

RUNNING HEAD: Animals as Social Objects

Animals as Social Objects: Groups, Stereotypes, and Intergroup Threats

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### **Abstract**

Nonhuman animals are typically excluded from the scope of social psychology. This article presents animals as social objects—targets of human social responses—overviewing the similarities and differences with human targets. The focus here is on perceiving animal species as social groups. Reflecting the two fundamental dimensions of humans' social cognition—perceived warmth (benign or ill intent) and competence (high or low ability), proposed within the Stereotype Content Model (Fiske, Cuddy, Glick, & Xu, 2002)—animal stereotypes are identified, together with associated prejudices and behavioral tendencies. In line with human intergroup threats, both realistic and symbolic threats associated with animals are reviewed. As a whole, animals appear to be social perception targets within the human sphere of influence and a valid topic for research.

*Keywords:* social cognition, animals, stereotypes, warmth, competence, prejudice, social groups

Society has made as many different types of men as there are varieties in zoology. The differences between a soldier, a workman, a statesman, a tradesman, a sailor, a poet, a pauper and a priest, are more difficult to seize, but quite considerable as the differences between a wolf, a lion, an ass, a crow, a sea-calf, a sheep, and so on. (Honoré de Balzac, 1842/2008)

Nonhuman animals<sup>1</sup> are a challenge for the field of social psychology. Whereas social psychology deals with the personal, interpersonal, group, and intergroup facets of human beings (e.g., person perception, stereotypes, close relationships, pro-social behavior), it is unclear whether animals could be legitimately included within the scope of the field—that is, whether humans might consider animals also as *social beings* in relation to our own species.

This review examines the status of animals as social beings, albeit nonhuman. Firstly, we introduce the conception of *social* underlying this review and the relevance of animals to it. Then, this article reviews evidence regarding similarities between social perception of animal and human targets, leading to the conclusion that human beings perceive animals similarly to the way they perceive other humans. We further examine how animal species are perceived as if they were social groups. Guided by the Stereotype Content Model (SCM; Fiske et al., 2002), stereotypes of animal groups are identified, together with associated prejudices and behavioral tendencies. Finally, to explain the stereotypes, perceived realistic and symbolic threats posed by animals are reviewed. Globally, animals emerge as social perception targets within the human sphere of influence.

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<sup>1</sup> For simplicity's sake, we will use the term animals to refer to nonhuman animals throughout the paper.

Broadly, two central themes underlie this review: the meaning of the social facet of beings (human and nonhuman) and the suitability of framing animals within humans' social processes.

### **What Makes a Being Social?**

There are two possible types of answer to this question. One concerns general assumptions about the intrinsically social nature of human beings among themselves: gregariousness (Aristotle, 348-322 BCE/1897), mutual influence (Aronson, 2012), pro-sociality (Batson, 1990), adaptation to group living (Fiske, 2010), language and sentiments (Leyens et al., 2003). Ultimately, social psychology topics are examples of the social nature of human beings to the extent that the processes imply *other people* (conspecifics). In this sense, some animals are more social than others, depending on how the species relates to other members of its own kind. Pack and herd animals are especially social, for example.

Alternatively, the sociality issue can treat the being as an animal, but as social with respect to humans. In considering *what makes an animal social*, a second type of answer then comes into play. What makes an animal social for humans is the possibility that people consider animals as a social target, that is, included as one instance of collective human perception processes. Targets of social processes are typically humans (Kwan & Fiske, 2008): People socially perceive *other people and human groups* in ways that differ from their perception of inanimate objects. Social responses—such as mentalizing inferences, empathic reactions, pro- and anti-social behaviors, stereotypes, prejudice, discrimination, group processes—then are directed toward humans. The question here is: *Are animals also targets of human social responses such as mentalizing inferences, empathic reactions, pro- and anti-social behaviors,*

*prejudice, discrimination, or group processes?* This review answers this question affirmatively (see also Amiot & Bastian, 2015).

### **Why Are Animals Special?**

To be sure, human qualities can seemingly *come to life* in virtually any entity. For example, by anthropomorphizing it (Epley, Waytz, & Cacioppo, 2007; Heider & Simmel, 1944), inanimate entities become *beings* with which to interact, as with human beings. Beyond anthropomorphism as a general functional human capacity, however, animals hold a privileged position in comparison to other living beings (e.g., plants) or inert objects, suggesting that animals are special. The human visual system is adept at detecting animals in the environment (New, Cosmides, & Tooby, 2007). Pre-school children differentiate between types of information relevant for categorizing animals and artifacts (Greif, Nelson, Keil, & Gutierrez, 2006). Moreover, domain-specific knowledge (animate-inanimate) may differentiate animals and humans from other objects (e.g., Caramazza & Shelton, 1998; Mahon, Anzellotti, Schwarzbach, Zampini, & Caramazza, 2009).

As one explanation for animals' privileged role in human perception, animals show several characteristics that make them seem similar to human beings and therefore eligible as social targets. For example, within one social cognitive framework, the Stereotype Content Model, its main human-directed constructs may also pertain to animals as object of social perception: perceived intent, agency, status, and interdependency (for a similar model in dehumanization literature, see also Hodson, McInnis, & Costello, 2014). Various animals indeed are perceived as having intent (hostile or friendly) and agency, the capacity to perform purposeful actions<sup>2</sup> (Knight, Vrij, Bard, & Brandon, 2009; Rajecki, Rasmussen, & Conner, 2007;

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<sup>2</sup> In social sciences, the term agency has been used with different meanings: as the capacity to act intentionally and autonomously (Heider, 1958; Morris, Menon, & Ames, 2001) or as a subjective experience, involving agency when

cf. Gray, Gray, & Wegner, 2007) with regard to humans. Moreover, animals are part of human society in a variety of areas: the food industry, therapeutic use, companion animals, entertainment. Thus, animal species hold higher or lower positions in society (status differences) and cooperate or conflict with humans (interdependence differences). In these ways, animals seem like social targets of perception both because people see them as having social characteristics (intent, agency) and because they are located within the same kind of social structures (interdependence, status).

### **Animals as Social Targets**

We now review evidence indicating that animals can be social targets, as mentioned above (for a more comprehensive approach not restricted to social psychology, see the recent review by Amiot & Bastian, 2015). When discussing the question of animals as social targets, we highlight the bidirectionality of human-animal social perception. Thus, animals are affected by, but they also affect social perception processes.

### **How Do Humans Perceive Animals Socially?**

In some ways, people socially perceive animals similarly to the way we perceive humans. Several social cognition principles illustrate this overlap. When thinking about animals, human beings show a positivity bias (Sears, 1983) toward them: the more similar to humans, the more positively evaluated the animal is (Eddy, Gallup, & Povinelli, 1993; Knight et al., 2009; Kellert & Berry, 1980; Plous, 1993; Rajecki, Rasmussen, Sanders, Modlin, & Holder, 1999; Rajecki et al., 2007).

When attempting to explain animal behavior, moreover, attributions toward animals resemble attributions about humans (Karaz & Perlman, 1975): For example, horses consistently

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individuals come to subjectively experience their actions in terms of internal factors (Miller, Das, & Chakravarthy, 2011). Following agentic-communal distinctions (Bakan, 1966), we use the term agency here as the capacity to perform actions.

winning races were perceived as the originators of their behavior (dispositional attributions to the horse), in contrast to less consistent outcomes. This result is in line with the finding for human targets that high behavioral consistency helps generate specific dispositional attributions—namely, to personality and capability (McArthur, 1972).

Regarding the social perception of mental capacities specifically, animal targets are, like humans, seen as having them. Comparing animals with human beings (and other entities) in mind perception—inferences about another's mental states and capacities—animals are perceived as especially high on the *experience dimension* (the capacity to feel pain, to be aware) but not on the *agency dimension* (the capacity of moral reasoning, memory) (Gray et al., 2007; Rasmussen, Rajecki, & Craft, 1993). Meat animals deserve special comment here. People ascribe fewer mental capacities and less moral status to those animals (Bastian, Costello, Loughnan, & Hodson, 2012; Bratanova, Loughnan, & Bastian, 2011; Loughnan, Bastian, & Haslam, 2014)—although this is affected by diet habits (Bilewicz, Imhoff, & Drogosz, 2011) and ideological beliefs (Dhont & Hodson, 2014).

More generally, animals are often anthropomorphized—attributed human psychological characteristics (Epley et al., 2007; Povinelli, 1997). Not only are animals perceived as human-like but, relevant to the perspective taken in this review, the motivation for considering animals as more human is strongly social (e.g., see core social motives; Fiske, 2010): Anthropomorphism is increased by a sociability motive—the need for social connections—and an effectance motivation—the need for interacting effectively, in this case with nonhuman agents (Epley, Akalis, Waytz, & Cacioppo, 2008; Epley, Waytz, Akalis, & Cacioppo, 2008; Waytz, Morewedge, Epley, Monteleone, Gao, & Cacioppo, 2010).

Related also to individual differences in interpersonal perception, the attributional style shown by individuals perceiving other individuals remains stable when perceiving animals: People who perceive humans as generally benevolent and gifted also tend to perceive dogs in the same way (Kwan, Gosling, & John, 2008).

Turning to perceived individual differences among targets, physical stereotypes influence human perception of animals, much as they do for people. Physical human stereotypes can start with observing baby faces (large eyes, round face, thin eyebrows, small nose bridge) and attributing childlike traits to baby-faced people (Zebrowitz & Montepare, 1992). They also can start with physical attractiveness generating positive evaluations and behavior (Dion, Berscheid, & Walster, 1972). Similarly, more attractive animals (foxes, lions) were perceived more favorably than less attractive animals; and more baby-faced animals were perceived more favorably and as less dominant than less baby-faced animals (Zebrowitz, Wadlinger, Luevano, White, Xing, & Zhang, 2011).

Finally, animals (especially pets) are perceived as participating in a counterpart of a close relationship. As in close human relationships, companion animals offer a source of social support that is equivalent to parent and sibling support, although not as much as that of a best friend (McConnell et al., 2011). Owners include companion animals in the self (Aron, Aron, & Smollan, 1992) to the same extent as siblings, although less than parents and best friends (McConnell et al., 2011). There is experimental (Allen et al., 1991; Zilcha-Mano, Mikulincer, & Shaver, 2012) and correlational evidence (Kurdek, 2008, 2009; Kwong & Bartholomew, 2011) showing that the human-pet bond meets the criteria for being perceived as an attachment bond (Hazan & Shaver, 1994).



In summary, human beings show a positivity bias toward animals, make dispositional attributions about their behavior, perceive them as having a mind in the same manner as humans, anthropomorphize them, hold physical appearance stereotypes of them, and maintain close relationships with them. Thus, human social perception processes treat animals similarly to humans in some ways, but animals' specific characteristics also affect human social perceptions of them, as we will review next.

### **How Are Humans Socially Affected by Animals?**

People are socially affected by animal characteristics. Humans who physically resemble animals are attributed those animal traits (e.g., a leonine person, physically similar to a lion's face, will be judged as cold and dominant; Zebrowitz et al., 2011), a process termed *reverse anthropomorphism*. In a study of humans' sex-differentiating macaques (Franklin, Zebrowitz, Fellous, & Lee, 2013), the similarity of sexually dimorphic qualities (e.g., wider faces and larger jaw structures in males) between macaques and humans allows human observers to generalize from human dimorphic cues to judge the sex of macaques. Some animal stereotypes automatically influence human behavior. Participants primed with dog images (stereotypically loyal animals) behaved with more loyalty to their friends (Chartrand, Fitzsimons, & Fitzsimons, 2008). Priming studies show that a person primed with fast animals (e.g., a cheetah) will walk faster (Aarts & Dijksterhuis, 2002); and a person primed with cute animal images will focus attention more (Nittono, Fukushima, Yano, & Moriya, 2012). Animals are used for derogating out-groups (Haslam & Loughnan, 2014; Leyens et al., 2003): attributing to them simplistic emotions and uncivilized manners.

### **Animal-Human Influences Are a Two-Way Path**

As reviewed, evidence indicates that the principles of human social perception are relevant to perceiving animals (positivity bias, dispositional attributions, mind perception, anthropomorphism, physical stereotypes, close relationships). Contrariwise, people are also affected by animals' characteristics, in: reverse anthropomorphism, automatic influence of stereotypes, priming effects, and outgroup derogation using animal characteristics. What does this tell us about social perception research? Some authors argue that processes such as anthropomorphism are a special case of social perception dealing with animals (Kwan et al., 2008). Broadly speaking, when people perceive animals, they may generalize from perceiving humans to perceiving animals (Franklin et al., 2013). Similarly, Epley et al. (2007, p. 867) state: "Anthropomorphism itself involves a generalization from humans to nonhuman agents through a process of induction, and the same mental processes involved in thinking about other humans should also govern how people think about nonhuman agents."

Thus, *human beings are equipped with a set of social perception tools and generalize their use toward nonhuman animals*. That is, human beings turn animals into social beings. The conditions under which human-to-animal generalizations are more probable should be made explicit (e.g., behavioral or physical cue validity in animals and humans; similar status of animals and humans when comparing companion/owner/keeper relationships). If the use of these social-perception tools has consequences for human-animal interactions, it will be worthwhile to study them. We now focus on a social area of special interest for human-animal interactions: groups, stereotypes, and intergroup threats.

### **Animals as Socially Constructed Types**

Further exploring the idea of animals as social beings, in this section, we consider animal species perceived as human socially constructed groups, leading humans to have a variety of systematic stereotypes, prejudices, and threats associated with animals.

### **Animal Species Seen as Social Groups**

When people consider animals or plants, we tend to think at the collective or species level (Medin & Atran, 2004). The notion of species leads naturally to perceiving the characteristics of groups, animal or human, as essentialistic (fixed, intrinsic) and as entitative (real, coherent things).

Both human and animal groups appear to human perceivers to be coherent entities. Whereas human collectives are perceived as groups because they show *entitativity*—the quality of being a meaningful object, based on similarity, common fate, and proximity among group members (Campbell, 1958)—animal species (dogs, tigers) are perceived as groups because they are *natural kinds*: real categories in physical or biological terms (e.g., water, tiger; Putnam, 1970/1975; Schwartz, 1980). Both human and animal groups are perceived as having an essence, human groups as socially constructed (Haslam, Rothschild, & Ernst, 2000; Miller & Prentice, 1999; Prentice & Miller, 2007; Rothbart & Taylor, 1992; Yzerbyt, Rogier, & Fiske, 1998) and animal groups as biological (Gelman & Markman, 1986; Medin & Atran, 2004).

Animals possess what we call *cognitive entitativity* because, as species, their natural kinds are rooted in biological bases. This cognitive entitativity can shift to *social entitativity*—the quality of being perceived as social object—in situations of human-animal conflict because perceived conflict can increase the social reality of out-groups (Fiske, 2010). For example, wolves can be considered as an out-group for the inhabitants of certain places (e.g., Minnesota in the U.S., Cantabria in Spain) where there is conflict over shared resources (land, prey) (Blanco &

Cortés, 2001; Kellert, Black, Rush, & Bath, 1996). But in other areas without conflict, animals function as an out-group may be questionable (Williams, Ericsson, & Heberlein, 2002). (This will be elaborated later.)

### **Animal Stereotypes**

Referring to social categorization processes, Tajfel (1981) stated that, without specific knowledge about an individual, people ascribe to those individuals the characteristics derived from knowing about other members of their class. This is also true in the case of animal species.

The Western adage *dog is man's best friend* exemplifies how a category (*dog*) is associated with a stereotype (*friendliness*). The friendliness of dogs is a stereotype because it is shared at a societal level and applies to all members of the dog category (Dovidio & Gaertner, 2010; Tajfel, 1981). From a functional perspective (Jost & Major, 2001), such a positive stereotype justifies positive evaluations of dogs (favorable *prejudices*) and the behaviors toward them are also positive (loving and caring, *advantageous discrimination*). Admittedly, to explain positive beliefs about dogs and maybe see such stereotypes as extraneous, some writers appeal to the extraordinary communication capacities of dogs (Hare, Brown, Williamson, & Tomasello, 2002) and the tradition of dogs as companion animals in North America and Europe (Grier, 2006; Thomas, 1984). Nevertheless, the point is that intergroup contexts (e.g., culture) determine collective beliefs (stereotypes) about nonhuman species. Contrary to Western cultural expectations, dogs are eaten in Korea (Podberscek, 2009), not kept as companion animals; and in South Africa they are killed as pests (Lindsey, du Toit, & Mills, 2005). Also, different perceptions of distinct dog breeds are observed (Mae et al., 2004).

### ***Stereotype Content Model for Animal Targets***

Within one framework, this section briefly reviews stereotypes, associated affective responses (prejudice), and behavioral tendencies<sup>3</sup> toward animals. Threats to human beings posed by animals are also discussed through the lens of intergroup threats.

The Stereotype Content Model (SCM; Fiske et al., 2002) proposes a theoretical framework that integrates two basic and apparently universal dimensions of social perception, namely warmth or perceived intent (What is the intention—good/bad—of another person/group?) and competence or ability and general capacity (What resources—abilities, power—does a person/group have at their disposal to achieve their goals?). The joint consideration of both dimensions implies a four-quadrant space that maps the relative positions of the different social groups.

- Stereotyped groups in the high-warmth/high-competence quadrant are reference groups (in-group and allied groups, e.g., a country's citizens);
- Stereotyped groups in the low-warmth/low-competence quadrant are groups seen as having no positive function in society (e.g., homeless people).

Groups placed in the high-warmth/low-competence and low-warmth/high-competence quadrants receive ambivalent stereotypes that reveal both positive and negative beliefs about them:

- High-warmth/low-competence groups are perceived as pursuing non-threatening goals but with no capacity to attain them (e.g., older people),
- and low-warmth/high-competence groups are seen as pursuing threatening goals plus the capacity to attain them (e.g., rich people).

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<sup>3</sup> We acknowledge that conceptualization of certain practices as discriminatory behaviors—“inappropriate treatment of individuals because of their group membership” (p. 1085; Dovidio & Gaertner, 2010), when directed toward animals—implies taking into account ideological and cultural variables. We refer to human behavioral tendencies directed toward different animal species; the appropriateness or inappropriateness of these tendencies are not implied.

This functionalistic approach is also relevant in the context of animals (Kwan & Cuddy, 2008; Sevillano & Fiske, 2015). Animals explore, attack, or ignore humans. As a result, the identification of animals' intentions (warmth) has implications for the way humans interact with them: To be aware of an imminent attack by an animal would imply defensive or avoidant behavior toward it. But animals also present diverse capacities (competence) to carry out their intentions (e.g., size, strength, natural weapons).

Animal species seem to suffer from inequality (Arluke & Sanders, 1996). Whereas some are accepted (e.g., dogs), others are rejected (e.g., rats). Intermediate positions include those useful as food, but uninteresting, without special sensory and physical abilities (e.g., cows); and those interesting, with extraordinary physical attributes, but fearsome (e.g., lions). The different positions (status differences) that animals hold and their degree of conflict with humans (cooperation differences) relate to the contexts in which animals are present (e.g., food industry, therapeutic use, companion animals, entertainment) within the human social structure. In the following, we consider stereotypes of animals within this framework attending to warmth, competence, status, and interdependence differences among them.

***Subordination stereotype: Farm animals, rabbits, and birds.*** Farm animals (pigs, cows) and other animals such as rabbits or birds are perceived as lacking physical or cognitive abilities (Eddy et al., 1993; Herzog & Galvin, 1992; Knight et al., 2009; Kwan & Cuddy, 2008; Sevillano & Fiske, 2015). Also, they do not have a special or privileged position among animals, which their consideration as a tool (human consumption; Lerner & Kaloff, 1999) would appear to indicate. Caged animals are perceived as tame and passive compared to wild animals (Finlay et al., 1988), and this view of animals has been referred to as disrespecting them (Coe, 1985; Maple, 1983; Hutchins, Hancoks, & Crockett, 1984, cited in Finlay et al., 1988; Sommer, 1972).

Caging or corralling reinforces the *per se* tame tendencies of farm animals, so they are perceived as showing inoffensive intentions toward humans. These beliefs (low intelligence, low status, inoffensive tendencies) may conform to an ambivalent subordination stereotype of those animals (a *dependent* image in terms of Alexander, Brewer, & Herrmann, 1999; high-warmth/low-competence stereotype in terms of Fiske et al.'s SCM, 2002), because they include both positive and negative beliefs.

These animals may evoke in people feelings of indifference and human superiority (Coe, 1985; Hutchins et al., 1984, cited in Finlay et al., 1988; Sevillano & Fiske, 2015), leading people to subordinate them condescendingly.

***Threatening-awe stereotype: Wolves, lions, bears, and coyotes.*** Certain prototypic carnivorous animals (lions, wolves, bears) are seen as aggressive (e.g., wolves as recreational killers), highly intelligent, and dominating other animals (Eddy et al., 1993; Kellert et al., 1996; Kellert, 1985; Sevillano & Fiske, 2015; Skogen, 2001). Some characteristics of these animals are a source of wonder (e.g., beauty; Kellert et al., 1996). These beliefs (intelligence, high status, and aggressive tendencies) may conform to a threatening-awe stereotype that is ambivalent (*enemy* image in the terms of Alexander et al., 1999; low-warmth/high-competence stereotype in terms of Fiske et al.'s SCM, 2002). This ambivalent stereotype has frequently provided a topic for literature and films (e.g., the novel *Moby Dick*, the film *The Bear*).

Large carnivorous animals (lions, cheetahs, hyenas, wild dogs, wolves, bears) are evaluated negatively worldwide (Southern Africa, Lindsey et al., 2005; Europe, Blanco & Cortés; North America, Kellert et al., 1996), but these animals are also an aesthetic and natural source of wonder. Correspondingly, emotions linked to these animals are fear, fascination, and awe (Bixler & Floyd, 1997; Curting, 2009; European Association of zoos and aquaria [EAZA]-

European Carnivore Campaign, 2008; Kaplan & Kaplan, 1989; Kellert et al., 1996; Knight, 2008; Koole & Van der Berg, 2005; Korpela, Hartig, Kaiser, & Furher, 2001; Perkins, 2010; Sevillano & Fiske, 2015; Van der Berg & Ter Heijne, 2005; Williams & Harvey, 2001). Human behavioral tendencies toward these animals include hunting, persecuting, and exterminating (Lindsey et al., 2005; EAZA-European Carnivore Campaign, 2008; Sevillano & Fiske, 2015), depending on the threat evoked. The Large Carnivorous Initiative for Europe [LCIE] summarizes this point clearly: “Large carnivores carry with them a cultural history of fear and hate [...] As a result there is still prejudice against the carnivores which is often expressed through illegal killings” (European Commission, 2009). Confinement in recreational settings (circus, zoo) is especially relevant for these animals because of the fascination they provoke (Tafalla, 2005).

***Contemptible stereotype: Invertebrates, rodents, and reptiles.*** Invertebrates (insects, spiders, ants, bugs, cockroaches, crabs), mice, rats, and reptiles (lizards, snakes) are attributed low cognitive (Eddy et al., 1993; Knight et al., 2009; Herzof & Galvin, 1992; Sevillano & Fiske, 2015) and affective/experiential capacities (Kellert, 1993; Herzof & Galvin, 1992). Generally, these animals are not allowed to interact with humans, which reflect their low status relative to other animals. Some of them are common phobic stimuli (e.g., snakes; Ohman & Mineka, 2003) and carriers of illness (bubonic plague through rats), so these animals are perceived as a threat to humans because of their harmful characteristics. These beliefs (low intelligence, low status, and harmful tendencies) may conform to a contemptible stereotype in terms of Fiske et al.’s SCM (2002).

Animals as phobic stimuli and carriers of illness imply a negative evaluation. Also, generally, invertebrates are disliked and feared (Bennett-Levy & Marteau, 1984; Kellert, 1993). Snakes, rats, and cockroaches are considered disgusting (Haidt, McCauley, & Rozin, 1993;



Knight, 2008; Miles & Clarke, 1993; Sevillano & Fiske, 2015). Thus, these animals evoke the most negative emotions: fear and disgust. Associated behaviors are aversion and extermination (Kellert, 1993; Sevillano & Fiske, 2015).

***Protective stereotype: Dogs, cats, horses, dolphins, chimpanzees, and monkeys.*** Cultural representations of animals in literature portray dogs and horses as protectors of humans (Oswald, 1995), and as especially friendly and competent (*dog is man's best friend*; the Houyhnhnms, noble horses showing the greatest sense of benevolence and intelligence in the novel *Gulliver's Travels*). Dogs, cats, horses, dolphins, and chimpanzees are perceived as similar to humans in cognitive abilities (Eddy et al., 1993; Herzog & Galvin, 1992; Sevillano & Fiske, 2015) and experiential capacities (e.g., fear, pain; Gray et al., 2007; Knight et al., 2009). Some of these animals perform important work for humans (therapeutic and police use; Bachi, Terkel, & Teichman, 2012) and are considered as companion animals and included in human events (Belk, 1996; Hickrod & Smith, 1982) and family activities (Franklin, 2007), providing them with a privileged position or high status among animals. These beliefs (intelligence, high status, and friendliness) may constitute a mutually protective stereotype (*ally* image as in Alexander et al., 1999; high-warmth/high-competence stereotype in terms of Fiske et al.'s SCM, 2002). Evaluations of these animals are positive (El-Alayli, Lystad, Webb, Hollingsworth, & Ciolli, 2012), and associated emotions are affection and love (Fatjó & Calvo, 2014; Belk, 1996; Driscoll, 1995; Sevillano & Fiske, 2015).

Human behaviors associated with these animals are facilitative (protecting, cooperation) (Sevillano & Fiske, 2015). The consideration of companion animals as being like children (Fatjó & Calvo, 2014) reinforces these behaviors. Initiatives such as online platforms about caring for companion animals, or the Great Ape Project, an international movement to guarantee the basic

rights to life, freedom, and non-torture of the nonhuman great apes ([www.projetogap.org](http://www.projetogap.org)), are examples of human actions toward these animals.

### **Animal Threats**

In this section, the types of intergroup threats applicable to animals, based on empirical evidence, are reviewed when available. Hostility toward animals may come from different sources: realistic and symbolic threats.

***Realistic threat.*** In a human inter-group context, realistic threat is defined as *a perceived threat to the resources available in a group and to the group welfare (its physical integrity)* (Stephan, Renfro, Esses, Stephan, & Martin, 2005). Certain species of animals constitute a realistic threat in both senses. Conflicts that arise with the large carnivorous animals are defined in terms of conflicts for resources (European Commission, 2009; Kellert et al., 1996; Naughton-Treves, Grossberg, & Treves, 2003). Paradigmatically, wolves compete with farmers and ranchers for the available prey (cattle, livestock, or even pets) (Heberlein, 2012). Those who have a conflict of interests with wolves show less tolerance toward them (Ericsson & Heberlein, 2003; Naughton-Treves et al., 2003). Not only are resources in play, but also the physical integrity of humans matters here. Large carnivores, sharks, snakes, and rats may pose a real threat to human lives. Some conservation studies focus on initiatives with an aim for coexistence, to reduce resource conflicts, and information campaigns, to provide accurate knowledge of aggressive tendencies (for the rarity of shark attacks, see for example Muter, Gore, Gledhill, Lamont, & Huveneers, 2013).

***Symbolic threat.*** More subtly, symbolic threat *challenges the in-group's worldview, values, and beliefs* (Stephan et al., 2005; Yzerbyt & Demoulin, 2010). How could animals be a

threat in these terms? We argue for at least three ways. Animals could be seen as a threat a) to human identity, b) for being reminders of death, and c) to human superior status.

Starting with identity: Definitions of humanness are frequently made in comparative terms with animals (uniquely human vs. typically human nature, Haslam, 2006; primary vs. secondary emotions, Demoulin et al., 2004; Kagan, 2004). That is, humanness distinguishes humans from animals. What it means to be human is opposed to what it means to be an animal. People showing a very positive attitude toward humanity hold a negative view of animals (Luke & Maio, 2009). However, considering companion animals as family members or livestock as sentient animals may be seen as transgressions, because then such animals are assimilated to humans. This was the case for the Conservative Party's refusal in Spain to assimilate the rights of great apes with human rights ("Congress recognizes life," 2008).

Turning to mortality: Some animals (cockroaches, maggots) and also nature itself (Koole & van der Berg, 2005) are reminders of human vulnerability to death (Goldenberg, Pyszczynski, Greenberg, Solomon, Kluck, & Cornwell, 2001), so they challenge our self-protections against negative thoughts related to death. Consequently, as a way to distance ourselves from death, humans try to distinguish themselves from animals and show negative attitudes toward them (Beatson & Halloran, 2007; Goldenberg et al., 2001).

Finally, in Western countries, human beings are seen as superior to animals, which allows us to use animals in an enormous variety of activities (Plous, 1993). Some advocate reducing such status differences between humans and animals. For example, demands of animal rights groups about the prohibition of animal experimentation, zoo installations, or entertainment using animals challenge the human prerogative, because of superiority, to use and exploit animals. In line with this view, status concerns have been related to prejudice toward animals. Social

dominance orientation (SDO), a tendency to endorse a hierarchy among groups, underlies prejudice toward animals (and also toward ethnic out-groups; Costello & Hodson, 2014; Dhont, Hodson, Costello, & MacInnis, 2014). More generally, the environmental concern of individuals is negatively related to SDO (Milfont, Richter, Sibley, Wilson, & Fischer, 2013). Perhaps the film “Dawn of the Planet of the Apes” (Chernin, Clark, Jaffa, Silver, & Reeves, 2014), which questioned the higher status of human beings and gave the power to apes, has been so successful because of its challenging proposal (“Dawn of the Planet of the Apes,” 2014).

Among other factors, realistic and symbolic threats (Jetten, Spears, & Postmes, 2004; Riek, Mania, & Gaertner, 2006) increase out-group derogation in human social groups. To the best of our knowledge, human-animal interaction studies have not been conducted within this framework, though they could give rise to a fruitful line of research.

Finally, besides out-group derogation, more positive responses toward animals (increasing concern, support for environmental conservation policies) have found as result of empathy manipulations (Schultz, 2000; Sevillano, Aragonés, & Schultz, 2007) and common fate perceptions (Liu, Bonzon-Liu, & Pierce-Guarino, 1997). Both factors are well-documented prejudice-reduction strategies (Batson, Polycarpou et al., 1997; Dovidio et al., 2004; Stephan & Finlay, 1999).

### **Contribution of This Review and Future Research**

This review contributes to considering how animals may seem to be social beings from the human perspective. We focus on the similarity between social perception of humans and social perception of animals, highlighting the bidirectionality of the processes. This represents a novel frame for accounting comprehensively for the dispersed literature in social psychological science using animals as targets. Recent contributions are in line with our aim here: for example,

Amiot and Bastian (2015)'s review of human-animal relations regarding psychological findings or Kwan and Fiske (2008)'s special issue on social cognition about nonhuman agents.

To the best of our knowledge, the discussion of animals as social groups and their implications is a novel contribution of this review. We focused on animals perceived as social groups, describing stereotypes, prejudice, and social threats to animals within the SCM framework (see also Amiot & Bastian, 2015). Paradoxically, despite research showing group processes, stereotyping, attributions, etc. even for completely artificial entities (Dasgupta, Banaji, & Abelson, 1999), the study of similar outcomes for animals (less artificial and much more familiar targets) is not prevalent in the field<sup>4</sup>. Ideological factors or a taste for narrowing the scope of the field could preclude the inclusion of animals as targets.

As noted, the use of intergroup relations findings for making the empirical case regarding human-animal conflicts has not yet been systematically carried out. Partially this could be due to the lack of discussion about the status of animal species as social groups. Disciplines closer to animals (ecology, environmental education, conservation biology) could benefit from such a group framework.

The different types of animals identified (in terms of stereotypes and prejudices) offer a new way to think about animals, elaborating from the dehumanization literature and terror management theory: animals not as a single group but as many groups (see also Hodson et al., 2014). Considering animals as groups could lead to the possibility of applying social conflict research findings to human-animal conflicts such as: biodiversity loss—which is greatly due to human actions, the ethical use of mammals for synthetic biology, conflicts regarding animal rights, or the use of animal organs for human transplants. These conflicts are social problems that social psychology should include within its scope.

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<sup>4</sup> We are grateful to one of the reviewers for suggesting this point.

Cultural differences regarding social perception of animals also are a venue for future research. The typology of animals in terms of warmth and competence may depend on cultural practices and social norms regarding specific animals (e.g., to consider horses as food, transport, or pets in different countries).

Excluding animals from social perception and intergroup processes misses the opportunity for social psychology to make a contribution to the above conflicts. This review explains how a social psychology perspective can help to understand and solve human-animal conflicts. As a precedent, climate change is now presented as a topic to be addressed by psychology (APA, 2011; Swim et al., 2011).

### **Conclusion**

Social psychology has considered the individual human as a social being (e.g., Aristotle, 348-322 BCE/1897; Aronson, 2012; Batson, 1990; Fiske, 2010; Leyens et al., 2003), but only in relation to other human individuals, not including other animals. Beginning to modify this situation, social behavioral science has recently focused on the social relations that human beings maintain with animals. In an extensive review of psychological findings, Amiot and Bastian (2015) highlight the variety and importance of human-animal relationships in themes such as evolutionary processes, development, normative factors, gender and individual differences, health and therapy, and intergroup relations. In dehumanization research, Costello and colleagues (Costello & Hodson, 2011; 2014) have proposed the Interspecies Model of Prejudice, which establishes a relation between how humans perceive animals and how humans perceive social groups. Lately, likewise, the SCM has been adapted to animals (Sevillano & Fiske, 2015), indicating the relevance of the warmth and competence dimensions of social perception for

animals. In accord with these approaches, the aim of this review is to present animals as legitimate social perception targets and therefore a useful research topic.

## References

- Aarts, H., & Dijksterhuis, A. (2002). Category activation effects in judgment and behaviour: The moderating role of perceived comparability. *British Journal of Social Psychology, 41*, 123-138.
- Alexander, M. G., Brewer, M. B., & Herrman, R. K. (1999). Images and affect: A functional analysis of out-group stereotypes. *Journal of Personality & Social Psychology, 77*, 78-93.
- Amiot, C. E., & Bastian, B. (2015). Toward a psychology of human–animal relations. *Psychological Bulletin, 141*, 6-47.
- Allen, K. M., Blascovich, J., Tomaka, J., & Kelsey, R. M. (1991). Presence of human friends and pet dogs as moderators of autonomic responses to stress in women. *Journal of Personality & Social Psychology, 61*, 582-589.
- APA. (2011). Resolution on affirming psychologists' role in addressing global climate change. Retrieved from <http://www.apa.org/about/policy/climate-change.aspx>
- Aristotle (1897). History of animals. In R. Cresswell (Ed.), *Aristotle's history of animals in ten books*. London, England: George Bell and Sons. (Original work produced 348-322 BC)
- Arluke, A., & Sanders, C. R. (1996). *Regarding animals*. Philadelphia: Temple University Press.
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the structure of interpersonal closeness. *Journal of Personality & Social Psychology, 63*, 596-612. DOI:10.1037/0022-3514.63.4.596
- Aronson, E. (2012). *The social animal (11<sup>th</sup> edition)*. New York: Worth Publishers.
- de Balzac, H. (2008). *The human Comedy, Vol I: Prologue* (C. Bell & R. S. Scott, Trans.). Baltimore: Noumena Press. (Original work published 1842)



- Bachi, K., Terkel, J., & Teichman, M. (2012). Equine-facilitated psychotherapy for at-risk adolescents: The influence on self-image, self-control and trust. *Clinical Child Psychology Psychiatry, 17*, 298-312. DOI: 10.1177/1359104511404177.
- Bakan, D. (1966). *The duality of human existence: Isolation and communion in modern man*. Boston: Beacon Press.
- Bastian, B., Costello, K., Loughnan, S., & Hodson, G. (2012). When closing the human-animal divide expands moral concern: The importance of framing. *Social Psychological & Personality Science, 3*, 421-429.
- Batson, C. D. (1990). How social an animal? The human capacity for caring. *American Psychologist, 45*, 336-346.
- Batson, D. C., Polycarpou, M. P., Harmon-Jones, E., Imhoff, H. J., Mitchener, E. C., Bednar, L. L., et al. (1997). Empathy and attitudes: can feeling for a member of a stigmatized group improve feelings toward the group? *Journal of Personality & Social Psychology, 72*, 105-118.
- Beatson, R. M., & Halloran, M. J. (2007). Humans rule! The effects of creatureliness reminders, mortality salience and self-esteem on attitudes towards animals. *British Journal of Social Psychology, 46*, 619-632.
- Belk, R. W. (1996). Metaphoric relationships with animals. *Society & Animals, 4*, 2, 121-145.
- Bennett-Levy, J., & Marteau, T. (1984). Fear of animals: what is prepared? *British Journal of Social Psychology, 75*, 37-42.
- Bilewicz, M., Imhoff, R., & Drogosz, M. (2011). The humanity of what we eat: Conceptions of human uniqueness among vegetarians and omnivores. *European Journal of Social Psychology, 41*, 201-209.

- Bixler, R. D., & Floyd, M. F. (1997). Nature is scary, disgusting, and uncomfortable. *Environment & Behavior*, 29, 443-467.
- Blanco, J. C., & Cortés, Y. (2001). *Ecología, censos, percepción y evolución del lobo en españa: análisis de un conflicto* [Ecology, census, perceptions and the development of the wolf population in Spain: an analysis of a conflict]. Malaga: Sociedad Española para la Conservación y Estudio de los Mamíferos (SECEM). Retrieved from: [http://www1.nina.no/lcie\\_new/pdf/635011445130573052\\_Blanco\\_Lobo\\_completo.pdf](http://www1.nina.no/lcie_new/pdf/635011445130573052_Blanco_Lobo_completo.pdf)
- Bratanova, B., Loughnan, S., & Bastian, B. (2011). The effect of food categorization on the perceived moral standing of animals. *Appetite*, 57, 193-196.
- Campbell, D. T. (1958). Common fate, similarity and other indices of the status of aggregate persons as social entities. *Behavioral Science*, 3, 14-25.
- Caramazza, A., & Shelton, J. R. (1998). Domain-specific knowledge systems in the brain: the animate-inanimate distinction. *Journal of Cognitive Neuroscience*, 10, 1-34.
- Chartrand, T. L., Fitzsimons, G. M., & Fitzsimons, G. H. (2008). Automatic effects of anthropomorphized objects on behavior. *Social Cognition*, 26, 198-209.
- Coe, J. C. (1985). Design and perception: making the zoo experience real. *Zoo Biology*, 4, 197-208.
- El Congreso reconoce los derechos a la vida y a la libertad de los grandes simios. [Congress recognizes life and freedom rights to great apes]. (June 25, 2008). *El Mundo*. Retrieved from <http://www.elmundo.es/elmundo/2008/06/25/ciencia/1214400402.html>
- Costello, K., & Hodson, G. (2011). Social dominance-based threat reactions to immigrants in need of assistance. *European Journal of Social Psychology*, 41, 220-231. DOI: 10.1002/ejsp.769

- Costello, K., & Hodson, G. (2014). Explaining dehumanization among children: The interspecies model of prejudice. *British Journal of Social Psychology, 53*, 175-197.  
<http://dx.doi.org/10.1111/bjso.12016>.
- Cronbach, L. J. (1955). Processes affecting scores on "understanding of others" and "assumed similarity." *Psychological Bulletin, 52*, 177-193.
- Curting, S. (2009). Wildlife tourism: the intangible, psychological benefits of human–wildlife encounters. *Current Issues in Tourism, 12*, 451-474.
- Chernin, P., Clark, D., Jaffa, R., Silver, A. (Producers) & Reeves, M.(Director).(2014). *Dawn of the Planet of the Apes* [Motion picture]. United States: Twentieth century fox Film Corporation.
- Dasgupta, N., Banaji, M. R., & Abelson, R. P. (1999). Group entitativity and group perception: associations between physical features and psychological judgment. *Journal of Personality & Social Psychology, 77* (5), 991-1003.
- 'Dawn of the Planet of the Apes' Conquers the Box Office with \$73.0M Debut (July 13, 2014). ProBoxoffice.com. Retrieved from <http://www.boxoffice.com/latest-news/2014-07-11-north-america-dawn-of-the-planet-of-the-apes-posts-solid-thursday-haul?q=dawn+of+the+planet+of+apes>
- Demoulin, S., Leyens, J. Ph., Paladino, M. P., Rodríguez, R. T., Rodríguez, A. P., & Dovidio, J. F. (2004). Dimensions of “uniquely” and “non-uniquely” human emotions. *Cognition & Emotion, 18*, 71-96.
- Dhont, K., & Hodson, G. (2014). Why do right-wing adherents engage in more animal exploitation and meat consumption? *Personality & Individual Differences, 64*, 12-17.

- Dhont, K., Hodson, G., Costello, K., & MacInnis, C. C. (2014). Social dominance orientation connects prejudicial human-human and human-animal relations. *Personality & Individual Differences, 61-62*, 105-108.
- Dion, K. K., Berscheid, E., & Walster, E. (1972). What is beautiful is good. *Journal of Personality & Social Psychology, 24*, 285-90.
- Dovidio J., & Gaertner, S. L. (2010). Intergroup bias. In S. T. Fiske, D. T. Gilbert, & G. Lindsay (Eds.), *The Handbook of Social Psychology* (5th ed., pp. 1084-1121). New York: Wiley.
- Dovidio, J. F., Vergert, M., Stewart, T. L., Gaertner, S. L., Johnson, J. D., Esses, V. M., Riek, B. M., & Pearson, A. R. (2004). Perspective and prejudice: Antecedents and mediating mechanisms. *Personality & Social Psychology Bulletin, 30*, 1537-1549. DOI: 10.1177/0146167204271177
- Driscoll, J. W. (1995). Attitude toward animals: species ratings. *Society & Animals, 3*, 139-150.
- Eddy, T. J., Gallup, G. G., & Povinelli, D. J. (1993). Attribution of cognitive states to animals: Anthropomorphism in comparative perspective. *Journal of Social Issues, 49*, 87-101.
- El-Alayli, A., Lystad, A. L., Webb, S. R., Hollingsworth, S. L., & Ciolli, J. L. (2012). Reigning cats and dogs: a pet-enhancement bias and its link to pet attachment, pet–self similarity, self-enhancement, and well-being. *Basic & Applied Social Psychology, 28*, 131-143.
- Epley, N., Akalis, S., Wayzt, A., & Cacioppo, J. T. (2008). Creating social connection through inferential reproduction: Loneliness and perceived agency in gadgets, gods, and greyhounds. *Psychological Science, 19*, 114-120.
- Epley, N., Wayzt, A., Akalis, S., & Cacioppo, J. T. (2008). When we need a human: motivational determinants of anthropomorphism. *Social Cognition, 26*, 143-155.

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: a three-factor theory of anthropomorphism. *Psychological Review*, *114*, 864-886.

Ericsson, G., & Heberlein, T. A. (2003). Attitudes of hunters, locals and the general public in Sweden now that the wolves are back. *Biological Conservation*, *111*, 149-159.

European Association of zoos and aquaria [EAZA]-European Carnivore Campaign (2008).

Retrieved from:

<http://www.eaza.net/campaigns/Pages/European%20Carnivore%20Campaign.aspx>

European Commission (2009). Coexistence with large carnivores: The challenge and the opportunity. Retrieved from:

[http://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/coexisting\\_with\\_large\\_carnivores\\_catalogue\\_s.pdf](http://ec.europa.eu/environment/nature/conservation/species/carnivores/pdf/coexisting_with_large_carnivores_catalogue_s.pdf)

Fatjó, J., & Calvo, P. (2014). *II Análisis científico del vínculo entre las personas y los animales de compañía: resumen de resultados* [II scientific analysis of people-companion animal attachment: results summary]. Retrieved from Affinity Foundation website: [www.fundacion-affinity.org/estudio/2014](http://www.fundacion-affinity.org/estudio/2014)

Finlay, T., James, L. R., & Maple, T. L. (1988). People's perceptions of animals: the influence of zoo environments. *Environment & Behavior*, *20*, 508-528.

Fiske, S. T. (2010). *Social Beings. Core motives in Social Psychology* (2<sup>nd</sup> edition). New York: Wiley.

Fiske, S. T., Cuddy, A. J. C., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: competence and warmth respectively follow from perceived status and competition. *Journal of Personality & Social Psychology*, *82*, 878-902.

- Franklin, A. (2007). Human-Nonhuman animal relationships in Australia: an overview of results from the first national survey and follow-up case studies 2000-2004. *Society & Animals* 15, 7-27.
- Franklin, R. G., Zebrowitz, L. A., Fellous, J. M., & Lee, A. (2013). Generalizing from human facial sexual dimorphism to sex-differentiate macaques: Accuracy and cultural variation. *Journal of Experimental Social Psychology*, 49, 344-348.
- Gelman, S. A., & Markman, L. M. (1986). Categories and induction in young children. *Cognition*, 23, 183-209.
- Goldenberg, J. L., Pyszczynski, T., Greenberg, J., Solomon, S., Kluck, B., & Cornwell, R. (2001). I'm not an animal: Mortality salience, disgust, and the denial of human creatureliness. *Journal of Experimental Psychology: General*, 130, 3, 427-435.
- Gray, H. M., Gray, K., & Wegner, D. M. (2007, February 2). Dimensions of mind perception. *Science*, 315, 619.
- Greif, M. L., Nelson, D. G., Keil, F. C., & Gutierrez, F. (2006). What Do Children Want to Know About Animals and Artifacts?: Domain-Specific Requests for Information. *Psychological Science*, 17, 455-459.
- Grier, K. C. (2006). *Pets in America: a history*. Chapel Hill, NC: University of North Carolina Press.
- Haidt, J., McCauley, C., & Rozin, P. (1993). Individual differences in sensitivity to disgust: a scale sampling seven domains of disgust elicitors. *Personality & Individual Differences*, 16, 701-713.
- Hare, B., Brown, M., Williamson, C., & Tomasello, M. (2002, November 22). The domestication of social cognition in dogs. *Science*, 298, 1634-1636.

- Haslam, N. (2006). Dehumanization: An integrative review. *Personality & Social Psychology Review, 10*, 252-264.
- Haslam, N., & Loughnan, S. (2014). Dehumanization and infrahumanization. *Annual Review of Psychology, 65*, 399-423. DOI: 10.1146/annurev-psych-010213-115045
- Haslam, N., Rothschild, L., & Ernst, D. (2000). Essentialist beliefs about social categories. *British Journal of Social Psychology, 39*, 113-127.
- Hazan, C., & Shaver, P.R. (1994). Deeper into attachment theory. *Psychological Inquiry, 5*, 68-79.
- Heberlein, T. A. (2012). *Navigating environmental attitudes*. New York: Oxford university press.
- Heider, F., & Simmel, M. (1944). An experimental study of apparent behavior. *American Journal of Psychology, 57*, 243-249.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Herzog, H. A., & Galvin, S. L. (1992). Animals, archetypes, and popular culture: tales from the tabloid press. *Anthrozoos, 5*, 77-92.
- Hickrod, L. J. H., & Smith, R. L. (1982). A naturalistic study of interaction and frame: the pet as 'Family Member'. *Urban Life, 11*, 55-77.
- Hodson, G., MacInnis, C. C., & Costello, K. (2014). (Over)Valuing humanness as an aggravator of intergroup prejudices and discrimination. In P.G. Bain, J. Vaes, & J.-Ph. Leyens (Eds), *Humanness and dehumanization* (pp. 86-110). London, UK: Psychology Press.
- Jetten, J., Spears, R., & Postmes, T. (2004). Intergroup distinctiveness and differentiation: a meta-analytic integration. *Journal of Personality & Social Psychology, 86*, 862-879.

- Jost, J. T., & Major, B. (Eds.) (2001). *The psychology of legitimacy*. New York: Cambridge University Press.
- Kagan, J. (2004). The uniquely human in human nature. *Daedalus*, 133, 77-88.
- Kaplan, R., & Kaplan, S. (1989). *The experience of nature: a psychological perspective*. New York: Cambridge University Press.
- Karaz, V., & Perlman, D. (1975). Attribution at the wire: Consistency and outcome finish strong. *Journal of Experimental Social Psychology*, 470-477.
- Kellert, S. R. (1993). Values and Perceptions of Invertebrates. *Conservation Biology*, 7, 845-855.
- Kellert, S. R. (1985). Social and perceptual factors in endangered species management. *Journal of Wildlife Management*, 49, 528-536.
- Kellert, S. R., & Berry, J. K. (1980). *Phase III: Knowledge, affection and basic attitudes toward animals in American society*. United States Department of the Interior Fish and Wildlife Service.
- Kellert, S. R., Black, M., Rush, C. R., & Bath, A. J. (1996). Human culture and large carnivore conservation in North America. *Conservation Biology*, 10, 997-990.
- Knight, A. J. (2008). "Bats, snakes and Spiders, Oh my!" How aesthetic and negativistic attitudes, and other concepts predict support for species protection. *Journal of Environmental Psychology*, 28, 94-103.
- Knight, S., Vrij, A., Bard, K., & Brandon, D. (2009). Science versus human welfare? Understanding attitudes toward animal use. *Journal of Social Issues*, 65, 463-483.
- Koole, S. L., & Van der Berg, A. E. (2005). Lost in the wilderness: terror management, action orientation, and nature evaluation. *Journal of Personality & Social Psychology*, 88, 1014-1028.



- Korpela, K. M., Hartig, T., Kaiser, F. G., & Furher, U. (2001). Restorative experience and self-regulation in favorite places. *Environment & Behavior, 33*, 572-589.
- Kurdek, L. A. (2008). Pet dogs as attachment figures. *Journal of Social & Personal Relationships, 25*, 247-266.
- Kurdek, L. A. (2009). Pet dogs as attachment figures for adult owners. *Journal of Family Psychology, 23*, 439-446.
- Kwan, S. Y. V., & Cuddy, A. (2008, October). *(Non-Human) Animal Stereotypes: Reflections of Anthropomorphism and Cultural Differences in System Justification*. Paper presented at the meeting of Society of Experimental Social Psychology, Sacramento.
- Kwan, S. Y. V., & Fiske, S. T. (2008). Missing links in social cognition: the continuum from nonhuman agents to dehumanized humans. *Social Cognition, 26*, 125-128.
- Kwan, S. Y. V., Gosling, S. D., & John, O. P. (2008). Anthropomorphism as a special case of social perception: a cross-species social relations model analysis of humans and dogs. *Social Cognition, 26*, 129-142.
- Kwong, M. J., & Bartholomew, K. (2011). Not just a dog: An attachment theory perspective on relationship with assistance dogs. *Attachment & Human Development, 13*, 421-436.
- Lerner, J. E., & Kalof, L. (1999). The animal text. *Sociological Quarterly, 40*, 565-586.
- Leyens, J. Ph., Cortés, B. Demoulin, S., Dovidio, J. F., Fiske, S. T., Gaunt, R., Paladino, M., Rodríguez-Pérez, A., Rodríguez-Torres, R., & Vaes, J. (2003). Emotional prejudice, essentialism, and nationalism: The 2002 Tajfel Lecture. *European Journal of Social Psychology, 33*, 703-717.

- Lindsey, P. A., du Toit, J. T., & Mills, M. G. L. (2005). Attitudes of ranchers towards African wild dogs *Lycaon pictus*: Conservation implications on private land. *Biological Conservation, 125*, 113-121.
- Liu, J. H., Bonzon-Liu, B., & Pierce-Guarino, M. (1997). Common fate between humans and animals? The dynamical systems theory of groups and environmental attitudes in the Florida Keys. *Environment & Behavior, 29*, 87-122.
- Loughnan, S., Bastian, B., & Haslam, N. (2014). The psychology of eating animals. *Current Directions in Psychological Science, 23*, 104-108.
- Luke, M. A., & Maio, G. R. (2009). Oh the humanity! Humanity-esteem and its social importance. *Journal of Research in Personality, 43*, 586-601.
- Mae, L., McMorris, L. E., & Hendry, J. L. (2004). Spontaneous trait transference from dogs to owners. *Anthrozoos, 17*, 225-243.
- Mahon, B. Z., Anzellotti, S., Schwarzbach, J., Zampini, M., & Caramazza, A. (2009). Category-specific organization in the human brain does not require visual experience. *Neuron, 63*, 397-405. doi:10.1016/j.neuron.2009.07.012
- Mapple, T. L. (1983). Environmental psychology and great ape reproduction. *International Journal for the Study of Animal Problems, 4*, 295-299.
- McArthur, L. A. (1972). The how and what of why: some determinants and consequences of causal attribution. *Journal of Personality & Social Psychology, 22*, 171-193.
- McConnell, A. R., Brown, C.M., Shoda, T. M., Stayton, L. E., & Martin, C. E. (2011). Friends with benefits: on the positive consequences of pet ownership. *Journal of Personality & Social Psychology, 101*, 1239-1252.

- Medin, D. L., & Atran, S. (2004). The native mind: biological categorization and reasoning in development and across cultures. *Psychological Review*, *111*, 4, 960-983.
- Miles, R., & Clarke, G. (1993). Setting off on the right foot: front-end evaluation. *Environment & Behavior*, *25*, 698-709. DOI: 10.1177/0013916593256002
- Milfont, T. L., Richter, I., Sibley, Ch. G., Wilson, M. S., & Fischer, R. (2013). Environmental consequences of the desire to dominate and be superior. *Personality & Social Psychology Bulletin*, *39*, 1127-1138.
- Miller, J. G., Das, R., & Chakravarthy, Sh. (2011). Culture and the role of choice in agency. *Journal of Personality and Social Psychology*, *101*, 46-61.
- Miller, D. T., & Prentice, D. A. (1999). Some consequences of a belief in group essence: The category divide hypothesis. In D.A. Prentice & D.T. Miller (Eds.), *Cultural divides: Understanding and overcoming group conflict* (pp. 213-236). New York: Russell Sage Foundation.
- Morris, M. W, Menon, T., & Ames, D. R. (2001). Culturally conferred conceptions of agency: a key to social perception of persons, groups, and other actors. *Personality and Social Psychology Review*, *5*, 169-182.
- Muter, B. A., Gore, M. L., Gledhill, K. S., Lamont, C., & Huvneers, C. (2013). Australian and U.S. news media portrayal of sharks and their conservation. *Conservation Biology*, *27*, 187-196. DOI:10.1111/j.1523-1739.2012.01952.x
- Naughton-Treves, L., Grossberg, R., & Treves, A. (2003). Paying for tolerance: rural citizens' attitudes toward wolf depredation and compensation. *Conservation Biology*, *17*, 6, 1500-1511.

- New, J., Cosmides, L., & Tooby, J. (2007). Category-specific attention for animals reflects ancestral priorities, not expertise. *Proceedings for the National Academies of Science, 104*, 16598-16603.
- Nittono, H., Fukushima, M., Yano, A., & Moriya, H. (2012). The Power of kawaii: viewing cute images promotes a careful behavior and narrows attentional focus. *PLoS ONE 7(9)*: e46362. doi:10.1371/journal.pone.0046362
- Ohman, A., & Mineka, S. (2003). The Malicious serpent: snakes as a prototypical stimulus for an evolved module of fear. *Current Directions in Psychological Science, 12*, 5-9. DOI: 10.1111/1467-8721.01211
- Oswald, L. J. (1995). Heroes and victims: the stereotyping of animal characters in children's realistic animal fiction. *Children's Literature in Education, 26*, 135-149.
- Perkins, H. E. (2010). Measuring love and care for nature. *Journal of Environmental Psychology, 30*, 455-463.
- Plous, S. (1993). The role of animals in human society. *Journal of Social Issues, 49*, 1-9.
- Podberscek, A. L. (2009) Good to pet and eat: the keeping and consuming of dogs and cats in South Korea. *Journal of Social Issues, 65*, 615-632.
- Povinelli, D. J. (1997). Panmorphism. In R. W. Mitchell, N. S. Thompson and H. L. Miles (Eds.). *Anthropomorphism, anecdotes, and animals* (pp. 92-103). Albany: State University of New York Press.
- Prentice, D. A., & Miller, D. T. (2007). Psychological essentialism of human categories. *Current Directions in Psychological Science, 16*, 202-206.

- Putnam, H. (1975). The meaning of meaning. In H. Putnam (Ed.), *Mind, language, and reality* (Vol. 2, pp. 139–152). Cambridge, UK: Cambridge University Press. (Original work published 1970)
- Rajecki, D. W., Rasmussen, J. L., Sanders, C. R., Modlin, S. J., & Holder, A. M. (1999). Good Dog: Aspects of Humans' Causal Attributions for a Companion Animal's Social Behavior. *Society & Animals, 7*, 17-34.
- Rajecki, D. W., Rasmussen, J. L., & Conner, T. J. (2007). Punish and forgive: Causal attribution and positivity bias in response to cat and dog misbehavior. *Society & Animals, 15*, 311-328.
- Rasmussen, J. L., Rajecki, D. W., & Craft, H. D. (1993). Humans' perceptions of animal mentality: Ascriptions of thinking. *Journal of Comparative Psychology, 107*, 283-290.
- Riek, B. M., Mania, E. R., & Gaertner, S. L. (2006) Intergroup threat and outgroup attitudes: a meta-analytic review. *Personality & Social Psychology Review, 10*, 336-353.
- Rothbart, M., & Taylor, M. (1992). Category labels and social reality: Do we view social categories as natural kinds? In G. R. Semin & K. Fiedler (Eds.), *Language, interaction, and social cognition* (pp. 11-36). Newbury Park, CA: Sage.
- Schultz, P. W. (2000). Empathizing with nature: The effects of perspective taking on concern for environmental issues. *Journal of Social Issues, 56*, 391-406.
- Schwartz, S. P. (1980). Natural kinds and nominal kinds. *Mind, 89*, 182-195.
- Sears, D. O. (1983). The person-positivity bias. *Journal of Personality & Social Psychology, 44*, 233-250.

- Sevillano, V., Aragonés, J. I., & Schultz, P. W. (2007). Perspective taking, environmental concern, and the moderating role of dispositional empathy. *Environment & Behavior*, *39*, 689-705.
- Sevillano, V., & Fiske, S. T. (2015). Warmth and competence in animals. *Journal of Applied Social Psychology*. doi: 10.1111/jasp.12361
- Sheepers, D., Spears, R., Doojse, B., & Manstead, A. S. R. (2006). The social functions of ingroup bias: Creating, confirming, or changing social reality. In W. Stroebe & M. Hewstone (Eds.), *European Review of Social Psychology*, *17* (pp. 359-396). New York: Psychology Press.
- Skogen, (2001). Who's is afraid of the big, bad wolf? Young people's responses to the conflicts over large carnivores in Eastern Norway. *Rural Sociology*, *6*, 203-226.
- Sommer, R. (1972). What do we learn at the zoo? *Natural History*, *81*, 26-85.
- Stephan, W. G., & Finlay, K. (1999). The role of empathy in improving intergroup relations. *Journal of Social Issues*, *55*, 729-743.
- Stephan, W. G., Renfro, C. L., Esses, V. M., Stephan, C. W., & Martin, T. (2005). The effects of feeling threatened on attitudes toward immigrants. *International Journal of Intercultural Relations*, *29*, 1-19.
- Swim, J. K., Stern, P. C., Doherty, T. J., Clayton, S., Reser, J. P., Weber, E- U., ... & Howard, G. S. (2011). Psychology's contributions to understanding and addressing global climate change. *American Psychologist*, *66* (4), 241-250.
- Tafalla, M. (2005). Por una estética de la naturaleza: la belleza natural como argumento ecologista [For an aesthetic of nature: natural beauty as ecological argument]. *Isegoría*, *32*, 215-226.

- Tajfel, H. (1981). *Human groups and social categories*. New York: Cambridge University Press.
- Thomas, K. (1984). *Man and the natural world: Changing attitudes in England 1500- 1800*. London: Penguin.
- Van der Berg, A. E., & Ter Heijne, M. (2005). Fear versus fascination: an exploration of emotional responses to natural threats. *Journal of Environmental Psychology, 25*, 261-272.
- Waytz, A., Morewedge, C. K., Epley, N., Monteleone, G., Gao, J. H., & Cacioppo, J. T. (2010). Making sense by making sentient: effectance motivation increases anthropomorphism. *Journal of Personality & Social Psychology, 99*, 410-435.
- Williams, K., & Harvey, D. (2001). Transcendent experience in forest environments. *Journal of Environmental Psychology, 21*, 249-260.
- Williams, C. K., Ericsson, G., & Heberlein, T. A. (2002). A quantitative summary of attitudes toward wolves and their reintroduction (1972-2000). *Wildlife Society Bulletin, 30*, 575-584.
- Yzerbyt, V. Y., & Demoulin, S. (2010). Intergroup relations. In S. T. Fiske, D. T. Gilbert, & G. Lindsay (Eds.), *The Handbook of Social Psychology* (5th ed., pp. 1024-1083). New York: Wiley.
- Yzerbyt, V. Y., Rogier, A., & Fiske, S. (1998). Group entitativity and social attribution: On translating situational constraints into stereotypes. *Personality & Social Psychology Bulletin, 24*, 1090-1104.
- Zebrowitz, L. A., & Montepare, J. M. (1992). Impressions of babyfaced individuals across the life span. *Developmental Psychology, 28*, 1143-1152.
- Zebrowitz, L. A., Wadlinger, H. A., Luevano, V. X., White, B. M., Xing, C., & Zhang, Y. (2011). Animal analogies in first impressions of faces. *Social Cognition, 29*, 486-496.

Zilcha-Mano, S., Mikulincer, M., & Shaver, P. R. (2012). Pets as safe havens and secure bases: The moderating role of pet attachment orientations. *Journal of Research in Personality*, *46*, 571-580.