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RUNNING HEAD: Animal stereotypes, emotions, and behaviors

# Stereotypes, Emotions, and Behaviors Associated with Animals: A Causal Test of the Stereotype Content Model and BIAS Map

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**Abstract**

Using the stereotype content model (SCM; Fiske, Cuddy, Glick, & Xu, 2002) and the behaviors from intergroup affect and stereotypes (BIAS) map (Cuddy, Fiske, & Glick, 2007), two experiments tested the effect of animal stereotypes on emotions and behavioral tendencies toward animals. As a novel approach, Study 1 ($N$ = 165) manipulated warmth and competence traits of a fictitious animal species (wallons) and tested their effect on emotions and behaviors toward those animals. Stereotypical warm-competent and cold-incompetent wallons elicited fondness/delight and contempt/disgust, respectively. Cold-competent wallons primarily elicited threat but not awe. Warm-incompetent wallons were elusive targets, not eliciting specific emotions. The warmth dimension determined active behaviors, promoting facilitation (support/help) and reducing harm (kill/trap). The competence dimension determined passive behaviors, eliciting facilitation (conserve/monitor) and reducing harm (ignore/let them die off). Study 2 ($N$ = 112) tested the relation between animal stereotypes for twenty-five species and realistic scenarios concerning behavioral tendencies toward animals. Similar to Study 1, stereotypically warm (vs. cold) animals matched with active scenarios, eliciting more facilitation (i.e., national health campaign) but less harm (i.e., fighting animals). Stereotypically competent (vs. incompetent) animals matched with passive scenarios, eliciting more facilitation (i.e., restricted areas) but less harm (i.e., accidental mortality). Accordingly, stereotypes limited the suitability of scenarios toward animals. Although findings are consistent with the SCM/BIAS map framework, several unpredicted results emerged. The mixed support is discussed in detail, along with the implications of an intergroup approach to animals.

*Keywords:* stereotype content, animals, emotion, behavior, groups

# Stereotypes, Emotions, and Behaviors Associated with Animals: A Causal Test of the Stereotype Content Model and BIAS Map

Animal species vary in how people perceive and behave toward them. Indeed, different species of animals are present in human society in a variety of areas that have different implications for human beings: food industry, therapeutic use, companion animals, entertainment, or conservation biology. The intergroup approach applied to the perception of animal species states that people may think about animal species as multiple social outgroups (Hodson, MacInnis, & Costello, 2014; Sevillano & Fiske, 2016a). Considering animal species as outgroups allows the use of theorizing about human groups for animal targets. This novel approach is not the prevailing one. Instead, animals are considered a global group, frequently compared with human beings or human social groups (Bastian, Loughman, Haslam, & Radke, 2012; Plous, 2003). For example, dehumanization studies explore outgroup derogation through animal assimilation (Haslam & Loughnan, 2014; Leyens et al., 2003), implicitly showing a prejudice toward animals (Plous, 2003).

Following the intergroup perspective advanced by the stereotype content model (SCM; Fiske, Cuddy, Glick, & Xu, 2002) and behaviors from intergroup affect and stereotypes (BIAS) map (Cuddy, Fiske, & Glick, 2007), society should show distinct stereotypes, prejudices, and behaviors toward distinct animal species, as society does toward distinct human groups. This article experimentally tested whether the dimensions of social perception, warmth and competence, determine the differential feelings and behaviors expressed toward specific species of animals.

## Empirical Adaptation of SCM and BIAS Map for Animal Species

Animals of different species' behavior toward humans differs (they adapt, ignore, attack, or avoid us), reflecting different intentions toward humans (hostile or friendly). Animal species also present diverse capacities to perform their intentions (e.g., intelligence and strength). Those behaviors and capacities, among other factors, may serve as the base for the formation of animal stereotypes by humans, in terms of warmth (intent) and competence (capacity). These factors are the basic dimensions of social perception of human groups identified by the SCM (Fiske et al., 2002): warmth—perceived intention, and competence—perceived ability.

We suggest that preexisting social perception dimensions that exist for human groups—warmth (perceived intent) and competence (capacity to enact)—may also organize knowledge regarding animals in a functional way (for an application to commercial brands, see Kervyn, Fiske, & Malone, 2012). When animal species interact with humans, it appears relevant to know to what extent they are harmful, sociable or threatening. Social perception dimensions, particularly warmth, offer practical information guiding how to interact with an animal (approach/avoid).

The BIAS map proposes that different human groups elicit distinct emotions and discriminatory behaviors. Following a theory of interpersonal social comparison processes (Smith, 2000), social groups elicit different emotions based on comparison processes (upward and downward in status) and outcome attributions (intent).

Regarding behaviors, the types of discriminatory behaviors that can be manifested toward animals represent two dimensions related to overt effort (active-passive) and valence (facilitative-harmful). Active and passive behavior definitions take into account the degree of effort put into the behavior itself (commission or omission). Facilitative and harmful behaviors are defined according to the outcome (favorable or unfavorable to the target). Whereas active

behaviors are associated with the warmth dimension because of its primacy in interpersonal perception (Cuddy et al., 2007), passive behaviors are associated with competence. Warmth elicits active behaviors with favorable outcomes for high-warmth targets, that is, facilitation (e.g., help), but unfavorable outcomes for low-warmth targets, that is, harm (e.g., kill). Competence elicits passive responses with favorable outcomes for high-competence targets, that is, facilitation (control), but unfavorable outcomes for low-competence targets, that is, harm (ignore). The application of BIAS's proposal to animal species is consistent with attitudinal research showing how attitudes and behaviors toward animals differ across their species (Kellert & Berry, 1980).

The SCM/BIAS map applied to animal targets has received initial support. Sevillano and Fiske (2016b) showed how 25 animal species fit the SCM space defined by warmth and competence dimensions. Using cluster analysis, at least four stereotype clusters captured the beliefs about animals, termed as *Fondness*, *Contemptible*, *Subordination*, and *Threat-awe* targets. Animal species were grouped in four clusters, in accordance with the four proposed stereotypes: "companions" (high warmth, high competence: dog, monkey, elephant, horse, and cat); "pests" (low warmth, low competence: lizard, rat, chicken, snake, mouse, hippopotamus, and fish); "prey" (moderate warmth, low competence: duck, cow, rabbit, hamster, zebra, giraffe, bird, and pig); and "predators" (low warmth, high competence: tiger, bear, whale, leopard, and lion). Apparently, distinct animal species are perceived differentially in terms of warmth (degree of positive intent) and competence (degree of skill or intelligence), the same as for human groups.

Comparing human groups and animal species regarding emotions, categories of human groups elicited *admiration* when high in both warmth and competence; *pity* for high warmth, low

competence groups; *envy* for low warmth, high competence groups, and *contempt* for low warmth, low competence groups (Cuddy et al., 2007; Fiske et al., 2002). Similar categories in the case of animal species (Sevillano & Fiske, 2016b) consistently elicited *fondness* for high warmth, high competence; *contempt* for low warmth, low competence; *indifference* for high warmth, low competence; and *awe* for low warmth, high competence. Except for *disgust*, the emotions elicited by animal species are simpler, in the sense that they are less clearly social comparison-based emotions. Social comparison-based emotions (e.g., envy vs. awe; admiration vs. fondness) are more complex to the extent that social comparison implicates the self and another person (Smith, 2001).

Regarding behavioral tendencies (Sevillano & Fiske, 2016b), high warmth, high competence animals (pets) elicited both active and passive facilitation (helped or preserved). Low warmth, low competence animals (pests) elicited both passive and active harm (ignored and killed). Moderate warmth, low competence animals (prey) elicited passive harm (ignored) and active facilitation (protected). Finally, low warmth, high competence animals (predators) elicited active harm (hunted and killed) and passive facilitation (managed and preserved).

Specific emotions and behavioral tendencies toward animals conformed to an adapted BIAS map. This prior work used correlational designs, leaving the causal relationships untested, however. The focus on common, salient animal species (*monkey, rat*) allows activation of the social image of the species (*stereotype*) and tests BIAS Map with different species. However, using common animal species, as the prior studies did, does not provide a strong test of whether the causal agenda that warmth and competence dimensions *per se* imply distinct emotions and behavioral tendencies in the animal domain. An experimental design (manipulating the traits of a fictitious animal) could rule out the effect of prior social knowledge and perceptions of specific

animals (*dog*, *lion*). Using such an experimental design here represents a methodological advance but also a novel approach. The manipulation of descriptive traits of social groups is common in intergroup relations research with the aim of explaining perceived threat, prejudice, discrimination, and perceived entitativity (Caprariello, Cuddy, & Fiske, 2009; Falomir-Pichastor, Munoz-Rojas, Invernizzi, & Mugny, 2004). However, the experimental manipulation of animals' traits is an unusual approach. In the case of animals, the prevalent approach was studying animals descriptively instead of experimentally (Eddy, Gallup, & Povinelli, 1993; Henley, 1969; Kellert & Berry, 1980; Knight, 2008). Adopting an experimental approach expands the scope of human-animal research, allowing systematic tests of the effects of dimensions, characteristics, or traits associated with animal species.

Our aim is to test how the descriptions of animal species (stereotypes) determine people's affective reactions (prejudices) and behaviors. Finding a stable association between types of animals and distinctive prejudices and behaviors can uncover general rules of social perception of animal species. From an applied perspective, finding such an association would offer insights about potential interventions. For example, applied interventions may be focused on changing stereotype content regarding distinct animal species. Changes in warmth [competence] would be associated with changes in elicited emotions and behavioral tendencies. Finding warmth and competence as relevant dimensions for humans' affect and behaviors toward animals offers new possibilities in conservation biology and environmental psychology areas (e.g., educational interventions, communication campaigns, and human-animal conflicts). Amiot and Bastian (2015) discussed other possible applied areas.

**Overview**

As stated, our approach aims to understand the diversity of human-animal relations according to differential perceptions of animal species in terms of stereotypes, prejudices, and behaviors. The pattern of relations between stereotypes, emotions, and behavioral intentions advanced by SCM and the adapted BIAS map for animals was experimentally tested in Study 1 by presenting a fictitious animal and systematically varying its levels of warmth and competence. Study 2 tested the different patterns of associations between the stereotypes of twenty-five animal species and realistic contexts triggering facilitation-harm and passive-active behavioral dimensions.

## Study 1

### Causal Test of Relationships: Stereotypes-Emotions and Stereotypes-Behavioral Tendencies

Sevillano and Fiske (2016b), using a correlational design, found support for the BIAS map of animals. Study 1 tested causality of the links between stereotypes and emotions and between stereotypes and behaviors for animal targets. We tested the following hypotheses in Study 1 regarding emotions:

- High warmth, high competence animals should elicit fondness and delight.
- Low warmth, low competence animals should elicit contempt and disgust.
- High warmth, low competence animals should elicit indifference and neutrality.
- Low warmth, high competence animals should elicit awe and threat.

Regarding behaviors, we tested the warmth-active behaviors and the competence-passive behaviors predictions. Specifically, the BIAS map predicts that:

- High warmth (vs. low warmth) animals elicit more active facilitation (helping, supporting) and less active harm (trapping, killing).
- High competence (vs. low competence) animals elicit more passive facilitation (conservation, monitoring) and less passive harm (ignoring, letting them die off).

## Method

**Participants.** Participants were recruited through MTurk and received a small monetary payment ($0.15). The sample comprised 165 American participants who self-reported that they were not related to animals academically or professionally[1] (age *M* = 36.5 years; 69.1% female). Ethnic characteristics of the sample were as follows: 84.8% White, 6.4% African American, 4.1% Asian, 2.9% Hispanic, 1.2% Native American, and .6% not specified.

**Questionnaire.** Four two-item emotion and four two-item behavioral tendency scales were included in the questionnaire; these items were derived from the SCM applied to animal targets (Sevillano & Fiske, 2016b): fondness (delight, fondness), indifference (neutral, indifference), awe (awe, threatened), contempt (contempt, disgust), active facilitation (help, support), active harm (trap, kill), passive facilitation (conserve, monitor), and passive harm (ignore, let them die off). The response format was Likert-type scales ranging from 1 (*not at all*) to 9 (*extremely*) with a *does not apply* response option[2]. Several sociodemographic questions were included.

Except for the fondness scale (*r* = .86), reliabilities for the two-item emotion scales were low: contemptuous *r* = .56, indifference *r* = .44, and awe *r* = .17 (see intercorrelations in Table 1). Therefore, we opted to present results separately for the eight emotions to avoid losing information and to conserve the specificity of each emotion term. Reliabilities for the two-item behavioral tendency scales were moderately high for active behaviors and lower than expected

for passive behaviors: active facilitation $r = .79$, active harm $r = .70$, passive facilitation $r = .46$, and passive harm $r = .34$ (see intercorrelations in Table 2). Following the same rationale as for emotions, the results are shown separately for the eight behaviors.

**Procedure[3].** The study was introduced as a memory task. Participants read the following instructions: "In the next slide, a short paragraph about animals called *wallons* will be presented. You have to read carefully, paying attention to the details described. It is important that you understand the text, as well as that you remember it. After you read the paragraph, some questions about it will be asked later on." The paragraph described physical and trait characteristics of wallons. To make evident the nonhuman nature of wallons, the description included the taxonomic name in parentheses and a physical description. The 2 x 2 between-subject design manipulated two perceived traits of the animal group: warmth (high–low) and competence (high–low). Participants were randomly assigned to one of four conditions and read

> *Among the least known animals living in the Altai Mountains, in Central Asia, are the wallons (Dasypus novemcinctus), a kind of four-legged, medium-sized animal with gray fur. There are approximately 10 species of wallon, some of which are distinguished by the different colors of their coats. Wallons are intelligent (or unintelligent) and skillful (or not skillful)[4] animals. In their social life, they are friendly (or unfriendly) and well intentioned (or not well-intentioned).*

After answering questions included for consistency with the cover story (*What was the name of the animal in the paragraph? In which geographical area would you find these animals? How many species there are? What does the animal look like?*), participants were asked what animal might be similar to *wallons*. Next, participants rated them on emotions and

behavioral tendencies, completed sociodemographic questions, received written feedback and were thanked.

## Results

*Wallons* were perceived as similar to many different animals (approximately 40), which indicates that no specific animal image was in participants' minds and that participants were rating animals rather than people (see Table 3). The diversity of animals mentioned (with a high number of idiosyncratic responses), from wolves, dogs, raccoons, and monkeys to roosters, kangaroos, coyotes, and panda bears, indicates that participants were differently interpreting the description of wallons, leaving room for warmth and competence traits affecting emotional and behavioral ratings. We expected a clearer match between condition and the animal species mentioned than was obtained. However, regardless of condition, *dog* (11.5%) and *wolf* (17.0%) were the most frequently mentioned animals. The description of wallons as "a kind of four-legged, medium-sized animal with gray fur," "living in the Altai Mountains," may have biased participants to think of wolves because the description makes salient a wild, four-legged gray animal. However, participants also frequently mentioned dogs, a companion rather than a wild animal, which we interpreted as an indication that participants listed animals *similar to* the one described. The results seem to indicate that participants perceive wallons as similar to "wolves"/ "dogs" but varying in friendliness and intelligence due to the effect of manipulation.

**Stereotypes → Emotions.** We conducted a three-way mixed factorial ANOVA for wallons' warmth (high, low) and competence (high, low), with a within-subject factor, the elicited emotions (fondness, delight, indifference, neutral, threatened, awe, contempt, and disgust). A significant three-way interaction showed that elicited emotions differed across the

conditions: $F(4.172, 638.25) = 2.64$, $p = .031$ (Greenhouse-Geisser correction), $\eta^2_p = .017$. Thereafter, we conducted separate interaction contrast analyses for each emotion to test hypothesized predictions, assigning a weight of +3 to the cluster predicted to be high on the given emotion (e.g., high warmth, high competence for fondness) and weights of –1 to each of the clusters predicted to be low on that emotion (see Table 4 for means and contrast weights).

***Fondness.*** More fondness pertained, as predicted, to high warmth, high competence animals ($M = 6.41$; $SD = 1.76$), more than to other conditions ($M = 3.00$-$4.68$; $SD = 1.99$-$2.08$), $t(160) = 4.98$, $p < .001$.

***Delight.*** More delight corresponded, as predicted, to high warmth, high competence animals ($M = 6.15$; $SD = 1.67$), more than to other conditions ($M = 2.80$-$5.46$; $SD = 1.85$-$2.01$), $t(160) = 5.52$, $p < .001$.

***Indifference.*** Contrary to our predictions, more indifference feelings did not correspond to high warmth, low competence animals ($M = 5.91$; $SD = 2.06$), more than to other conditions ($M = 5.48$-$5.58$; $SD = 1.89$-$2.27$), $t(159) = 1.10$, $p = .275$.

***Neutral.*** Contrary to our predictions, more neutral feelings did not correspond to high warmth, low competence animals ($M = 6.04$; $SD = 1.98$), more than to other conditions ($M = 5.38$-$6.38$; $SD = 1.76$-$2.07$), $t(159) = .77$, $p < .440$.

***Threatened.*** More threatened corresponded, as predicted, to low warmth, high competence animals ($M = 4.87$; $SD = 2.31$), more than to other conditions ($M = 2.50$-$4.36$; $SD = 1.75$-$2.72$), $t(63.65) = 3.53$, $p = .001$.

***Awe.*** Contrary to our predictions, more awe feelings did not correspond to low warmth, high competence animals ($M$ = 4.08; $SD$ = 2.02), more than to other conditions ($M$ = 3.47-5.44; $SD$ = 1.91-2.16), $t$ (159) = -.54, $p$ = .592.

***Contempt.*** More contempt corresponded, again as predicted, to low warmth, low competence animals ($M$ = 4.89; $SD$ = 2.42), more than to other conditions ($M$ = 2.79-3.66; $SD$ = 1.92-1.98), $t$ (160) = 4.80, $p$ < .001.

***Disgust.*** More disgust corresponded, again as predicted, to low warmth, low competence animals ($M$ = 4.49; $SD$ = 2.31), more than to other conditions ($M$ = 2.33-3.66; $SD$ = 1.38-2.02), $t$ (66.24) = 4.14, $p$ < .001.

Other main effects were also significant: for competence, $F$(1, 153) = 6.97, $p$ = .009, $\eta^2_p$ = .044; and for emotion, $F$(4.172, 638.25) = 35.77, $p$ < .001, $\eta^2_p$ = .189 (W's Mauchly = .089, $p$ < .001). The two-way interaction was significant for warmth X emotion, $F$(4.172, 638.25) = 26.05, $p$ < .001 (Greenhouse-Geisser correction), $\eta^2_p$ = .145; and competence X emotion, $F$(4.172, 638.25) = 3.85, $p$ = .004 (Greenhouse-Geisser correction), $\eta^2_p$ = .025. There were no other significant effects.

**Stereotypes → Behaviors.** According to the warmth-active behavior and the competence-passive behavior predictions, we conducted two three-way (warmth X competence X behaviors) mixed factorial ANOVAs, one for (4) active behaviors and one for (4) passive behaviors, with repeated measures on the last factor.

***Active behaviors.*** The results revealed the predicted warmth X behavior effect, $F$(1.566, 245.906) = 25.61, $p$ < .001 (Greenhouse-Geisser correction), $\eta^2_p$ = .14. Planned comparisons

contrasted high- and low-warmth animals on each active behavioral tendency. As predicted, high-warmth animals elicited more *support* ($M$ = 5.68, $SD$ = 1.55) than did low-warmth animals ($M$ = 4.33, $SD$ = 1.89), $F(1, 162) = 24.67$, $p < .001$, $\eta^2_p = .13$; and more *help* ($M$ = 5.91, $SD$ = 1.64) than did low-warmth animals ($M$ = 4.30, $SD$ = 2.09), $F(1, 162) = 29.85$, $p < .001$, $\eta^2_p = .16$. Low-warmth animals elicited more *trapping* ($M$ = 4.80, $SD$ = 2.30) than did high-warmth animals ($M$ = 3.70, $SD$ = 1.91), $F(1, 163) = 11.041$, $p = .001$, $\eta^2_p = .06$; and more *killing* ($M$ = 4.39, $SD$ = 2.15) than did high-warmth animals ($M$ = 3.24, $SD$ = 2.00), $F(1, 163) = 12.69$, $p < .001$, $\eta^2_p = .07$.

Other lower order effects were significant. A main, not-predicted effect of competence, $F(1, 157) = 11.50$, $p = .001$, $\eta^2_p = .07$, indicated that high-competence animals elicited more active behaviors ($M$ = 4.88, $SD$ = 1.06) than did low-competence animals ($M$ = 4.29, $SD$ = 1.14). Additionally, a main effect of behavior was found, $F(1.566, 245.906) = 17.53$ (W's Mauchly = .23, $p < .00001$), $p < .001$ (Greenhouse-Geisser correction), $\eta^2_p = .10$, indicating that animals received more facilitative behaviors ($M$help = 5.14, $SD$ = 1.88; $M$support = 5.04; $SD$ = 1.70) than harm behaviors ($M$trap = 4.30, $SD$ = 2.13; $M$kill= 3.86; $SD$ = 2.06). No other effects were significant.

***Passive behaviors.*** The results revealed the predicted competence X behavior effect, $F(2.339, 367.27) = 5.07$, $p = .004$ (Greenhouse-Geisser correction), $\eta^2_p = .03$. Planned comparisons contrasted high- and low-competence animals on each passive behavioral tendency. As predicted, high-competence animals elicited more *conservation* ($M$ = 5.81, $SD$ = 1.75) than did low-competence animals ($M$ = 5.01, $SD$ = 2.26), $F(1, 161) = 6.03$, $p = .015$, $\eta^2_p = .04$; and more *monitoring* ($M$ = 6.00, $SD$ = 1.61) than did low-competence animals ($M$ = 5.36, $SD$ = 1.98),

$F(1, 161) = 4.94$, $p = .028$, $\eta^2_p = .03$. However, low-competence animals did not elicit more *ignoring*, $F(1, 161) = 2.25$, $p = .136$, $\eta^2_p = .01$, or *let them die off* behaviors, $F(1, 162) < 1$, $p = .451$, $\eta^2_p < .01$, than did high-competence animals.

A warmth X behavior effect that was not predicted was also significant, $F(2.339, 367.27) = 21.62$, $p < .001$ (Greenhouse-Geisser correction), $\eta^2_p = .12$. High-warmth animals elicited more *conservation* ($M = 6.03$, $SD = 1.70$) than did low-warmth animals ($M = 4.71$, $SD = 2.21$), $F(1, 161) = 17.85$, $p < .001$, $\eta^2_p = .10$; but not more *monitoring*, $F(1, 161) < 1$, $p = .36$, $\eta^2_p < .01$. Low-warmth animals elicited more *ignoring* ($M = 5.70$, $SD = 2.31$) than did high-warmth animals ($M = 4.89$, $SD = 2.21$), $F(1, 161) = 5.32$, $p = .022$, $\eta^2_p = .03$; and more *let them die off* ($M = 5.06$, $SD = 2.28$) than did high-warmth animals ($M = 2.84$, $SD = 1.64$), $F(1, 162) = 50.76$, $p = .001$, $\eta^2_p < .24$.

Other lower order effects were significant. A main effect of warmth that was not predicted, $F(1, 157) = 4.86$, $p = .029$, $\eta^2_p = .03$, indicated that high-warmth animals elicited fewer passive behaviors ($M = 4.89$, $SD = 1.06$) than did low-warmth animals ($M = 5.25$, $SD = 1.06$). Additionally, a main effect of behavior was found, $F(2.339, 367.27) = 24.61$ (W's Mauchly = .62, $p < .001$), $p < .00001$ (Greenhouse-Geisser correction), $\eta^2_p = .14$, indicating that animals received less *let them die off* behavior ($M = 3.94$; $SD = 1.99$) than other behaviors ($M = 5.26$-$5.68$; $SD = 1.84$-$2.27$). No other effects were significant.

## Discussion

We applied the SCM and BIAS map theoretical statements to animals, performing a causal test of the relationship between stereotypes-emotions and stereotypes-behavioral tendencies.

**Emotions toward animals**. Using an experimental approach, we replicated several relationships between stereotypes and emotions previously found (Sevillano & Fiske, 2016b). The joint manipulation of warmth and competence traits through a fictitious animal produced the predicted emotion in five of eight cases: friendly and intelligent animals (high warmth, high competence) elicited fondness and delight; and unfriendly and unintelligent animals (low warmth, low competence) elicited contempt and disgust. Unfriendly but intelligent animals (low warmth, high competence) elicited threat but not awe. Finally, friendly but unintelligent animals (high warmth, low competence) did not elicit significant indifference or neutral feelings. Indeed, high levels of indifference were felt toward all animal types, specifically based on the mean observed on the indifference variable, which may indicate the difficulty of activating clear animal categories through abstract scenarios.

The lack of effect for feelings of awe regarding unfriendly but intelligent animals is explained in terms of the lack of clarity in emotional terms. We expected that participants considered the "awe" term an ambivalent emotion, as assumed in the literature (Keltner & Haidt, 2003). Consequently, we anticipated a high correlation with "threat." However, that did not occur. In fact, awe was more correlated than expected with positive emotions (fondness, delight). The prototype perspective (Fehr & Russell, 1984) highlights the lack of clarity in some emotional terms, which leads to difficulties in emotion research using emotional labels.

**Behaviors toward animals.** Stereotype-behavioral tendency relationships previously found for human groups (Cuddy et al., 2007) and animals (Sevillano & Fiske, 2016b) were only partially replicated. As in the case of human groups, the dimensions of warmth and competence in animals affected the theoretically predicted behavioral tendency; friendly animals (high

warmth) received active facilitation behaviors, whereas unfriendly animals (low warmth) received active harm behaviors. Skillful animals (high competence) received passive facilitation behaviors, whereas unskillful animals (low competence) received passive harm behaviors.

Some other unpredicted effects emerged. First, competence elicited active behaviors independently of behavior valence (facilitation, harm). High-competence animals elicited both help/support and killing/trapping to a greater extent than did low-competence animals. As an *ad hoc* explanation, in the animal domain, perceived competence, similarly to warmth, may require an active response. Nonetheless, this effect is not found previously for animals or for human groups and should be further explored in future studies.

Second, warmth elicited passive behaviors, promoting passive facilitation, conservation (but not monitoring), and reducing passive harm behaviors (ignore, let them die off). Tentatively, this finding could be the result of a generalized positive rather than negative image of the animal described in the text, which prevented ascribing passive harm behaviors to it, whereas passive facilitation may be easily applicable. Additionally, some theoretically passive behaviors such as conserve and let them die off were associated with active facilitation (help, support) and harm behaviors (kill, trap), respectively (see intercorrelations in Table 2). Therefore, to some extent, conserve and let them die off behaviors were perceived as more direct behaviors than intended. This warmth-passive behavior link was also found in Cuddy et al. (2007) for human groups; thus, it deserves future research attention.

Focusing on behavioral tendencies, Study 2 adopted a novel approach by testing how certain realistic scenarios that trigger behavioral tendencies are more stereotypical for certain

animals. The use of scenario methodology also allows presenting more realistic human-animal contexts, expanding Study 1's scope.

## Study 2

### Animal Scenarios

Study 1 manipulated an immaterial animal's attributes (competence and warmth) and asked participants to ascribe some emotions and behavioral tendencies toward the animal. Thereafter, Study 2 presented several realistic scenarios varying in active/passive harm/facilitation behavioral tendencies toward animals and asked participants which animals, among twenty-five species, fit each scenario. Whereas Study 1 directly tested how animal traits trigger certain behavioral tendencies, Study 2 tested how certain contexts triggering behavioral tendencies are stereotypically associated with certain animals.

Concerning the case of human groups, we proposed that the two stereotype dimensions predict different aspects of behavior (Cuddy et al., 2007). The warmth dimension—animals' intentions—will determine active behaviors, facilitative or harmful. Competence, animals' ability, will determine passive behaviors that vary in valence, facilitative or harmful. Whereas active behaviors are associated with the warmth dimension because of its primacy in interpersonal perception (Cuddy et al., 2007), passive behaviors are associated with competence. In the case of animals, for example, taking actions such as caring for certain species such as pets or highly regarded animals such as horses may seem plausible (active facilitation). However, protecting rats from viruses may not be well received by society (active facilitation).

The specific hypotheses of Study 2 are

H1: Active scenarios will be associated with the warmth dimension. High- vs. low-warmth animals will receive more active help and less active harm.

H2: Passive scenarios will be associated with Competence dimension. High- vs. low-competence animals will receive more passive help and less passive harm.

## Method

### Pilot Study: Evaluating animal scenarios in terms of their intention and benefit

Realistic behavioral scenarios related to animals were developed with the aim that actions could be particularly applicable to different animal species (see Appendix). Active facilitation scenarios were operationalized as direct actions regarding care and protection of animals with economic costs. Passive facilitation scenarios were intended as indirect actions enabling survival of animal species without specific human action. Active harm scenarios were operationalized in terms of intentional suffering inflicted on animal species. Passive harm scenarios were operationalized in terms of behaviors with negative consequences to animals but without a clear intention to cause them harm. Active facilitation scenarios were as follows: 1) budget allocation among different organizations that aim to support different animals *(Budget scenario)*; and 2) national health campaign for animals, endorsing long-term care for animals *(Campaign scenario).* Active harm scenarios were as follows: 3) biological research using animals for testing *(Biological research scenario)*; and 4) fighting (to shoot, trap, poison, euthanize, or eliminate) animals who cause problems for humans (damage to private property, endangering safety, spreading disease, causing car accidents, or being aggressive) *(Fighting scenario).* Passive harm scenarios included the following: 5) ignoring vaccine targets for diseases *(Vaccines scenario)*; and 6) ignoring accidental mortality *(Accidental mortality scenario).* Passive

facilitation scenarios were as follows: 7) sharing spaces with animals for the relocation of species to other areas or the reintroduction of species in their original areas *(Relocation scenario)*; and 8) developing parks, recreation areas, and restricted areas that may allow a species to avoid extinction *(Restricted areas scenario).*

To test whether scenarios were perceived as varying in active-passive, facilitation-harm dimensions, a pilot study was carried out asking participants to rate each scenario on the intentionality/unintentionality of the action described (perceived intent) and on the benefit-harm of the action (perceived benefit).

**Method: Participants, questionnaire, and procedure.** One hundred and fifty-nine American participants from the general population (age $M$ = 38.4, 48.4% females), not involved with animals, were recruited through the MTurk website and received standard compensation ($0.30). Participants rated the eight scenarios on perceived intent (e.g., "to what extent do you think that distributing financial resources among different organizations that aim to support animals affects animals unintentionally / intentionally?") and perceived benefit (e.g., "to what extent do you think that distributing financial resources among different organizations that aim to support animals harms / benefit the animals?"). Both ratings used a 7-point Likert scale. For one-half of the sample, the order of the two dependent variables was reversed. The effect of order was not significant in any analysis.

**Results.** A 2 (scenarios-benefit: facilitation, harm) x 2 (scenarios-intent: active, passive) repeated measures ANOVA on perceived intention showed significant main effects for scenarios-intent, $F(1, 158) = 147.88$, $p < .001$, $\eta^2_p = .48$, and scenarios-benefit, $F(1, 158) = 21.58$, $p < .001$, $\eta^2_p = .12$. Active behaviors were perceived as having a stronger intention ($M$ =

5.80; *SD* = 1.08) than were passive behaviors (*M* = 4.45; *SD* = .98). In addition, facilitative behaviors were perceived as having a stronger intention (*M* = 5.34; *SD* = .96) than were harmful behaviors (*M* = 4.91; *SD* = .96). The interaction effect was also significant, $F(1, 158) = 21.69$, $p < .001$, $\eta^2_p = .12$, and active facilitation scenarios (*M* = 5.81; *SD* = 1.24) were almost identical to active harm scenarios (*M* = 5.80; *SD* =1.34) on intention. The passive facilitation scenario was rated as *M* = 4.87 (*SD* = 1.26), and the less intentional was the passive harm scenario (*M* = 4.02; *SD* = 1.44).

A 2 (scenarios-benefit: facilitation, harm) x 2 (scenarios-intent: active, passive) repeated measures ANOVA on perceived benefit showed significant scenarios-benefit, $F(1, 158) = 324.34$, $p < .001$, $\eta^2_p = .67$, and scenarios-intent main effects, $F(1, 158) = 15.93$, $p = .001$, $\eta^2_p = .09$. Facilitative behaviors were perceived as more beneficial (*M* = 4.99; *SD* = .91) than were harmful behaviors (*M* = 2.76; *SD* = 1.15). Active behaviors were perceived as more beneficial (*M* = 4.03; *SD* = .72) than were passive behaviors (*M* = 3.72; *SD* =.93). The interaction effect was also significant, $F(1, 158) = 104.91$, $p < .001$, $\eta^2_p = .40$; active harm was rated as the lowest in benefit (*M* = 2.46; *SD* = 1.29), and followed by passive harm (*M* = 3.07; *SD* =1.26), passive facilitation (*M* = 4.37; *SD* =1.29), and active facilitation (*M* = 5.6; *SD* =1.08). Table 5 shows benefit and intent means by scenario. The pilot study showed that active/passive scenarios and facilitative/harm scenarios were differently perceived in intention and benefit by participants. Study 2 will explore the different patterns of associations between animal stereotypes and scenarios.

## Main Study

**Participants.** One hundred and sixteen American participants from the general population (age $M$ = 35.9, 64.7% females), not involved with animals[5], were recruited through the MTurk website and received a small monetary payment ($0.15). They also took part in a raffle to win two $25 gift cards. Four participants were excluded from the analyses because their completion time was abnormally high (more than 2.5 $SD$ = 24.57 min, where $M$ = 10.5 min)[6]. Ethnic characteristics of the sample were as follows: 79% White, 8.9% Asian, 4.8% Hispanic, 5.6% African American, and 1.6% other. Sixty-seven percent of participants owned pets ($N$ = 76). No differences were found in the main variables due to owning pets. Participants were randomly assigned to one of two versions of the questionnaire asking them to rate animals according to different scenarios.

**Stimulus and Procedure.** The eight piloted scenarios, varying in the active-passive and facilitation-harm dimensions, are shown. Participants rated scenarios according to their suitability for twenty-five animals on a 9-point Likert scale ranging from 1 (*completely disagree*) to 9 (*completely agree*). All participants rated all animals on all eight scenarios. Given the possibility that selected scenarios were unsuitable for some specific animal, a *does not apply* option was included[7]. The questionnaire named 25 frequently mentioned animals classified previously through cluster analysis in distinct categories regarding warmth and competence (Sevillano & Fiske, 2016b): high warmth, high competence animals such as dog, monkey, elephant, horse, and cat; high warmth, low competence animals such as duck, cow, rabbit, hamster, zebra, giraffe, bird, and pig; low warmth, high competence animals such as tiger, bear, whale, leopard, and lion; and low warmth, low competent animals such as lizard, rat, chicken, snake, mouse, hippopotamus, and fish. Participants rated these animals on eight scenarios following the instruction, “Nowadays, animal-human relationships are diverse and complex. We

behave toward animals in many different ways. In this survey, we are interested on your point of view about how to behave in different situations regarding animals." Scenarios were scrambled and shown in a fixed order. Participants received written feedback after completing the ratings. To avoid fatigue, the sample was divided into half, and each group rated approximately 13 animals.

## Results

For the analysis, the twenty-five animals were grouped by high/low warmth and high/low competence following previous results (Sevillano & Fiske, 2016b). We created variables averaging scores for type of scenario and type of animal (e.g., average ratings of high warmth, high competence animals for the active facilitation scenario). We ran two repeated measures ANOVA 2 (behavior: facilitation vs. harm) x 2 (warmth: low vs. high) x 2 (competence: low vs. high) for active and passive scenarios separately.

**Active Behaviors.** Most of the effects were significant, including the predicted two-way interaction warmth x behavior, $F(1,111) = 40.85$, $p < .001$, $\eta^2_p = .27$. Planned comparisons tested the effect of warmth in facilitative and harm scenarios. As predicted, high-warmth animals were to a greater extent associated with facilitative scenarios ($M = 6.36$, $SD = 1.84$) than were low-warmth animals ($M = 5.72$, $SD = 1.81$), $F(1, 111) = 24.26$, $p < .001$, $\eta^2_p = .18$. Low-warmth animals were to a greater extent associated with harmful scenarios ($M = 4.42$, $SD = 1.74$) than were high-warmth animals ($M = 3.56$, $SD = 1.91$), $F(1, 111) = 50.83$, $p < .001$, $\eta^2_p = .31$. Because the three-way interaction that qualifies the lower two-way interaction was also significant, $F(1,111) = 60.793$, $p < .001$, $\eta^2_p = .35$, we proceeded to examine this interaction in an exploratory manner separately by category of animal and scenario. Low warmth, high

competence animals (tiger, bear) were associated with more active facilitation scenarios than expected (see Figure 1).

**Passive Behaviors.** Most of the effects were significant, including the predicted two-way interaction competence x behavior, $F(1,111) = 107.104$, $p < .001$, $\eta^2_p = .49$. Planned comparisons tested the effect of competence in facilitative and harm scenarios. As predicted, high-competence animals were to a greater extent associated with facilitative scenarios ($M = 6.43$, $SD = 1.54$) than were low-competence animals ($M = 6.01$, $SD = 1.65$), $F(1, 111) = 11.47$, $p = .001$, $\eta^2_p = .09$. Low-competence animals were to a greater extent associated with harmful scenarios ($M = 5.09$, $SD = 1.70$) than were high-competence animals ($M = 3.54$, $SD = 1.82$), $F(1, 111) = 137.67$, $p < .001$, $\eta^2_p = .55$. Because the three-way interaction that qualifies the lower two-way interaction was also significant, $F(1,111) = 14.98$, $p < .001$, $\eta^2_p = .12$, we proceeded to examine this interaction in an exploratory manner separately by category of animals and behavior. High warmth, low competence animals (cow, hamster) were associated with more passive facilitation than expected (see Figure 2).

## Discussion

We aimed to demonstrate that stereotypes are associated with distinct behavioral tendencies. Our main predictions hold for the low warmth, low competence and for the high warmth, high competence categories of animals but not entirely for low warmth, high competence or high warmth, low competence categories. We found that animals such snakes, rats, and lizards received less active facilitation, more active harm (warmth-active behavior hypothesis), less passive facilitation, and more passive harm (competence-passive behavior hypothesis). Animals such dogs, monkeys, and horses received more active facilitation, less

active harm (warmth-active behavior hypothesis), and more passive facilitation, and less passive harm (competence-passive behavior hypothesis). For the case of animals such tigers, bears, and lions (low warmth, high competence animals), the predictions were not entirely supported, obtaining more active facilitation than expected given their low-warmth stereotype. In addition, cows, ducks, and hamsters (high warmth, low competence animals) obtained more passive facilitation than expected based on their low-competence stereotype. This last result, an effect of warmth on passive behaviors, was also found in Study 1 and in previous research (Cuddy et al., 2007).

The developed scenarios vary to some extent in their relevance to each species, which may have affected the results. If anything, the differential relevance of animal species to the scenarios worked against our hypotheses. For example, some active facilitation scenarios may be suitable for low warmth, high competence species (lions, elephants) and for high warmth, high competence species (dogs, horses). A campaign of veterinary attention and active medical and biological research to improve animal lives (campaign scenario) or a budget distribution among different organizations aimed at supporting animals (budget scenario) may work for several species. Similarly, passive facilitation such as the delimitation of areas for animals' benefit (restricted areas scenario) and the relocation and reintroduction of animals (relocation scenario) may be generally applicable to most animal species.

## General Discussion

The studies provided experimental evidence that animal stereotypes affect the emotional reactions and shape the behavioral tendencies that people show toward animals. Therefore, emotions and behavioral tendencies toward animals varied across categories of animals. Specific emotional reactions such as fondness/delight for warm and competent animals (e.g., dogs,

monkeys, and elephants), contempt/disgust for cold and incompetent animals (e.g., lizards, rats, and chickens), and threatened toward cold and competent animals (e.g., tigers, lions, and bears) were differentially perceived.

Distinct behavioral tendencies such as active behaviors and scenarios were determined by the warmth dimension, increasing facilitative and mitigating harmful behaviors for warm animals (e.g., dogs, monkeys, cows, and rabbits). However, passive behaviors and scenarios were determined by the competence dimension (Study 2 and partially in Study 1), increasing facilitative and mitigating harmful behaviors for competent animals (tigers, lion, dogs, and monkeys).

Although these findings are consistent with the SCM/BIAS map framework, other unexpected findings limit the support for the theoretical model. The emotions associated with ambivalent categories were more elusive. Indifference and neutrality were not primarily associated with high warmth, low competence animals; and low warmth, high-competence animals elicited threat but not awe. The lack of effect for indifference/neutral and awe feelings may indicate the limitations of the scenario methodology. Additionally, related to the weakness of reported indifference/neutral, perhaps eating animals (not studied here) mainly drives the indifference emotion. Sevillano and Fiske (2016b) found that a moderate warmth, low-competence animal category including eating animals (cow, pig, rabbit, and duck) elicited indifference. Because the experimental manipulation of Study 1 did not mention the eating quality of the animal, the predicted indifference emotion, if mainly elicited by eating animals, was not relevant. Consistent with this point, some participants reported, as noted, thinking of exotic animals such as koala, kangaroo, sloth and lemming when reading the high warmth, low competence scenario, for which indifference may not be the main emotion. The important role of

edibility has been previously discussed (see research on "the meat-paradox": Loughnan, Haslam, & Bastian, 2010).

Turning to awe, this emotion has consistently been associated with low warmth, high competence animals (Kellert, Black, Rush, & Bath, 1996; Knight, 2008; Sevillano & Fiske, 2016b; Van der Berg & Ter Heijne, 2005). These animals (tigers and lions) elicited admiration and feelings of fear (Sevillano & Fiske, 2016b), which jointly characterize the emotion of awe (Keltner & Haidt, 2003). However, our experimental manipulation of warmth and competence traits failed to show the expected awe feeling. The explanation for this result may be that the description of the wallons was not powerful enough to elicit outstanding levels of competence; the paragraph did not qualify the degree of wallons' intelligence but merely stated that *wallons are intelligent and skillful*, not *exceptionally intelligent and skillful*. Another possible explanation is the role of animal size in eliciting awe. Here, competence was operationalized as intellectual capacity and skillfulness, but competence may also be triggered by the animal's physical capacity, their size or strength. Nonetheless, the specific relation between animals' competence and size is not yet established. To draw conclusions, future research needs to confirm or disconfirm this lack of support for indifference and awe.

Regarding behavioral tendencies, the lack of effect of competence on passive harm behaviors in Study 1 may be explained by the difference in the level of abstraction of the term used in Studies 1 and 2. The abstract passive behavioral terms used in Study 1 (*let them die off, ignore*) may be viewed as more active (and negative) than specific passive scenarios used in Study 2 (*restricted areas, accidental mortality*), although the abstract term *let them die off* is conceptually the same type of negative passive behavior as the *accidental mortality* scenario. Similarly, the *conservation* term and *restricted areas* scenarios may vary in the degree of effort

devoted to them. Acting to conserve animals may seem an active behavior, whereas leaving restricted areas only for animals may be viewed as more passive.

Some other unpredicted effects were the main effects of the competence dimension on active behaviors and of the warmth dimension on passive behavior in Study 1. These results are consistent with the pattern found in Study 2 for low warmth, high competence animals, which received more active facilitation, and for high warmth, low competence animals, which received more passive facilitation than expected. Therefore, to some extent, those categories of animals are more positively perceived than expected.

**Divergence between findings for human groups and for animal species**

The intergroup perspective taken here to animal targets revealed several differences between the perception of human groups and animal species.

**More basic emotional correlates and behavioral tendencies with animal species than with human groups.** When comparing similar warmth/competence categories for human groups and animal species, the emotions elicited by animal species seem more basic and less social than do those emotions elicited by human groups. Instead of admiration, people feel fondness toward friendly and capable animals. Whereas stereotypically friendly and incapable human targets elicit pity, the same categorization for animal targets elicits no clear emotional correlates. Stereotypically unfriendly and capable human targets elicited envy, whereas animal targets lead to feeling threatened. Unfriendly and incapable human targets elicited the same emotion, contempt, as did similar animal species.

Animal targets qualify the behavioral tendencies prescribed by the SCM and BIAS map about human groups. Behavioral tendencies toward animals are blunt (Sevillano & Fiske, 2016b). We try to *associate* with high-competence humans, whereas we make efforts to conserve

competent animals (passive facilitation). We avoid low-competence humans, whereas we ignore low-competence animals (passive harm). On the other hand, we attack low-warmth humans, whereas we are extreme with low-warmth animals, trapping and killing them (active harm). These differences in the behavioral tendencies toward animals show the less privileged social position of animals as a group compared to humans. Remarkably, we protect and help both high-warmth humans and animals (active facilitation).

Within the context of moral consideration toward entities, the differential ascription of behaviors toward animal species entails distinct moral consideration based on group membership (i.e., species membership). Research on moral standing gives a main role to agency and patience dimensions for explaining moral behaviors toward targets (Gray, Gray, & Wegner, 2007). Piazza, Landy, and Goodwin (2014) expanded these dimensions including harmfulness. Harmfulness, defined as *having a harmful/nonharmful disposition* (p. 109), is in fact conceptually identical to SCM's warmth. In accordance with this line of research, we found that warmth—good/bad intent, similar to harmfulness, and competence—intelligence and ability, similar to agency, affect attribution of harm to animal species (Studies 1 & 2).

**Unstable pattern for high warmth, low competence animals.** The high warmth, low competence predicted pattern for eliciting emotions and behaviors was not completely found. It seems that those animals are perceived more positively than expected since indifference was not associated with them; thus, passive facilitation was ascribed to those animals, which may be explained by the lack of reference to humans eating them (Study 1), which in turn may legitimize the negative feelings and behaviors previously found (Sevillano & Fiske, 2016b). In addition, this category comprised a diversity of animal species (cow and giraffe) in previous research, leading to moderate levels of warmth. Diversity may lead to mild, negative feelings (neutrality

and indifference). Study 1's manipulation portrayed a simpler target, friendly and incapable, which may enhance positive feelings.

Our findings could be indicating that studying different animal species at the same time is a challenging option. In the case of human groups, all groups share human nature (human species), but this point is not true in the case of animals; there are several species. As a result, to consider a human friendly and capable is less ambiguous that saying that an animal, without mentioning the species, is friendly and capable. This point may preclude obtaining consistent emotions and behavioral tendencies when not showing specific animal species to participants, as we did in Study 1.

In the same vein, the overall animal stereotype may adjust better for some animals than for others. The stereotype content for animals in general (Sevillano & Fiske, 2017) is higher in warmth than in competence. Whereas some animal species (e.g., cows and rabbits) may fit the overall animal stereotype, other animals may not fit it, perhaps because they are anthropomorphized. Consequently, some animals are perceived more positively (e.g., dogs and monkeys) than are others, depending on their relationship with humans. As a general consideration, the social comparison of humans and animals, without specifying animal species, as is done in the dehumanization literature, leads to a negative view of animals, which is apparently contradictory with some research on human-animal relations research (companion animal research and animal rights advocacy).

**Practical Implications**

Our results have applied implications. Traditionally, attitudes and values have been the focus of interest in conservation biology and environmental psychology (Sevillano & Fiske, 2019). Much less attention has been given to social perception of animals from an intergroup

perspective. Stereotyped labels, however, placed upon specific animals are common; wolves are considered cruel, recreational killers, intelligent, aggressive, dangerous, and bold (Johansson, Karlsson, Pedersen & Flykt, 2012; Skogen, 2001). To the extent that stereotypes have important consequences for human groups, for nonhuman beings lacking human privileged status, the consequences may be worse (e.g., killings and poison). Our approach points out stereotype content regarding perceived warmth and competence relating to differential behavioral tendencies directed toward animals.

The lack of people's support for biodiversity management measures has been generally attributed to a lack of knowledge (Hunter & Brehm, 2003). In our approach, ignoring animals harmed by accident or letting nature take its course with viruses of animals (passive harm) was related to low-competence animals more than high-competence animals. Thus, certain animals may be subjected to unsuccessful management practices because they are perceived stereotypically regarding competence (i.e., low competence). Acknowledging and fighting such stereotypes may improve the efficacy of management practices.

As in the case of human groups, acknowledging stereotypes about animals could strategically guide educational campaigns, for example focusing on warmth- or competence-related characteristics depending on the context. Conservation research has focused primarily on valenced attitudes toward animals instead of stereotype content. General evaluations of species are no doubt worthy of attention for intervention programs, but beliefs associated with species (stereotypes) offer rich information to guide intervention strategies. Changing beliefs about an animal species' intelligence (e.g., pigs) may imply changes in associated emotions (e.g., fondness) and behavioral tendencies (e.g., conserve). This observation is especially interesting for food animals, which are denied minds (Bastian, Loughnan, Haslam, & Radke, 2012).

The conceptualization of behavioral tendencies advanced by the BIAS map is like types of conservation measures used in conservation biology (see Sevillano & Fiske, 2019). For example, a conceptual distinction among types of behavior regarding wildlife is based on the active/passive and positive/negative characterization (Bruskotter & Fulton, 2012), which is identical to the BIAS map's tendencies: *intolerance* (negative-active), *tolerance* (no action), and *stewardship* (positive-active) (for other distinctions, see Treves, Wallace, Naughton-Treves, & Morales, 2006). Similarities in behavioral conceptualizations coming from different disciplines allow communication among them and advances in research. Our research showed that the social perception of conservation measures is worthy of attention. For example, conserve and monitor were correlated with active facilitation behaviors when they were intended as passive behaviors (Study 1). However, specific scenarios of those behaviors (restricted areas and relocation scenarios) were perceived as lower in intent compared with active scenarios (campaign and budget scenarios) (pilot study). In general terms, they seem active, but relative to other types of behaviors, they seem more passive, which is informative when trying to understand the point of view of different stakeholders in human-animal conflicts (e.g., relocation of species). Certain groups (e.g., ranchers) may perceive conservation measures with an *excessive* degree of positive effort toward animals that is detrimental for them (humans). Other groups (e.g., environmentalist) may perceive conservation measures as mild interventions.

**Future Research and Conclusions**

Intergroup studies have recognized that the conceptualization of prejudice as a general, unidimensional attitude is problematic. The diversity of emotional reactions toward groups challenges the unidimensional view of prejudice (Cottrell & Neuberg, 2003; Fiske et al., 2002). Different groups elicit distinct emotions. Our research is consistent with this statement for the

case of animal species. Different animal species elicit distinct emotions. This finding is quite relevant, since the social perception of animals has been focused on attitudes—general evaluations that preclude revealing distinct emotional reactions.

Expanding the application of an intergroup perspective to animals, the role of social status and perceived cooperation of animals along with other important intergroup variables, such as threat, is worthy of attention. All these variables are relevant for intergroup relations (stereotypes, prejudice, and discrimination) and have been linked to social stereotypes of human groups within SCM (Caprariello, Cuddy, & Fiske, 2009; Kervyn, Fiske, & Yzerbyt, 2015). Preliminary results showed correlational evidence for the status→competence and cooperation/threat→warmth links (Sevillano & Fiske, 2017).

Parallel intergroup threat research, that is, the exploration of different threats associated with animal species, is a promising avenue. Intergroup studies broadly categorize threats in terms of realistic and symbolic. Distinct animal species may elicit different threats such as loss of resources, physical threat, group identity, and cultural values. Research questions regarding animal stereotypes and associated threats are relevant in applied contexts such as human-animal conflicts in urban or rural areas. Does stereotype content of species relate to distinct types of threats?

Our research suggests that warmth and competence are important dimensions with respect to animals (also harmfulness and agency); animals have intent toward us that resembles SCM's warmth dimension, and they have capabilities that determine how much they affect us that resemble SCM's competence dimension. Nonetheless, other characteristics may have an important role—for example, size, given its preeminence in the animal perception literature

(Henley, 1969; López et al., 1997). Whether SCM's competence for animals is close in meaning to physical capacity from animals' size or strength is not yet established. The status of the size dimension in social perception of animals is a further venue for research.

The study of human-animal relations in psychology covers a variety of topics (see Amiot & Bastian, 2015 for a comprehensive review). Within an intergroup approach, the SCM and BIAS map offer an integrative, partially successful framework to account for the different emotions and behavioral tendencies elicited by animal targets. Future research has a variety of agendas, together developing a model of social perception for other animal species.

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Table 1

*Intercorrelations among Emotions, Study 1 (N = 161-164)*

| | Threat | Disgust | Contempt | Neutral | Indifference | Delight | Fondness |
|---|---|---|---|---|---|---|---|
| Awe | .17* | -.13 | -.03 | -.18* | -.19* | .46*** | .46*** |
| Threat | | .37*** | .55*** | -.28*** | -.12 | -.26** | -.32*** |
| Disgust | | | .56*** | -.17* | .02 | -.39*** | -.43*** |
| Contempt | | | | -.11 | -.05 | -.38*** | -.48*** |
| Neutral | | | | | .44*** | <.01 | .02 |
| Indifference | | | | | | .07 | -.09 |
| Delight | | | | | | | .86*** |

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

*Intercorrelations among behaviors, Study 1 (N =162-164)*

| | Kill | Conserve | Monitor | Support | Help | Ignore | Let them die off |
|---|---|---|---|---|---|---|---|
| Trap | .70*** | -.23** | .15 | -.20* | -.24** | .12 | .49*** |
| Kill | | -.31*** | .08 | -.31*** | -.30*** | .20* | .61*** |
| Conserve | | | .46*** | .59*** | .60*** | -.06 | -.47*** |
| Monitor | | | | .44*** | .49*** | -.14 | -.13 |
| Support | | | | | .79*** | -.26** | -.49*** |
| Help | | | | | | -.18* | -.44*** |
| Ignore | | | | | | | .34*** |

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

*Animals Mentioned as Similar to Wallons by Condition, Study 1*

| | | | Condition | | | |
|---|---|---|---|---|---|---|
| | Freq. | % | High Warmth High Competence | Low Warmth High Competence | High Warmth Low Competence | Low Warmth Low Competence |
| Wolf | 28 | 17.0 | 23.5 | 12.8 | 15.2 | 17.4 |
| Dog | 19 | 11.5 | 14.7 | 5.1 | 19.6 | 6.5 |
| Koala | 14 | 8.5 | 2.9 | 7.7 | 10.9 | 10.9 |
| Opposum | 8 | 4.8 | 11.8 | 2.6 | 4.3 | 2.2 |
| Goat | 6 | 3.6 | 0.0 | 7.7 | 2.2 | 4.3 |
| Rat | 5 | 3.0 | 2.9 | 0.0 | 2.2 | 6.5 |
| Racoon | 5 | 3.0 | 8.8 | 2.6 | 0.0 | 2.2 |
| Sloth | 5 | 3.0 | 0.0 | 0.0 | 4.3 | 6.5 |
| Sheep | 4 | 2.4 | 0.0 | 2.6 | 2.2 | 4.3 |
| Donkey | 4 | 2.4 | 0.0 | 7.7 | 0.0 | 2.2 |
| Fox | 4 | 2.4 | 0.0 | 2.6 | 4.3 | 2.2 |
| Cat | 3 | 1.8 | 2.9 | 0.0 | 4.3 | 0.0 |
| Monkey | 3 | 1.8 | 2.9 | 2.6 | 2.2 | 0.0 |
| Beavers | 3 | 1.8 | 2.9 | 5.1 | 0.0 | 0.0 |
| Rabbit | 3 | 1.8 | 0.0 | 2.6 | 2.2 | 2.2 |
| Hyena | 3 | 1.8 | 0.0 | 2.6 | 0.0 | 4.3 |
| Wombat | 3 | 1.8 | 0.0 | 5.1 | 2.2 | 0.0 |
| Wolverine | 2 | 1.2 | 0.0 | 2.6 | 0.0 | 2.2 |
| Bear | 2 | 1.2 | 0.0 | 2.6 | 0.0 | 2.2 |
| Marmot | 1 | .6 | 2.9 | 0.0 | 0.0 | 0.0 |
| Squirrell | 1 | .6 | 0.0 | 2.6 | 0.0 | 0.0 |
| Capybara | 1 | .6 | 0.0 | 2.6 | 0.0 | 0.0 |
| Mouse | 1 | .6 | 2.9 | 0.0 | 0.0 | 0.0 |
| Weasel | 1 | .6 | 2.9 | 0.0 | 0.0 | 0.0 |
| Rooster | 1 | .6 | 2.9 | 0.0 | 0.0 | 0.0 |
| Cheetah | 1 | .6 | 2.9 | 0.0 | 0.0 | 0.0 |
| Lion | 1 | .6 | 0.0 | 2.6 | 0.0 | 0.0 |
| Muskrat | 1 | .6 | 0.0 | 2.6 | 0.0 | 0.0 |
| Walrus | 1 | .6 | 0.0 | 2.6 | 0.0 | 0.0 |
| Mink | 1 | .6 | 0.0 | 2.6 | 0.0 | 0.0 |
| Kangaroo | 1 | .6 | 0.0 | 0.0 | 2.2 | 0.0 |
| Elephant | 1 | .6 | 0.0 | 0.0 | 2.2 | 0.0 |
| Lemming | 1 | .6 | 0.0 | 0.0 | 2.2 | 0.0 |
| Yak | 1 | .6 | 0.0 | 0.0 | 2.2 | 0.0 |
| Gopher | 1 | .6 | 0.0 | 0.0 | 2.2 | 0.0 |
| Cow | 1 | .6 | 0.0 | 0.0 | 0.0 | 2.2 |
| Groundhog | 1 | .6 | 0.0 | 0.0 | 0.0 | 2.2 |
| Coyote | 1 | .6 | 0.0 | 0.0 | 0.0 | 2.2 |
| Mole | 1 | .6 | 0.0 | 0.0 | 0.0 | 2.2 |
| Panda bear | 1 | .6 | 0.0 | 0.0 | 0.0 | 2.2 |
| Don’t know | 6 | 3.6 | 2.9 | 5.1 | 2.2 | 4.3 |
| No answer | 14 | 8.5 | 8.8 | 5.1 | 10.9 | 8.7 |

Table 4

*Emotion Means by Condition, Study 1*

| Warmth | Competence | Fondness | $\psi$ | Delight | $\psi$ | Disgust | $\psi$ | Contempt | $\psi$ | Neutral | $\psi$ | Indifference | $\psi$ | Awe | $\psi$ | Threatened | $\psi$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High | High | **6.41** (1.76) | +3 | **6.15** (1.67) | +3 | 2.71 (2.02) | -1 | 2.79 (1.95) | -1 | 5.38 (1.76) | -1 | 5.48 (1.89) | -1 | 5.44 (1.99) | -1 | 3.26 (2.34) | -1 |
| High | Low | 5.85 (2.08) | -1 | 5.46 (1.86) | -1 | 2.33 (1.38) | -1 | 2.98 (1.92) | -1 | 6.04 (1.98) | +3 | 5.91 (2.06) | +3 | 3.93 (1.91) | -1 | 2.50 (1.75) | -1 |
| Low | High | 4.68 (2.04) | -1 | 4.26 (2.01) | -1 | 3.66 (1.94) | -1 | 3.66 (1.98) | -1 | 6.38 (1.85) | -1 | 5.58 (1.88) | -1 | 4.08 (2.02) | +3 | **4.87** (2.31) | +3 |
| Low | Low | 3.00 (1.99) | -1 | 2.80 (1.85) | -1 | **4.49** (2.31) | +3 | **4.89** (2.42) | +3 | 5.59 (2.07) | -1 | 5.50 (2.27) | -1 | 3.47 (2.16) | -1 | 4.36 (2.72) | -1 |

*Note.* By Column, bolded means significantly differ from other means at $p < .001$ (Standard deviations are in parentheses). The column $\psi$ refers to contrast weights used in analyses.

Table 5

*Means in Perceived Benefit and Intent by Scenarios, Pilot Study (N = 159)*

| Dimension | Scenario | $M_{benefit}$ | *SD* | $M_{intent}$ | *SD* |
|---|---|---|---|---|---|
| Passive Facilitation | Relocation | 4.26 | 1.68 | 4.31 | 1.73 |
| | Restricted areas | 4.49 | 1.68 | 5.43 | 1.64 |
| Active Facilitation | Budget | 5.50 | 1.37 | 5.66 | 1.42 |
| | Campaign | 5.71 | 1.31 | 5.95 | 1.40 |
| Active Harm | Biological research | 2.70 | 1.78 | 5.65 | 1.58 |
| | Fighting animals | 2.21 | 1.59 | 5.94 | 1.52 |
| Passive Harm | Vaccines | 3.69 | 1.58 | 3.84 | 1.82 |
| | Accidental mortality | 2.45 | 1.54 | 4.19 | 1.97 |

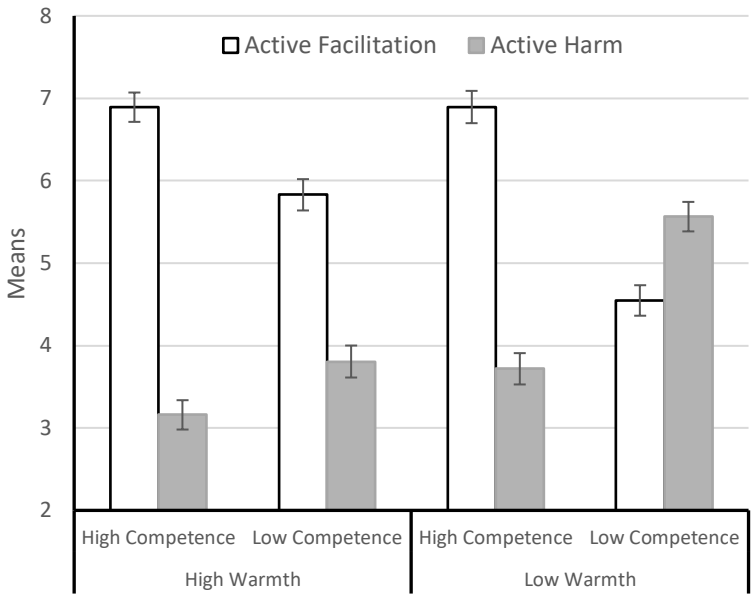


*Figure 1.* Means in Active Facilitation and Harm Scenarios by Warmth and Competence Stereotypes, Study 2

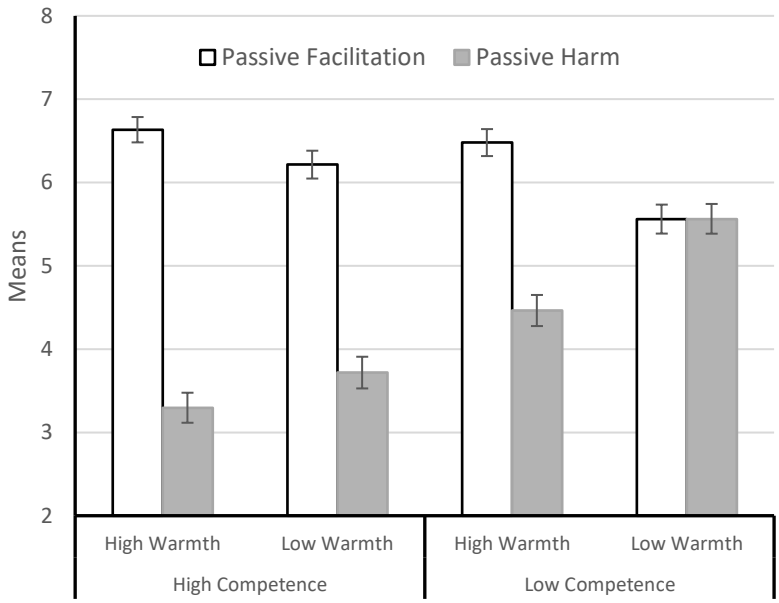


*Figure 2.* Means in Passive Facilitation and Harm Scenarios by Warmth and Competence Stereotypes, Study 2

# Appendix

## *Behavioral Scenarios, Study 2*

### *Active Facilitation*

Campaign Scenario: Care-taking across animals' lives

Some sectors in society have suggested a National Health Campaign for animals. This Campaign endorses long-term care-taking across animals' lives. Included benefits of such plan would be mainly veterinary attention and active medical and behavioral research to improve their lives. To what extent you agree or disagree with such a plan for each of the following animals.

Budget Scenario: Improving animals' living conditions

Everyday governmental and non-governmental environmental agencies make decisions about budget allocation to various animal species. For example, they might or might not address some animals' habitat loss and degradation. All the animals presented below are animals that could be the target of financial resources to improve their living conditions. To what extent do you agree or disagree about distributing financial resources among different organizations that aim to support each of the following animals.

### *Passive Facilitation*

Restricted areas scenario

People enjoy watching animals in parks, recreation areas, and restricted territories. Sometimes the zoo population may allow a species to survive extinction. To what extent you agree or disagree about developing this type of installation for the following animals.

Relocation scenario

Frequently, human needs conflict with animal needs. Human population expansion decreases the land and water available for virtually every animal species. The consequences of the lack of space are ameliorated by costly measures such the relocation of species to other areas or the reintroduction of species in their original areas. Do you agree or disagree that people should share their spaces with the following animals, just getting along with each other in the same areas?

### *Active Harm*

Biological research scenario

It is common in biological research to use animals for testing, for example, their sensory and physical abilities, the function of their body organs, their reactions to different chemicals, etc. Some practices of biological research can harm the animal being tested (pain, loss of weight, stress). However the research is often important enough to be conducted. Below there is a list of animals that may be under study. Please rate to what extent you agree or disagree about studying these animals even if they would suffer some harm.

Fighting animals scenario

Sometimes animals cause problems for humans (damage to private property, endangering safety, spreading disease, causing car accidents, being aggressive). Humans may take action against them. To what extent do you agree or disagree about fighting (to shoot, trap, poison, euthanize, eliminate...) the following animals.

### *Passive Harm*

Vaccines scenario

In nature, several types of virus affect non-human animals only, so there is no case for these viruses affecting human beings. Diseases carried by these viruses can entail suffering several symptoms (hearing impairment, low responsiveness, increased sleeping, low-level discomfort). However, being infected by these viruses does not necessarily mean death for the infected animals. Usually, vaccines against these viruses can not be given to every animal species. To what extent should we let nature take its course with the following animals' natural viruses? Below is a list of animals, please rate how much you agree or disagree that people should leave these animals alone and let nature take its course?

Accidental mortality scenario

Because humans and animals share the same spaces, inevitably, almost every animal may get involved in accidents (cross electrified fences, hit by a car, entangled in fishing gear, damaged by tourists). Accidental mortality is one of the issues that animals may face. If one of these animals has an accident with a human, do you agree or disagree that the animal should be ignored, because this is just an unlucky situation, and not much can be done?

[1] Twenty-five participants were related to animals: chef, biology students and professionals, veterinary, and farm occupations. Additionally, four participants failed to follow experimental instructions properly (Oppenheimer, Meyvis, & Davidenko, 2009). These participants were excluded from the analyses.

[2] Less than 1.8% of the total sample ($N$ = 3) chose this option for an emotion or behavioral tendency, which indicates that participants did not find the ratings unusual.

[3] Databases and questionnaires are available upon request to authors.

[4] In the same way that social groups are diverse in their skillfulness (more intellectual or manual skills), animals are also diverse. In fact, the learning capacity of some animals (monkeys) or the specific strategies to survive (group coordination or elaborate strategies for hunting) may be viewed as differences in skills between animal species. People found rating animals regarding skillfulness unproblematic in previous research (Sevillano & Fiske, 2016). Other research has successfully explored people's perception of animals' skills: Gray, Gray, and Wegner (2007); Haslam, Kashima, Loughnan, Shi, and Suitner (2008); Weisman, Dweck, and Markman (2017).

[5] Participants working on farms, at zoos or in veterinary hospitals were excluded from Study 2 ($N$ = 37).

[6] Participants who took more than 35 min to complete the survey were excluded. The exact completion times were as follows: 35, 36, 45 and 240 min. Since a paragraph describing the behavior was shown before rating the animals, it was important to conserve this priming effect. Using the common rule of 2.5 SD for considering outliers, we excluded these four participants.

[7] The *does not apply* option was chosen by 1 to 2 participants (1–3%) for behavioral scenarios except for *Vaccines* and *Budget scenarios*; *does not apply* was not selected by any participant for these scenarios. Additionally, the *does not apply* option was ascribed to whale by 4 participants (7%) in the *Relocation scenario*.