moral sacrilege. Norcross, however, highlights how chickens and other food animals are treated equivalently and harvested to feed peoples' hypocritical and oft-times needless desire for the taste of animal flesh. Norcross's stand can be argued to have the impact it does because of the animal he chose to use in his scenario. People might stand by the injustice done to an animal they deem a 'lesser being' (e.g., a chicken), but defiantly wage a socio-political war where the same treatment is subjected to an animal of a different species (e.g., a dog). As Gunnthorsdottir (2001) states, the determinants of the decision to save a species are ever unclear.

HYPOTHESES

Based on the dearth of information concerning the fit of the SCM to nonhuman animals, and the potentially conflicting matters of animal consumption and assignment of moral status, the current study is exploratory in nature and addresses several hypotheses. Hypothesis 1 is that people would pass judgment on a variety of animals based on social value permutations as they do with people. The dimensional terms employed for this study are, in line with the SCM, warmth, and competence. Moreover, it is hypothesized that individuals engaged in animal welfare or who identify themselves as practicing vegetarians will have dissimilar social value permutations of nonhuman animals when compared to individuals who are neither animal activists nor vegetarians.

Hypothesis 2 of this study states that participants drawn from samples of animal activists and vegetarians will have absolutist ethical ideals, similar to the results garnered by Galvin and Herzog Jr. (1992).

Methodology

PARTICIPANTS

Participants were recruited through purposive sampling from three sources. A total of 323 individuals participated in the study: 42 were members of the Vegetarian Society of Singapore, 76 were members of the Animals Concerns Research and Education Society (ACRES Singapore), and 205 were students at a private university in Singapore. The mean age of all participants was 26 years (*sd* = 11.21). Frequencies for ethnicity and religious affiliation are recorded in Table 1. Student participants who were eligible received partial credit for their participation; other participants received neither incentive nor reward.

MATERIALS

The study adopts a between-groups design and was delivered as an online survey, hosted by SurveyGizmo. The 238-item survey

Table 1. Percentage distributions for sample demographic variables for N = 323 respondents.

Variables	Vegetarians	Animal activists	Students	Total sample
N	13	24	63	100
Female/male	28/72	85/15	71/29	69/31
Race				
Chinese	48	54	46	48.18
Caucasian	36	24	36	33.12
Indian	12	11	7	8.61
Malay	2	5	5	4.61
Other	2	6	6	5.48
Religion				
Agnostic	10	9	10	9.76
Atheist	10	17	13	13.57
Buddhist	30	16	15	17.19
Christian/catholic	20	36	34	32.66
Hindu	10	5	5	5.65
Muslim	2	8	6	5.96
Other	18	9	17	15.21

was structured into four sections: an animal stereotype survey matrix, a moral obligation survey matrix, the Ethics Position Questionnaire, and a participant demographic section.

ANIMAL STEREOTYPE SURVEY MATRIX

In the first section, participants were presented with a matrix based on the SCM (Fiske et al., 1999). Participants were provided a list of 16 animals and asked to rate each animal on 10 traits (5 Warmth: Warm, Pleasant, Nice, Likable, Good-Natured. 5 Competence: Competent, Intelligent, Capable, Dynamic, Active) via a 5-point Likert scale (1 = Not at all, 5 = Very Much).

The animals were selected from Laham's (2009) circle of compassion study and Gosling and John's (1999) research on animal personalities. The warmth/competence trait items were selected to measure participants' perceptions of the animals based on the universal dimensions that form 'social value'. Negative traits were not selected due to prior research on such measures violating homogeneity of variance; such traits are reputedly too extreme and less frequent when people make stereotypical judgments (Fiske et al., 1999). The traits in the matrix were selected with reference to a similar stereotyping study involving rabbits by Dubois and Beauvois (2011), who reported comfortable reliability and validity coefficients ($\alpha = 0.88$ for 'social desirability' and $\alpha = 0.75$ for 'social utility'). The current study borrows from the original terms put forward by Fiske, Cuddy, Glick, and Xu (Fiske et al., 2002); dimensions of 'warmth' and 'competence'; as the animals are rated based on their own inherent personality traits rather than with regards to their roles with people (Dubois and Beauvois had participants consider rabbits as would-be pets).

ETHICS POSITION QUESTIONNAIRE

In section 2, participants were invited to complete a modified version of the 20-item Ethics Position Questionnaire (Forsyth, 1980; Galvin and Herzog Jr., 1992). The modified version by Galvin and Herzog Jr. was employed. As the study is interested in uncovering human perceptions about nonhuman animals, minor modifications were made to several questions by substituting the word 'being' for 'human' or 'person'. An item on idealism, for example, states; "The dignity and welfare of people should be the most important concern in society." It can be presumed that this statement would be answered affirmatively by idealistic individuals. Idealistic animal welfare activists, however, may select "strongly disagree." They may deem the framing of the statement in terms of the well-being of humans, rather than all sentient creatures. An example of a relativist statement serves as a contrast: "What is ethical varies from one situation and society to another." The modified questionnaire comprises 20 statements to be rated on a nine-point Likert scale (1 = Completely Disagree, 5 = Neither agree nor Disagree, 9 = Completely Agree), with half measuring idealism and a half measuring relativism. Participants fall into one of four ethical positions (Absolutists, Subjectivists, Situationists, and Exceptionists) based on the two dimensions. The scale has acceptable psychometric properties and is well-employed when studying issues of a moral or social nature (Forsyth et al., 1988). Results from the questionnaire are used for understanding the different social value permutations that participants holding dissimilar ethical beliefs might have for nonhuman animals.

Finally, in Section 3, participants were asked for generic demographic information such as gender, age, race, religious affiliation, and if they identify themselves as vegetarians or animal rights activists. In the case of vegetarians, further options were available to indicate the specific type of vegetarianism or veganism practiced.

Details of the study and the limits of consent were provided on a preliminary information page ending in an invitation to confirm informed consent.

PROCEDURE

Ethics approval for the study was acquired from James Cook University's Human Research Ethics Committee (approval no. H5258). Appeals for participants were sent to contact persons in the VSS and ACRES. Members from the third-party organizations were recruited through circulated links to the survey via e-mail notifications and relevant social media networking sites.

For university student recruitment, a summary of the study was provided in the university's SONA research management system to help students gain both understanding and interest in participation. Students who were not eligible for research credit were recruited via a poster placed on the campus research recruitment noticeboard.

Once participants accessed the survey link and read important details about the research on the information page, participants provided their consent by clicking on an 'I agree' button to proceed to the survey. They also had the option to select an 'I do not agree' button, which was linked to an exit page.

Results

All raw data were analyzed using SPSS Statistics 21, with $\alpha = .05$. For the between-groups one-way multivariate analyses (MANOVA), preliminary assumption testing was conducted to ensure normality, linearity, univariate and multivariate outliers, homogeneity of variance–covariance matrices, and multicollinearity. Violations were recorded and the relevant correctional procedures were conducted.

HYPOTHESIS 1: SOCIAL VALUE JUDGMENTS ON WARMTH AND COMPETENCE

Hypothesis 1 was that people would pass social value judgments on a variety of nonhuman animals as they do with people. It was also hypothesized that participants with differing ethical ideologies would have dissimilar social value permutations about nonhuman animals. Reliabilities for the warmth and competence measures on the nonhuman animal × social value matrices were acceptable, with Cronbach's alpha for both dimensions being above 0.7 (Warmth $\alpha = 0.84$, Competence $\alpha = 0.85$). The data were subjected to a multidimensional scaling analysis using the PROXSCAL procedure, with Euclidean distances derived from the participant ratings. The PROXSCAL method allows the finding of a least squares representation of the objects in low-dimensional space (Coxon, 1999). A separate multidimensional scaling analysis was performed for two matrices following data separation on the basis of absolutist versus neutral scores. Vegetarians and activists fell into the absolutist group and the individuals who held neither sentiment (not being vegetarian nor subscribing to activist ideals) fell into the neutral group based on composite data analysis of the Ethics Position Questionnaire (EPQ) scores of all participants (Refer to Hypothesis 2). PROXSCAL procedures optimize normalized raw stress, a value that ranges from 0.00 to 1.00, with a lower value highlighting a better fit. The Stress I, Stress II, and S-Stress values for the absolutist sample are 0.241, 0.609, and 0.140. The values for the neutral sample were 0.258. 0.659, and 0.163, respectively. Tucker's Congruence Coefficient, a value that ranges from −1.00 to 1.00, was also employed. A value above 0.95 indicates a good solution (in this case, $\phi = 0.97$ (absolutist) and $\phi = 0.96$ (neutral)). The PROXSCAL analysis shows that two dimensions support the data well. To verify the results a cluster analysis was conducted based on the derived Euclidean distance scores. Four clusters were selected based on a priori expectations of the SCM of Fiske, Cuddy, Glick, and Xu (Fiske et al., 2002). The solutions derived from the multidimensional scaling and cluster analyses are presented in Figure 1.

The warmth axis for both groups ranges from left to right (low to high), with competence scores being recorded from bottom to top (low to high). Species on the far right, thus, are deemed by

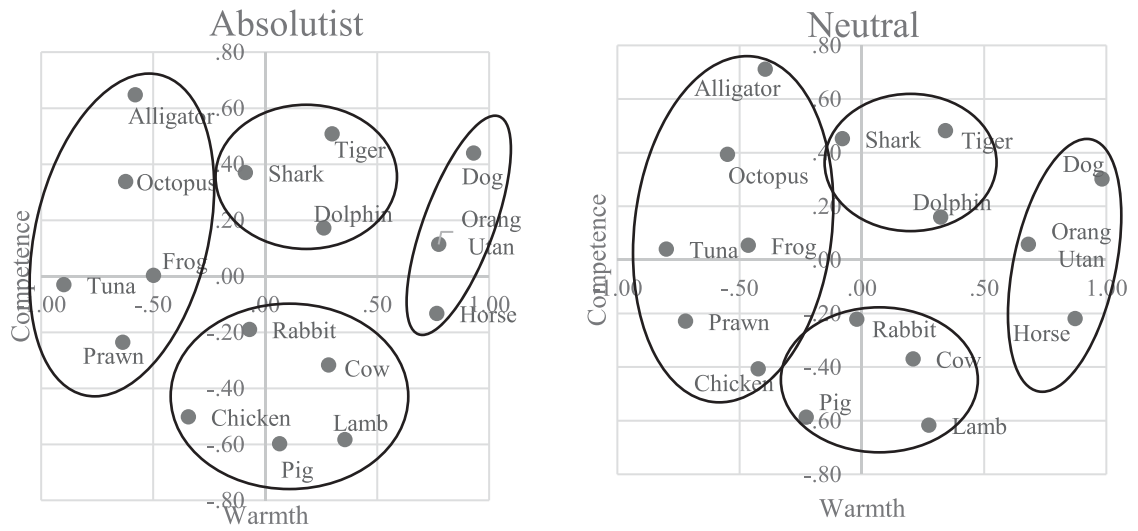

Fig. 1. Cluster plots of animal species on warmth and competence dimensions for absolutist and neutral groups

participants to be highly warm (e.g., Dog), whereas those situated in the upper section of the graph are perceived as more competent (e.g., Alligator). Hypothesis 1 was supported, as participants rated each of the nonhuman species differently based on warmth and competence. However, the ethical ideology of the participants seemed not to have made a difference in social value judgments, with close similarity in clustering recorded for the two ideologically defined groups.

HYPOTHESIS 2: ETHICAL POSITION OF VARIOUS SAMPLES

Hypothesis 2 of this study states that participants drawn from samples of animal activists and vegetarians will have absolutist ethical ideals. A one-way between-groups multivariate analysis of variance (MANOVA) was performed to investigate the differences in ethical positions of the three participant groups surveyed. Two dependent variables were employed; these were the idealism and relativism scores from the EPQ that make up the ethical ideology of participants. The ethical ideology of individuals dictates the assumptions they make to solve ethical conflicts (Galvin and Herzog Jr., 1992). The independent variable was whether individuals identified themselves as vegetarians, animal activists, or neither. Significant differences among vegetarians, activists, and those who were neither (henceforth referred to as 'neutral' individuals) were observed in terms of idealism and relativism: idealism F (2, 323) = 13.71, $p < .001$ and relativism F (2, 323) = 8.94, $p < .001$, Wilks' Lambda =0.87. The scores for both dimensions and all three groups are presented in Figure 2.

Tukey posthoc tests revealed that vegetarians (M = 75.19, SD = 15.18) had significantly higher idealism scores than neutral individuals (M = 65.19, SD = 13.72), $p < .001$. Similarly, activists (M = 71.94, SD = 11.78) had significantly higher idealism scores than individuals in the neutral group as well.

Similar Tukey posthoc tests revealed that vegetarians (M = 51.14, SD = 18.78) had significantly lower relativism scores than neutral individuals (M = 59.90, SD = 11.54), $p < .001$. Equivalently, activists (M = 54.91, SD = 16.09) had significantly lower relativism than neutral individuals; $p < .001$.

Both the vegetarian and activist samples, as such, can be grouped under the 'absolutist' distinction of ethical ideology as per Forsyth's (1980) instruction, having significantly higher Idealism scores and lower Relativism scores than neutral participants (Absolutists = High Idealism, Low Relativism). As such, surveying the standalone composite scores, neutral individuals had also measured higher on Idealism and lower on Relativism, though their scores on both dimensions were not as extreme as the other groups. Their near similar scores suggest that they did not adhere strongly to either facet of the measure and that their 'absolutism' is predominantly 'mild' (not significant in contrast to Vegetarians or activists). For ease of discussion, this group is termed 'neutral'. Hypothesis 2, thus, was confirmed, with vegetarian and activist samples subscribing to greater absolutist ethical ideology than neutral individuals.

Discussion

Results for hypothesis 1 indicate that indeed participants rated the 16 nonhuman animal species significantly differently on dimensions of warmth and competence. Moreover, participants' ethical ideologies about nonhuman animals do not seem to affect the social value permutations they grant to the different species. The MDS and clustering procedures revealed that both the absolutist group and neutral individuals grouped the various beings into similar clusters, except for the chicken.

Hypothesis 2 was also supported, with activists and vegetarians scoring higher than neutral participants on the 'Idealism' facet of ethical ideology and lower on the 'Relativism' domain (Forsyth, 1980). These results are to be expected for the activist sample, as Galvin and Herzog Jr. (1992) show from their findings. The current study, however, also included a previously unsurveyed vegetarian sample, with results indicating that such individuals also hold absolutist beliefs with regard to their ethical ideology. Absolutism is demarcated by an insistence that one must always avoid harming another (high idealism) and that personal moral beliefs will always be strictly observed in consonance with greater universal ethical rules (showing a lack of relativism, such that the thought process that 'exceptionless' moral principles do not exist) (Forsyth et al., 1988). Forsyth et al. posit that this absolutist school of moral reasoning is seen to highlight an ethic of caring; a model proposed by Gilligan (1982) who stated that inflicting hurt is selfish and immoral while moral responsibility hinges on the expression of care and welfare to others. With many practicing vegetarians holding deep moralistic ideals about their dietary practice (Rozin, 1996), it is unsurprising that they would hold ethical ideologies similar to those of individuals who actively seek to promote the welfare of nonhuman participants (i.e., in this case, animal activists). The results further revealed that the neutral group also subscribed to absolutist ideals, though not in so much fervor (with lower

Fig. 2. Ethics Position Questionnaire scores for three groups

idealism and higher relativism scores in comparison to vegetarian and activists). This might be due to an unforeseen priming effect when participants completed the questionnaire. Participants were provided the EPQ last in the battery of tests; having had to rate the various nonhuman animals and required to consider their obligatory moral standing on issues such as welfare and ceasing human consumption. This might have primed participants to welfare-oriented thinking, affecting their idealism scores. Future studies should employ randomized order.

Perhaps what is most salient is the finding that such morally heterogeneous groups hold similar stereotypes about the range of nonhuman animals studied. The groups rated the nonhuman animals so similarly that they fell largely into clusters that were alike, with the chicken (as mentioned) being the only creature to hold differing membership from a cluster. In their SCM, Cuddy et al. (2007) named the quadrants after the emotive affordances participants garnered from the groups they had rated (Pity, Contempt, Envy, and Admiration). Though the clusters in the current study failed to fall into the clear quadrants, there might exist some specific emotion or overall perception of the nonhuman animals based on the warmth/competence dimensional permutation. For example, we might be 'intrigued' about the high competence and lack of warmth of the efficient predatory prowess of alligators and octopi, and 'apathetic' to the plights of creatures we deem neither warm nor competent (prawn, frog, or tuna). We obviously 'love' the highly warm and competent dog or orangutan (like Ah Meng, the Singapore zoo's now late but very much still adored mascot) and we might 'pity' the pleasant but helpless ruminant food animals, such as the cow or lamb. As the animals did not load perfectly into the hypothesized quadrants, future research might seek to employ a greater number of nonhuman animal species to further demarcate with clarity the stereotypical emotive affordances of the dual dimension stereotypic content model posited here. Due to the sheer variety of nonhuman species, humans are acquainted with, additional dimensional divides that segregate the quadrants diagonally might also be an area for further study.

LIMITATIONS OF THE CURRENT STUDY

The current research, though it merits the position of being a pioneer in extending perceptions of nonhuman animals into a dependable social psychological model, has several limitations in its execution. A priming effect might have occurred, increasing idealism scores for participants as per hypothesis 2. It is recommended that future studies adopt a random questionnaire order. This may also prove useful in the consideration of survey fatigue due to a large number of survey items (238 items). Randomization could additionally aid in the alleviation of fatigue effects for a specific section of the survey. Finally, age and gender differences, and cultural and religious background were not explicitly factored into the study, but we acknowledge that these variables have been observed to hold important implications for moral and ethical nuances with regard to nonhuman animals. Religious beliefs predominant in Southeast Asia (Buddhism, Christianity, Hindu, Islam) and mirrored in the current sample, for example, propound protectionist messages toward animals (Chapple, 2014). This could potentially explain the lack of obvious difference in the warmth-competence dimensions between the Absolutist and Neutral groups if religious beliefs were driving ethical positioning. More than 60% of the current sample self-identified as either Buddhist, Christian, Hindu, or Muslim.

Outcome variance in human-animal interaction research has also been reported with respect to age (Rodriguez et al., 2021), which was another variable we neither focused on nor controlled for in the current study. There was some inevitable age difference among the three groups because most members of both the Vegetarian Society and ACRES had graduated from studies. Nevertheless, with a mean age of 26 years and a standard deviation of 11 years, the age range meant that participants were predominantly in their early or middle adult years.

The current sample was predominantly female, which might lead to some speculation about the effect of gender (Rodriguez et al., 2021). In his review of effect sizes of gender differences reported in several aspects of human-animal-interaction research, Herzog (2007) observed that women, on average, showcased greater positive behaviors toward animals, an example of how such variables may have biased the current analysis. However, Herzog's summation of his review led him to highlight several issues concerning supposed gender differences. These include variation in the size and direction of gender differences depending on the type of interaction, the similarity of responses from both sexes in many areas of human-animal interactions, and the

changeability of gender differences across time and interactions. Herzog also highlighted the inadequacy of effect size reporting in many publications, which inhibits accurate interpretations of the practical significance of reported differences.

IMPLICATIONS FOR FURTHER STUDY

The current findings suggest that general human feelings about nonhuman animals might be sourced from mental shortcuts of adaptive social value judgment and permutations. Gosling and John (1999) cite the evolutionary continuity that exists between modern man and nonhuman animals and the current study indicates that this might indeed be so, given the readily interpretable solutions into four species clusters on the warmth-competence dimensions. A phylogenetic view, as such, might explain how some traits and their dimensions are considered universal, not merely between all of humankind, but also across species as well. Being able to judge the warmth and competence of nonhuman animals at one point might have been even more adaptive and important to survival than the ability to pass judgment on individuals of the same species. Considering an alligator as 'warm' and thus, approachable or 'incompetent' and inept at causing harm might have not been in the best interests of our early ancestors. As such, a phylogenetic stance on understanding personality and personality judgments might lead to future research focusing on the evolutionary underpinnings of a trait. Gosling (2008) states how the trait of Conscientiousness was traced back to a common ancestor that humans and chimpanzees (but not other apes) shared. Similarly, other trait dimensions, such as the primacy of warmth and competence, and even the emergence of stereotyping behavior can be a source of further study. The knowledge of when we began taking such shortcut mental routes would doubtless enable a more comprehensive analysis of the psychological process.

Further research could extend this version of the SCM to be of inter-species value, assessing the intrinsic social value of human out-groups in relation to nonhuman animals. Practical applications of the current study and future research might have useful ramifications in areas such as solicitation for animal welfare, ecology, and eco-health studies. Comprehending why we perceive certain creatures in a particular way might aid welfare organizations in the uphill battle of ceasing common misconstructions due to stereotyping. Psycholinguistics with regard to nonhuman animals is another field that might benefit from the research discussed. Gilquin and Jacobs (2006) suggest that the use of the pronoun 'who' for nonhuman animals might promote psychological closeness and behaviors beneficial to those beings. The dimensions of warmth and competence may affect how we speak, write or record instances of a certain being. Would we be easier persuaded to refer to animals we 'Love' or are 'Intrigued' by as a 'who'? Importantly, this study was conducted in the Southeast Asian city-state of Singapore and responses are thus embedded within the culture's own unique and specific idiosyncrasies and relationships to nonhuman animals. Singapore is an urban city-state with few natural or agricultural spaces due to land scarcity, and opportunities for interactions with a diverse range of nonhuman animals are relatively limited. Future studies could seek to replicate this method with participant groups in Western cultures to determine the broader generalization of our findings.

Herzog (2010) argues that we have an impressive ability to blatantly ignore examples of moral inconsistencies in how we think and feel about animals. Thankfully, he also ventures that such "moral quagmires are inevitable in a species with a big brain and a huge heart" (p. 12). Understanding the place of our own moral judgments among nonhuman animals might help to finally define the nebulous nature of human interaction with the beings that share our world with us.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

ETHICS STATEMENT

The authors confirm that the research meets any required ethical guidelines, including adherence to the legal requirements of the study country.

AUTHOR CONTRIBUTIONS

All authors contributed equally to the development of this article.

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