



Cruel nature: Harmfulness as an important, overlooked dimension in judgments of moral standing



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ABSTRACT

Entities that possess moral standing can be wronged and deserve our moral consideration. Past perspectives on the folk psychology of moral standing have focused exclusively on the role of “patience” (the capacity to experience pain or pleasure) and “agency” (usually defined and operationalized in terms of intelligence or cognitive ability). We contend that *harmfulness* (i.e., having a harmful vs. benevolent disposition) is an equally if not more important determinant of moral standing. We provide support for this hypothesis across four studies using non-human animals as targets. We show that the effect of harmfulness on attributions of moral standing is independent from patience and intelligence (Studies 1–2), that this effect pertains specifically to an animal’s harmful disposition rather than its capacity to act upon this disposition (Study 3), and that it primarily reflects a parochial concern for *human* welfare in particular (Study 4). Our findings highlight an important, overlooked dimension in the psychology of moral standing that has implications for real-world decisions that affect non-human animals. Our findings also help clarify the conditions under which people perceive patience and agency as related versus truly independent dimensions.

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“Cruel nature absolves us of any guilt for treating its denizens cruelly.”

~Jonathan Balcombe (2010), *Second nature: The inner lives of animals*

“Even the revered medical missionary Albert Schweitzer, whose philosophy emphasized reverence for all life, kept a gun around to shoot snakes.”

~Hal Herzog (2010), *Some we love, some we hate, some we eat: Why it’s so hard to think straight about animals*

1. Introduction

Which entities or organisms deserve our moral consideration? Which entities would it be morally wrong to harm or neglect without good reason? Do we have obligations only towards members of our own species, or are we obligated to respect the interests of other species as well, and if so, which ones? Questions such as these pertain to the attribution of moral standing. Entities with “moral standing” are those entities that can be morally wronged and which therefore deserve our moral consideration (Schönfeld, 1992; Singer, 1975/2009, 2011).

A longstanding debate persists in philosophy about which entities have moral standing, and which do not. Much of this debate has revolved around the question of *which characteristics* are relevant for attributing moral standing (Bentham, 1789/2011; Carruthers, 1992, 2010; Feinberg, 1971; Kant, 1981; Schönfeld, 1992; Singer, 1975/2009, 2011; Steinbock, 1978). Although there are a

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number of nuanced positions, philosophers debating this issue have generally discussed two distinct sources of moral standing—patience and agency.¹ On one side of the debate are those philosophers, such as Jeremy Bentham and Peter Singer, who argue that “sentience,” “experience,” or “patience”² (i.e., the capacity to suffer, or experience pain and/or pleasure) is the primary morally relevant dimension for determining whether an entity deserves our moral consideration (Bentham, 1789/2011; Korsgaard, 1996; Schönfeld, 1992; Singer, 1975/2009, 2011). On one popular account (Singer, 1975/2009, 2011), patience is defended as the basis for moral standing owing to the fact that any other attribute (e.g., gender, race, intelligence, language, self-awareness, etc.) would lead to some human beings (e.g., mentally handicapped individuals, fetuses, minorities, etc.) being disqualified from moral standing, thus, violating principles of equality (this argument is sometimes referred to as the “argument from marginal cases”). Positing patience as the basis for moral standing avoids this problem and enables the interests of all sentient beings to be given equal moral consideration.

On the other side of the debate are philosophers, such as Immanuel Kant and Peter Carruthers, who defend “agency” as the main relevant condition for moral standing (Carruthers, 1992, 2010; Kant, 1981; Steinbock, 1978). Proponents of this view often define agency in terms of “higher” intelligence, or *human rationality*, which includes “moral autonomy,” the capacity to self-govern one’s behavior in accordance with universally agreed upon rules or principles. This more anthropocentric account of moral standing often takes contractalist moral theory (e.g., Rawls, 1972) as its starting point – we only have moral obligations towards entities that can enter into contracts or agreements. Entities that cannot enter into such agreements fall outside our moral circle, though we might have other reasons to avoid harming them (e.g., because of how harming them would reflect on our character, see Carruthers, 1992, 2010; or because harming them would indirectly harm a person who is worthy of our moral consideration, see Kant, 1981).

Mirroring this two-source debate in philosophy, experimental philosophers and psychologists have recently entered the fray to investigate whether folk attributions of moral standing parallel the debate within philosophy. In one relevant study, Gray, Gray, and Wegner (2007) found that across a range of different entities (including but not limited to animals), an entity’s possessing “experience,” that is, the ability to experience hedonic states, including the ability to suffer, was a very strong predictor of whether people would be upset about harming that entity. Knobe and Prinz (2008) similarly found that, in verbal reports, people explicitly described the capacity for hedonic

experience as highly relevant for making judgments about an entity’s moral standing.

Building on these investigations, Sytsma and Machery (2012) presented a more complex theory, arguing that “experience” (or patience) but also “agency” (operationalized in terms of intelligence) represent two distinct dimensions underlying both philosophical and lay intuitions about moral standing (see also Bastian, Laham, Wilson, Haslam, & Koval, 2011). Sytsma and Machery (2012) obtained evidence consistent with their “two-source hypothesis.” Across four experiments they manipulated lay people’s perceptions of the amount of “experience” or “agency” a particular organism or species possessed. They operationalized “experience” in terms of patience (i.e., the capacity for pain and pleasure), and “agency” in terms of possessing sophisticated intellectual abilities. For example, in one innovative study (Study 2) an alien species was described as feeling “both pleasure and pain” (i.e., patience), and/or as “very intelligent, and [engaging] in highly complex social political interactions (...) [having] highly developed literary, musical, and artistic traditions, in addition to having made great advances in the sciences” (i.e., intelligence). They found that patience (but not intelligence) sometimes enhanced judgments of moral standing, as measured by the belief that it would be immoral to harm or kill the species, while at other times intelligence (but not patience) enhanced moral standing. Sytsma and Machery (2012) acknowledge that there may be other sources of moral standing beyond patience and intelligence, though they regard these two dimensions as predominant (p. 309).

In the present paper, we argue that the two factors of patience and intelligence, derived from philosophy and recent empirical work, do not exhaust the full range of factors that lay people rely on in their judgments of moral standing. Borrowing from models of social cognition, and research from moral psychology, we demonstrate that *harmfulness* (i.e., having a harmful disposition, or, conversely, a non-harmful or benevolent disposition) is an equally, if not at times more important, source of moral standing, which does not reduce to patience or intelligence, and which has hitherto been overlooked by researchers.

1.1. *Harmfulness as an important, overlooked source of moral standing*

Our use of the term “harmfulness” is meant to capture the attribution of a harmful underlying *disposition*. That is, when an entity is perceived to be “harmful,” we mean that it is perceived as having a disposition that leads to behaviors that harm others. Such a harmful disposition does not require that the agent is perceived as *malicious*, i.e., as having deliberate intentions or plans to harm others – though of course, maliciousness may sometimes amplify harmfulness; nor does it necessarily require that the agent is capable of acting upon its harmful disposition – it only requires that the agent be *disposed* to behave in harmful ways.

In social psychology, there is a rich literature on how a person or group’s having a harmful or a benevolent disposition affects global evaluations that others form of them (e.g., Abele & Wojciszke, 2007; Brambilla, Sacchi, Rusconi,

¹ We leave aside the more radical ethical position that all forms of conative life deserve moral consideration and can be wronged—including all living organisms, including plants and trees, that have “interests,” in the sense of strivings or latent tendencies such as capacities for nutrition, growth, or respiration (see Atfield, 1981; Taylor, 1986).

² Sentience, experience, and patience are three ways of labeling the very same construct—namely, the capacity to suffer or experience pain and/or pleasure. Throughout this paper we adopt the label “patience” to denote this psychological dimension.

Cherubini, & Yzerbyt, 2012; Cottrell, Neuberg, & Li, 2007; Fiske, Cuddy, & Glick, 2007; Fiske, Cuddy, Glick, & Xu, 2002; Goodwin, Piazza, & Rozin, 2014; Leach, Ellemers, & Barreto, 2007; Wojciszke & Abele, 2008; Wojciszke, Abele, & Baryla, 2009; Wojciszke, Bazinska, & Jaworski, 1998). Individuals and groups that are thought to hold harmful attitudes and intentions towards others (particularly towards oneself or one's ingroup) tend to be evaluated negatively (e.g., Brambilla et al., 2012; Goodwin et al., 2014; Wojciszke et al., 1998), are avoided and ostracized (Kurzban & Leary, 2001; Kurzban & Neuberg, 2005), and are the subject of contempt and derogation (Castano & Giner-Sorolla, 2006; Fiske et al., 2002). Furthermore, research in moral psychology suggests that individuals found to be culpable of harmful acts are perceived to have their moral rights, particularly their rights not to be harmed or deprived of freedom, temporarily withheld until "justice" has been served (see Astor, 1994; Carlsmith, 2006; Carlsmith, Darley, & Robinson, 2002; Darley, Carlsmith, & Robinson, 2000). If people apply a similar framework to non-human actors, and, moreover, if they perceive certain animals (e.g., scorpions, sharks) to have stable or enduring harmful dispositions, then they may perceive these harmful animals to have forfeited their entitlement to moral standing, at least to some degree (e.g., to be less deserving of protection from harm). In this way, harmfulness may serve as a relevant factor in the attribution of moral standing across a range of agents, including non-human animals.

Indeed, a great deal of anecdotal evidence suggests that perceptions of an animal's harmful nature affect the moral attitudes that we hold towards it. For example, in 2011, 56 wild animals, including 18 Bengal tigers, were released from a private animal reserve in Zanesville, Ohio. Rather than tracking down the animals to be captured and safely returned to their natural habitat, local law enforcement personnel hunted and killed the animals to circumvent the possibility of an attack on humans (Bishop & Williams, 2011). Many other predatory species, especially those perceived as dangerous to humans (e.g., snakes, spiders, wolves), similarly find themselves the target of human antipathy (Balcombe, 2010; Bekoff, 2007; Herzog, 2010; Öhman & Mineka, 2001). Recently, the U.S. Department of Agriculture endorsed a plan to exterminate two million brown tree snakes in Guam by "air bombing" them with thousands of dead mice laced with pain killers lethal to the snakes (Lendon, 2013). The USDA's decision was motivated as an intervention for Gaum's native bird population, which has taken a major hit due to snake predation. It is difficult to imagine such an extreme measure being taken if the situation was reversed (birds preying on snakes), given that birds are typically not harmful to humans.

Given the seemingly powerful role that harmfulness plays in our treatment of non-human species, it is perhaps surprising that past perspectives have largely ignored it. We surmise that psychologists have ignored this factor in judgments of moral standing principally because philosophers and ethicists have ignored it. Yet, ethicists have good reason to ignore harmfulness as a pertinent source of moral standing, given that their goal is to develop a defensible moral theory, which specifies which characteristics *should*

matter for moral standing, not which characteristics *do* in fact matter for ordinary people's judgments.

From the point of view of normative ethics, an organism's harmful disposition should not matter to their moral standing insofar as animals should not be held morally accountable for their actions (e.g., because they act on instincts or are unaware of the moral significance of their actions). However, we might expect human intuition to deviate from normative theory in this regard, particularly if people start from a different set of assumptions about the moral accountability of animals. Indeed, some recent work in psychology suggests that lay people sometimes *do* hold animals morally accountable—to some extent—for their harmful acts. The most direct evidence for this comes from studies by Goodwin and Benforado (2014), who found that people's responses to the harmful actions of non-human animals, such as a shark or a dog attacking a human, followed the same retributive logic as when they responded to the harmful acts of human beings—namely, subjects perceived the animal "culprit" to deserve punishment proportionate to the severity of the harm it had caused. These studies suggest that people hold non-human animals accountable, on some level, for the harm they cause to others. Accordingly, it may also be that an animal's dispositional harmfulness plays a role in people's judgments of moral standing, such that more harmful animals are perceived to have reduced moral standing. The primary aim of the present paper was to examine this hypothesis.

1.2. Are patency and agency orthogonal or correlated?

A secondary aim was to investigate whether the established dimensions of patency and agency are orthogonal, or inversely related, as has sometimes been claimed in the literature. Sytsma and Machery (2012), who operationalized agency in terms of intelligence, did not explicitly claim that intelligence and patency were orthogonal, but they did argue that these dimensions are quite distinct from each other. Similarly, Gray et al. (2007), while not explicitly claiming that patency and agency were orthogonal, also argued they are relevant for distinct aspects of moral judgment.³ In their study, participants rated a range of natural and unnatural entities (including animals, God a robot, a dead person, and a human fetus – 13 agents in total) on attributes pertaining to what they labeled as "experience" (essentially patency, e.g., fear, pain, pleasure) and "agency", which they defined in terms of certain sophisticated cognitive capacities (e.g., memory, planning, communication). Using a factor-rotation method, the authors reported a two-factor solution of the attributes with "experience" traits loading on one factor and "agency" traits loading on another. These factors were argued to comprise two distinct aspects of mind perception.

A more radical perspective emerges from moral type-casting theory (MTT; Gray & Wegner, 2009), which focuses

³ Note, however, that Gray and Wegner (2009, pp. 506, 507), Gray and Wegner (2012, p. 126), Gray, Young, and Waytz (2012, pp. 103), and Gray and Schein (2012, pp. 407, 408) do interpret Gray et al. (2007) as having indicated that patency and agency are orthogonal/independent.

specifically on *moral* agency and *moral* patiency. Though moral agency and moral patiency are arguably slightly narrower constructs than the mental dimensions identified as agency and patiency in Gray et al. (2007), Gray and Wegner (2009) see these constructs as being very closely linked. For instance, referring to Gray et al.'s (2007) study, Gray and Wegner (2009) note that, “analyses of mean judgments revealed a two-dimensional solution corresponding in key aspects to the constructs of moral agency and moral patiency. A dimension termed *Experience* included many mental qualities indicating moral patiency. . . . A dimension termed *Agency* included many mental qualities indicating moral agency” (Gray & Wegner, 2009, p. 506). Thus, Gray and Wegner's construal of moral agency and moral patiency is quite broad, with the “moral” adjective only modifying the type of the events caused or experienced, but not the fundamental capacities themselves: “moral agents participate in moral events by causing them and moral patients participate in moral events by experiencing their effects” (Gray & Wegner, 2009, p. 505).

Moral typecasting theory makes the provocative claim that moral agency and moral patiency are not just orthogonal, but that they are in fact *inversely* related, such that whenever an entity is perceived as a moral patient it “will not be seen as having the complementary position” (Gray & Wegner, 2009, p. 507) – namely, it will not be seen as a moral agent, and vice-versa. Thus, according to MTT, moral patiency and moral agency may be negatively correlated insofar as the perception of one dimension precludes the perception of the other (see also Gray, Knobe, Sheskin, Bloom, & Barrett, 2011). And, while the theory focuses specifically on moral agency and moral patiency (i.e., the capacity for moral action and suffering, respectively), it carries the implication that agency and patiency are also inversely related when conceived in more general, purely mentalistic terms (i.e., insofar as moral agency and moral patiency are supported by different aspects of mind—namely, agency and patiency; see also Gray & Schein, 2012; Gray et al., 2012).

We revisit this issue of whether lay people truly perceive patiency and agency as orthogonal or inversely related dimensions, particularly when “agency” is defined exclusively in terms of intelligence or the possession of “higher” cognitive capacities. We think there are good reasons to be skeptical of claims that patiency and agency are seen as orthogonal or inversely related. Rather, we think these dimensions are likely to be perceived as positively related for the most part.

To some extent, the degree of overlap between these two dimensions may depend on exactly how the notion of “agency” is operationalized, since this tends to vary across different philosophical and psychological traditions. As we have seen, the experimental approach developed by Sytsma and Machery (2012) operationalizes agency strictly in terms of intellectual properties (e.g., the capacity for complex reasoning, culture, art, music, etc.), which largely reflects the approach adopted by Gray et al. (2007). From a contractualist perspective (e.g., Carruthers, 1992), it makes sense to emphasize the intellectual aspects of agency, since what matters for moral standing within a contractualist framework is the capacity to enter into agreements with

others and to plan one's actions in advance to accord with these agreements. When agency is defined in this way, it seems unlikely that people will perceive patiency and agency as independent or inversely related. This is because at a conceptual level, higher-order mental traits (e.g., imagination, self-awareness) *enable more complex forms of suffering and pleasure*. The following quotation from Peter Singer illustrates this point:

“Surely pain felt by a mouse just is not as bad as pain felt by a human. Humans have much greater awareness of what is happening to them, and this makes their suffering worse⁴ (. . .) *Normal adult human beings have mental capacities that will, in certain circumstances, lead them to suffer more than animals would in the same circumstances*. If, for instance, we decided to perform extremely painful or lethal scientific experiments on normal adult humans, kidnapped at random from public parks for this purpose, adults who entered parks would become fearful that they would be kidnapped. The resultant terror would be a form of suffering additional to the pain of the experiment. The same experiments performed on nonhuman animals would cause less suffering because the animals would not have the anticipatory dread of being kidnapped and experimented on.” (Singer, 2011, pp. 50–51, italics added)

This quotation illustrates the intuition that certain intellectual sophistications, such as the ability to represent future or counterfactual states, can lead to greater suffering, or greater pleasure, than if such capacities were diminished or absent (see also Mill, 1861/1998, on the distinction between lower and higher qualities of pleasure, such as the appreciation of artistic beauty). If this analysis captures a real aspect of folk intuitions, then we might surmise that rather than viewing patiency and “agency” (defined in terms of intelligence) as orthogonal or negatively correlated, individuals will tend to see them as positively correlated.

Indeed, some evidence already strongly supports such a positive relation. While Gray et al. (2007) did not report the overall correlation between the two factors in their original report (only the rotated factor loadings), re-examination of their data set (H. Gray, personal correspondence, August 28, 2013) revealed that Gray et al.'s “experience” and “agency” dimensions correlated together very highly, $r(11) = .90$, $p < .001$. Furthermore, when we eliminated the extraordinary, non-natural entities as targets (i.e., “God,” “dead person,” and “robot”), the correlation was virtually perfect, $r(8) = .97$, $p < .001$, suggesting that patiency and intelligence may be perceived as much more intertwined than previously alluded to.

Nonetheless, a broader definition of “agency” that extends beyond aspects of intelligence has sometimes

⁴ Note that the first sentence of the quotation is actually a rhetorical statement used by Singer to introduce the popular view that human suffering is greater than the suffering of other animals. Singer goes on to make the point that while certain aspects of human intelligence, such as self-awareness, enhance human suffering, the unique intelligences of other animals (e.g., the acute hearing of cats and dogs), make them susceptible to greater suffering in other respects, and thus their interests related to these capacities deserve special consideration.

been adopted in the social cognition literature, which may be more orthogonal with patience. This broader conception encompasses intelligence, but it also includes attributes pertaining more generally to activity and goal pursuit, such as “being active, decisive, self-confident, and efficient,” (Abele & Wojciszke, 2007, p. 752), or “striving to be independent, to control one’s environment, and to assert, protect and expand one’s self” (Abele, Uchrowski, Suitner, & Wojciszke, 2008, p. 1204). This broader conception of agency therefore encompasses all of the attributes that lead to an agent being more effective in accomplishing their goals. Intelligence is certainly part of this broader notion of agency – all else being equal, an intelligent individual is more likely to be successful in attaining their goals than a less intelligent individual. But this broader conception of agency is not reducible to intelligence, and the fact that it also encompasses aspects related to activation and goal-striving may mean that it is perceived as more orthogonal with patience than a notion of agency defined more narrowly in terms of intelligence. Since no research to date has sought to tease apart these different aspects of agency (intelligence vs. activity/striving), we aimed to do so in Study 1 of the present research, by examining their distinct relationships with patience, as well as the separate contributions that they make to ascriptions of moral standing.

1.3. Present hypotheses and overview of studies

In this research, we tested the hypothesis that harmfulness is an important factor in lay judgments of moral standing, which contributes independently of patience and intelligence. As an ancillary goal, we also further examined the relation between agency and patience, by distinguishing between intelligence and activity/striving as sub-components of a broader dimension of agency (effectiveness in achieving one’s goals), in order to test the hypothesis that intelligence will be seen as correlating *positively* with patience.

Non-human animals are an important target for judgments of moral standing because they are the recipients of many different forms of human action that depend upon judgments of their moral standing (e.g., killing, eating, protecting). They are also likely to vary considerably in their perceived moral standing, unlike humans, who are likely thought to possess moral standing almost universally. However, while non-human animals have been the focus of considerable recent psychological research (e.g., Bastian, Loughnan, Haslam, & Radke, 2012; Joy, 2010; Laham, 2009; Ruby, 2012), few if any studies have comprehensively investigated judgments of their moral standing. For these reasons, we exclusively used non-human animals as targets of judgment across four studies. In Study 1, we had participants rate a number of real-life, natural targets (e.g., fish, sheep) on traits that originated from four dimensions—patience, intelligence, harmfulness, and “activity/striving”—as well as make judgments of each target’s moral standing. This allowed us to compare the relative contribution that each dimension made to judgments of moral standing. It also allowed us to explore the relations between the dimensions themselves, in order to test our

hypothesis about the perceived positive relationship between patience and agency. In Study 2, we experimentally manipulated the characteristics of a novel alien species, with regards to its perceived harmfulness, patience, and intelligence, and compared the effects of each dimension on judgments of the moral standing of the novel species. In Study 3, we isolated the disposition of the agent as the mechanism by which harmfulness affects moral standing, ruling out a broader sense of harmful agency (i.e., effectiveness in carrying out harm) as the mechanism. Finally, in Study 4, we sought to uncover the primary motivation that underlies the effect of harmfulness, by examining whether its effect mostly stems from parochial or speciesist motivations to protect one’s own species from harm, or from a concern for the welfare of other sentient beings that might be harmed.

2. Study 1 – Correlations between trait dimensions and moral standing using real-life targets

In Study 1, we had participants rate a range of real-life animal targets on the dimensions of *patience* (capacity to suffer/experience pleasure), *activity/striving* (a sub-component of the broader construct of agency), *intelligence* (also a sub-component of agency), and *harmfulness* (possessing a violent or aggressive disposition), as well as to provide judgments of each target’s moral standing (e.g., how deserving of protection the target is). We predicted that (a) harmfulness would emerge as a significant predictor of judgments of moral standing, independent of patience and intelligence, and (b) that patience and intelligence would be positively correlated, rather than orthogonal or negatively correlated.

2.1. Method

2.1.1. Participants

Participants were 175 American adults (90 female; $M = 32.42$ years, $SD = 11.40$) recruited via Amazon’s Mechanical Turk (www.mturk.com) in exchange for payment. Recruitment was limited to people located in the United States.

2.1.2. Materials and procedures

Participants completed an online questionnaire that required them to rate 17 different animals (from a set of 34 animals) on twenty traits, and five moral standing questions. The set of 34 animals included land mammals (chimpanzees, elephants, lions, bears, wolves, dogs, cats, horses, cows, sheep, pigs, bats, mice, rabbits), marine mammals (dolphins, whales, seals), reptiles (turtles, snakes, lizards), amphibians (frogs), birds (chickens, parrots, crows, pigeons), marine animals (octopus, sharks, fish, shrimp, lobsters), and insects, arachnids, or worms (spiders, earthworms, hornets, butterflies). The selection of animals was designed to cover a range of wild and domestic animals that, on the surface, appeared to vary along the four dimensions of interest (patience, intelligence, activity/striving, harmfulness).

A photo of each target animal was provided as a memory aid. The photo consisted of a single individual, centered in the frame, either facing forward or to the side, in a static pose, with no other individuals present. Below the photo, on the same page, was the trait measure. Twenty traits were included with the aim of assessing our four hypothesized dimensions. We included five trait terms for each dimension: patience (*sensitive, can suffer, can experience pain, can experience pleasure, vulnerable*), intelligence (*intelligent, clever, sophisticated, creative, inquisitive*), activity/striving (*potent, powerful, active, vigorous, energetic*), and harmfulness (*aggressive, dangerous, mean, hostile, violent*). Each trait, presented in a randomized order, was rated on a 7-point scale in terms of “the extent to which [target] have the following traits” (*Not at all to Extremely*). The trait terms were selected because of their face validity as an element of one of the four hypothesized constructs. Owing to the fact that we classified traits *a priori*, we submitted the trait terms to a principal components factor analysis (see below) to determine their empirical factor structure.

On a separate page, participants rated their level of agreement with five moral standing items, presented in a randomized order. Two of the items were phrased in terms of the animal deserving specific rights⁵: “[Target] deserve to be protected from harm”; “[Target] deserve to be treated with care and compassion.” Two of the items involved positive moral emotions or appraisals directed at the animal: “I have sympathy for [target]”; “I have respect for [target].” Another item called for a judgment as to whether it was a moral transgression to harm the animal: “Harming [target] is morally wrong.” The five items were aggregated to form an index of moral standing attributions. The index had a very high internal reliability ($\alpha = .99$). After completing the survey, participants provided demographic information and were debriefed. No other measures were collected.

2.2. Results

2.2.1. Data preparation

Because participants provided data for only half of the 34 targets, we calculated means for the twenty trait measures, and five moral standing measures, for each of the 34 targets (mean sample size = 87.5 participants), and then entered these mean scores for each target into correlational and regression analyses; that is, each target comprised a separate case ($N = 34$) for the twenty-five measures.

2.2.2. Factor analysis of trait terms

To determine the underlying factor structure of our twenty trait terms, we submitted all twenty traits to a principal components analysis, with Varimax rotation, using parallel analysis (O'Connor, 2000) as our extraction method. The analysis produced a two-factor solution,

explaining 87.93% of the total variance. Only the eigenvalues for the first two factors (12.77, 4.81, respectively) exceeded those generated via parallel analysis. The two factors and their trait loadings are presented in Table 1. As can be seen, the first factor that emerged was comprised of four patience items, all five intelligence items, as well as a few of the activity/striving items. The loading together of the patience and intelligence items is consistent with the hypothesis that patience and intelligence are perceived as highly correlated dimensions when individuals judge the characteristics of real agents.

The second factor was comprised of all of the harmfulness items, and three of the activity/striving items; one patience item (*vulnerable*) negatively loaded on this factor, suggesting that “vulnerable” was perceived more in terms of benevolence (e.g., being gentle or tender) than in terms of being vulnerable to pain or suffering. The activity/striving items cross-loaded on both the patience/intelligence and harmfulness factors.

In the final solution, we aggregated items together based on their highest loading. Thus, Factor 1 was comprised of the average of the following traits: *can experience pleasure, can experience pain, can suffer, sensitive, intelligent, inquisitive, clever, creative, sophisticated, active, and energetic*. Factor 2 was comprised of the average of: *hostile, violent, dangerous, aggressive, mean, vulnerable* (reverse scored), *potent, powerful, and vigorous*. In the analyses that follow, we used these empirically derived factors, rather than our *a priori* dimensions, since these derived factors were more independent.⁶

2.2.3. Relationship between the two empirical factors, and moral standing attributions

The patience/intelligence factor (Factor 1) correlated moderately with the harmfulness factor (Factor 2), $r(32) = .49, p < .01$ (see Fig. 1). To test the individual contributions of the two observed dimensions (patience/intelligence and harmfulness) on participants' judgments of the moral standing of the animal targets, we conducted a linear regression analysis with the two factors entered as simultaneous predictors of moral standing. Both factors emerged as significant, independent predictors of moral standing attributions: patience/intelligence, $\beta = .99, t(31) = 10.50, p < .001$, and harmfulness, $\beta = -.30, t(31) = -3.16, p < .01$.

2.2.4. Relations between the *a priori* dimensions

Finally, in an exploratory manner, we examined the various relations between the *a priori* dimensions, rather than the empirically derived factors, that is, indices of the four hypothesized dimensions (five items each, with the exception of patience, which had “vulnerable” omitted to improve its reliability; $\alpha s = .90-.99$). Consistent with our predictions, the correlation between patience and intelligence was extremely high, $r(32) = .86, p < .001$. The correlation between patience and activity/striving was moderate,

⁵ We measured moral standing partly in terms of perceived fundamental rights, rather than perceived duties or obligations towards the animal. We did this primarily to avoid the issue raised by Kant (1797/1991) that one can have *indirect duties* to an entity on account of its value or worth to a person (e.g., the value a farmer places on his/her workhorse), but still see that entity as lacking moral standing in its own right.

⁶ This therefore obviates a problem with multi-collinearity when using the dimensions that we hypothesized *a priori*, which was particularly acute for the intelligence items (tolerance .143, VIF 6.99) and the activity/striving items (tolerance .140, VIF 7.12; all other VIFs < 4.73).

Table 1

Trait factors and their loadings from Study 1: Values less than .40 were suppressed.

	Factor 1 (patience/intelligence)	Factor 2 (harmfulness)
Can experience pleasure	.97	–
Can experience pain	.95	–
Can suffer	.94	–
Sensitive	.92	–
Intelligent	.87	–
Inquisitive	.85	–
Clever	.83	–
Creative	.79	–
Sophisticated	.79	–
Hostile	–	.97
Violent	–	.97
Dangerous	–	.96
Aggressive	–	.95
Mean	–	.95
Vulnerable	–	–.94
Potent	–	.89
Powerful	.55	.74
Vigorous	.50	.62
Active	.40	–
Energetic	.45	–

$r(32) = .62, p < .001$, though significantly lower than the correlation between patience and intelligence, Steiger's test, $z = 3.59, p < .001$. Finally, the correlation between intelligence and activity/striving (the two sub-components of agency) was also quite high, $r(32) = .80, p < .001$. These correlations therefore support our original theorizing, that patience and intelligence are very strongly related, whereas patience and activity/striving are more moderately related, though still positively. But they clearly do not support claims that there is no relation or an inverse relation between patience and agency. Finally,

harmfulness was highly correlated with activity/striving, $r(32) = .79, p < .001$, less so with intelligence, $r(32) = .47, p < .01$ (Steiger's test, $z = 3.97, p < .001$), and only weakly and non-significantly correlated with patience, $r(32) = .22, p < .20$.

2.3. Discussion

Study 1 provided initial support for the hypothesis that perceiving an agent to possess a harmful disposition contributes negatively to judgments of moral standing. It also cast considerable doubt on the allegedly orthogonal nature of patience and intelligence, and even greater doubt regarding their allegedly inverse nature. Consistent with our predictions, when we decomposed agency into intelligence and activity/striving, we found that the intelligence traits loaded on the same factor as the patience traits, reflecting a very high correlation between these traits, with this factor contributing positively to judgments of moral standing. Activity/striving appeared somewhat distinct from intelligence and patience, but was also somewhat related to harmfulness, making it more difficult to interpret. By contrast, the harmfulness traits did not load with patience or intelligence, were only weakly to moderately correlated with patience and intelligence, and contributed to moral standing attributions independently of patience and intelligence. While the findings of Study 1 are promising, they are limited by the correlational design employed. Thus, it remains to be seen whether perceiving an agent to possess a harmful disposition *causally* influences judgments of moral standing. We addressed this limitation in Study 2 by adopting an experimental methodology, in which we manipulated perceptions of an animal's harmfulness, as well as its intelligence and patience, and examined the effects on judgments of moral standing.

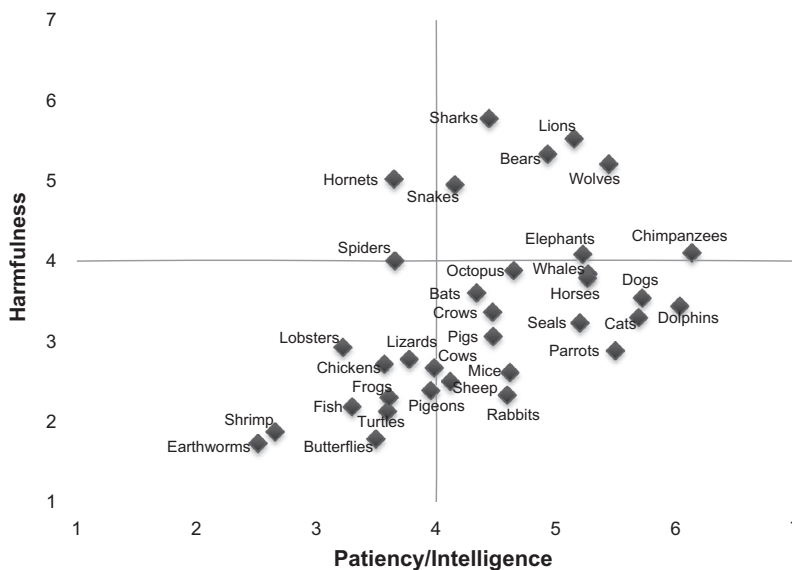


Fig. 1. Scatterplot of the 34 animal targets along the two empirically-derived dimensions of patience/intelligence and harmfulness (Study 1).

3. Study 2 – Experimentally manipulating patency, intelligence, and harmfulness

We adopted the “alien species” methodology developed by Sytsma and Machery (2012, see Study 2). In this method, participants imagine that an alien species is discovered in the distant future. The characteristic traits of this species are then manipulated along the dimensions of interest. The benefit of the “alien species” methodology is that it allows for the manipulation of different traits within a target that participants do not have pre-existing attitudes towards. In this study, we dropped the less interpretable activity/striving dimension, and focused on intelligence, patency, and harmfulness. Based on the findings of Study 1, and on past research by Sytsma and Machery (2012), we expected the dimensions of patency and intelligence to exert an effect on moral standing judgments. We also predicted that harmfulness would affect moral standing judgments, with greater perceived harmfulness leading to lower levels of moral standing.

3.1. Method

3.1.1. Participants

We recruited a new sample of 644 adults (236 female; $M_{age} = 29.48$ years, $SD = 9.98$) from the same web service as before, excluding individuals who participated in Study 1 and restricting the sample to U.S. residents.

3.1.2. Design

We used a 2 (harmful vs. harmless) \times 2 (high vs. low patency) \times 2 (high vs. low intelligence) between-subjects design.

3.1.3. Materials and procedures

Participants were asked to imagine an alien species that had been discovered by human scientists in the distant future. The wording was slightly different from that used by Sytsma and Machery (2012). All participants first read:

“Imagine that in the distant future scientists discovered that life had developed on a planet in a nearby solar system. Imagine further that on their first expedition to the planet a team of scientists encountered a new species of animal, similar in many ways to the great apes on our planet, but different in some ways as well. They called this new species the *trablans*. After spending several months studying the behavior of the new species, the scientists found the *trablans* to have the following characteristics:”

Participants were randomly assigned to receive one of eight different descriptions of this alien species, which immediately followed this opening paragraph. The eight descriptions resulted from orthogonally manipulating three binary independent variables: harmfulness, intelligence, and patency. The descriptions were tightly controlled with regards to form and the amount of information conveyed: two trait words and one behavioral example were provided for each dimension. The information for each variable was conveyed via two sentences (thus, the descriptions were comprised of a total of six sentences). The order in which

each variable appeared was randomized. The descriptions read as follows (with the second level of each variable in brackets):

Harmful [Harmless]: The *trablans* are vicious and aggressive. One of the scientists was brutally attacked by a *trablan* and nearly died. [The *trablans* are gentle and peaceful. The *trablans* were very accepting of the scientists' presence amongst them.]

High intelligence [Low intelligence]: The *trablans* are intelligent and inquisitive. They display sophisticated problem solving abilities, including tool use. [The *trablans* are neither intelligent nor inquisitive. They do not display even basic problem-solving abilities, like the use of basic tools.]

High patency [Low patency]: The *trablans* are sensitive to pain, and have a rich emotional life. When one of the *trablans* fell from a tall tree it was observed shrieking in pain. [The *trablans* are insensitive to pain, and have a shallow emotional life. When one of the *trablans* fell from a tall tree, it appeared unperturbed by the fall and walked away like nothing happened.]

Afterwards, participants made five judgments pertaining to the moral standing of *trablans*, all rated on 1–9 scales:

1. How morally wrong do you think it would be for the scientists to harm a *trablan*?
2. How morally wrong do you think it would be for the scientists to kill a *trablan*?
3. To what extent do you think the *trablans* deserve to be treated with compassion?
4. To what extent do you think the *trablans* deserve to be protected from harm?
5. If the *trablans* were endangered, how important would it be to protect them from extinction?

The five items formed a reliable index of moral standing ($\alpha = .90$). Finally, participants rated from 1–9 the extent to which *trablans* possess fifteen different traits, five pertaining to each dimension: harmfulness (*aggressive, mean, hostile, peaceful* [reverse scored], *gentle* [reverse scored]; $\alpha = .97$), intelligence (*intelligent, clever, sophisticated, creative, inquisitive*; $\alpha = .96$), and patency (*can suffer, can experience pain, can experience pleasure, emotionally vulnerable*⁷, *sensitive*; $\alpha = .94$). These ratings allowed us to test whether each trait manipulation affected moral standing via the theoretically relevant dimension or via a related dimension. Participants then provided demographic information, were debriefed and paid. No other measures were collected.

3.2. Results

3.2.1. Trait ratings

Preliminary ANOVAs were conducted on the three trait indices to test whether the trait manipulations affected

⁷ We surmised that “vulnerable” did not load with the other patency items in Study 1 because it did not focus on “emotional” vulnerability (i.e., susceptibility to negative emotion, pain, or suffering), which is closer to what we originally had in mind. We therefore made this emotional aspect more explicit in the present study.

only the hypothesized traits of interest, or had broader effects. The patency manipulation affected perceptions of patency, and only patency. Perceptions of patency were significantly lower in the low patency condition ($M = 2.78$, $SD = 1.51$) than in the high patency condition ($M = 7.34$, $SD = 1.21$), $F(1,642) = 1775.35$, $p < .001$, $\eta_p^2 = .73$, but levels of intelligence and harmfulness were not affected by the patency manipulation ($F_s < 1.61$, $p_s > .20$). The intelligence manipulation affected perceptions of intelligence (high intelligence condition: $M = 6.72$, $SD = 1.36$; low intelligence condition: $M = 2.04$, $SD = 1.25$), $F(1,642) = 2051.61$, $p < .001$, $\eta_p^2 = .76$. However, the intelligence manipulation also significantly affected perceptions of patency, $F(1,642) = 4.04$, $p < .045$, $\eta_p^2 = .006$. An alien species with great intelligence was perceived to possess greater patency ($M = 5.27$, $SD = 2.42$) than an alien species with low intelligence ($M = 4.85$, $SD = 2.77$), which is consistent with the positive correlation between intelligence and patency observed in Study 1. The intelligence manipulation did not affect perceptions of harmfulness, $F < 1$, $p = .87$.

Finally, the harmfulness manipulation successfully manipulated perceptions of harmfulness (harmful condition: $M = 7.42$, $SD = 1.23$; harmless condition: $M = 2.04$, $SD = 1.12$), $F(1,642) = 3337.11$, $p < .001$, $\eta_p^2 = .84$. The harmfulness manipulation also significantly influenced perceptions of patency, $F(1,642) = 6.97$, $p = .008$, $\eta_p^2 = .011$, though not intelligence, $F(1,642) = 2.66$, $p = .103$. An alien species that was perceived to have a harmful disposition was also perceived to possess less patency ($M = 4.78$, $SD = 2.56$) than a harmless species ($M = 5.33$, $SD = 2.73$).

3.2.2. Main analysis of moral standing

We conducted a 2 (Patency) \times 2 (Intelligence) \times 2 (Harmfulness) between-subjects ANOVA on the moral standing index. There were significant main effects for all three dimensions: patency ($M_{\text{high}} = 7.22$, $SD = 1.66$ vs. $M_{\text{low}} = 6.83$, $SD = 1.71$), $F(1,636) = 10.01$, $p = .002$, $\eta_p^2 = .016$, intelligence ($M_{\text{high}} = 7.26$, $SD = 1.55$ vs. $M_{\text{low}} = 6.80$, $SD = 1.81$), $F(1,636) = 13.41$, $p < .001$, $\eta_p^2 = .021$, and harmfulness ($M_{\text{harmful}} = 6.41$, $SD = 1.85$ vs. $M_{\text{harmless}} = 7.65$, $SD = 1.26$), $F(1,636) = 100.35$, $p < .001$, $\eta_p^2 = .136$. Notably, the effect of harmfulness was substantially larger than the effect of the other two dimensions: more than eight times larger than the effect of patency, and more than six times larger than the effect of intelligence. Furthermore, it is worth noting that the relatively larger influence of harmfulness on moral standing is not attributable simply to the greater potency of the harmfulness manipulation – as revealed by its effect on the harmfulness traits – since the effect size of harmfulness on moral standing is disproportionately large in comparison with the relative potencies of the three manipulations on their respective trait dimensions.

There was also a small, but statistically significant, two-way interaction between intelligence and harmfulness, $F(1,636) = 4.72$, $p = .03$, $\eta_p^2 = .007$ (see Fig. 2), but none of the other two-way or three-way interactions were significant ($p_s > .42$). Follow-up simple effects tests revealed the nature of the interaction between intelligence and harmfulness. As can be seen in Fig. 2, intelligence only affected moral standing judgments when the alien species

was harmful, $F(1,320) = 12.30$, $p = .001$, but not when the species was harmless, $F(1,320) = 1.73$, $p = .19$. By contrast, a harmful species was attributed less moral standing than a harmless species at both levels of intelligence, $F_s > 34.35$, $p_s < .001$.

3.2.3. Mediation analyses

Since the harmfulness manipulation and the intelligence manipulation affected perceptions of patency in addition to the trait dimension they were intended to manipulate, we conducted mediation tests to confirm that these manipulations affected moral standing via their hypothesized dimension. We conducted two separate, multiple-mediation bootstrapping analyses (Preacher & Hayes, 2008), both with 5000 resamples. First, to test whether the harmfulness manipulation operated through perceptions of harmfulness, i.e., had an indirect effect (“ab path”) through harmfulness, we entered harmfulness ratings and patency ratings simultaneously as mediators (since the manipulation of harmfulness also affected patency). Indeed, the harmfulness manipulation had a significant indirect effect through harmfulness, $ab_{\text{harmfulness}} = -1.60$ (95% bias corrected CIs $[-2.12, -1.03]$) though it also had a much smaller effect through patency, $ab_{\text{patency}} = -.06$ $[-.13, .01]$. Next, to test whether the intelligence manipulation operated through perceptions of intelligence, we entered intelligence ratings and patency ratings (which were also affected by the manipulation of intelligence) simultaneously in a second analysis. Intelligence had an indirect effect through intelligence, $ab_{\text{intelligence}} = .83$ $[.31, 1.33]$, as well as a smaller one through patency, $ab_{\text{patency}} = .05$ $[.01, .12]$. Thus, we can be confident that the effects of harmfulness and intelligence manipulations on moral standing, result mainly from their effects on appraisals of harmfulness and intelligence, respectively, rather than from their incidental effects on patency.

3.3. Discussion

Consistent with the findings from Study 1, in Study 2 participants attributed significantly less moral standing

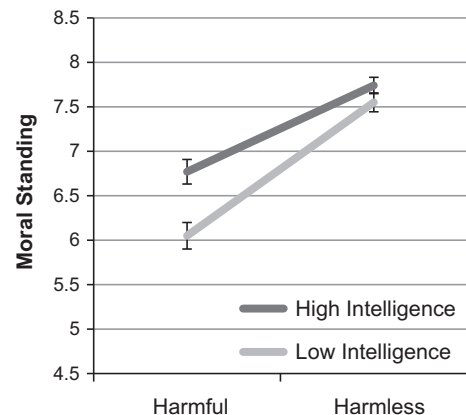


Fig. 2. The effects of harmfulness and intelligence on judgments of the moral standing of an alien species, in Study 2. Error bars ± 1 S.E.

to a novel, harmful species than to a harmless species. Participants also attributed less moral standing to the novel species when that species was unintelligent rather than intelligent, and when it possessed low patience rather than high patience. However, in this second study, the effect of perceived harmfulness on moral standing attributions was much larger in magnitude than the effects of intelligence and patience. Furthermore, the effect of intelligence was largely dependent on the level of harmfulness, such that intelligence increased judgments of moral standing only at high levels of harmfulness. By contrast, when the novel species was perceived to be harmless, perceiving the species also to be highly intelligent did not affect its moral standing.

Considered together, the results of Studies 1–2 strongly support the hypothesis that perceptions of an animal's harmful disposition contribute significantly to judgments of its moral standing. However, several questions still remain. In particular, the precise mechanism underlying the harmfulness dimension remains unclear. There are at least two possibilities. On the one hand, harmfulness could imply something solely about the animal's *disposition* or character, i.e., that it is inclined to be harmful (or not), which by itself accounts for the effect of harmfulness on moral standing. On the other hand, the harmfulness variable could also imply something about the *harmful agency* of the animal, i.e., the animal's capacity to exercise its harmful disposition effectively, which could, in turn, influence ascriptions of moral standing. According to this hypothesis, dispositional harmfulness does not affect judgments of moral standing directly, but does so indirectly via information that is conveyed about an animal's *harmful agency*. To be clear, this second hypothesis does not claim that harmfulness exerts its effects on moral standing via *agency* in a more general sense (which would be implausible given the *positive* relation between agency and moral standing seen in Study 1). Rather, this alternative hypothesis is that harmfulness should only diminish an entity's moral standing when the entity has the capacity to carry out its harmful disposition, i.e., that there should be an interaction between having a harmful disposition and general agency. The methodologies employed so far are unable definitively to adjudicate between these two possibilities. Thus, in Study 3 we independently manipulated an animal's overall agency (or effectiveness) as well as its disposition (harmful vs. benevolent) in order to clarify the effect of the harmfulness dimension.

4. Study 3 – Is disposition or agency the mechanism of harmfulness?

4.1. Method

4.1.1. Participants

Two-hundred and four (103 male; 101 female) adult participants ($M_{\text{age}} = 36.26$ years, $SD = 12.75$) located in the US participated in the study in exchange for payment via the same web service as before. Previous participants were excluded from participation.

4.1.2. Design

We used a 2 (disposition: harmful vs. benevolent) \times 2 (agency: high vs. low) between-subjects design.

4.1.3. Materials and procedure

Participants read a brief vignette about a stray dog. They were instructed to imagine that there is a stray dog in their neighborhood, without an owner, with certain characteristics. Depending on which disposition condition participants were assigned to, the dog was described as either having a “vicious and aggressive” disposition or a “playful and friendly” disposition. Thus, slightly different from the manipulation in Study 2, this time we emphasized the actively benevolent nature of the non-harmful animal, rather than simply describing it as harmless or benign. Depending on which agency condition participants were assigned to, the dog was described as either having the capacity to act upon its harmful or benevolent disposition (was healthy and effective) or as lacking the capacity to act upon its disposition (it was blind and ineffective; see Appendix A for full vignettes by condition). The key predictions were as follows. If harmful dispositions by themselves diminish moral standing, then there should be an overall main effect of the harmful disposition manipulation, but no interaction between harmful disposition and agency. On the other hand, if harmful agency is what matters, then there should be a main effect of the harmful disposition manipulation, but it should be qualified by an interaction between harmful disposition and agency, such that a harmful disposition only diminishes moral standing when the animal has the capacity (i.e., agency) to carry out its harmful disposition.

After reading the vignette, participants were asked to imagine that a ranger from animal services captured the stray dog while it was rooting around in some garbage cans in search of food. (These instructions were meant to provide a naturalistic setting in which to ground participants' moral standing judgments.) Participants then responded to four moral standing items, similar to those used in Study 2, this time framed in terms of how the dog should be treated by the ranger: “The dog deserves to be treated with compassion”; “The dog deserves to be protected from harm”; “It would be morally wrong for the ranger to harm the dog”; “It would be morally wrong for the ranger to kill the dog” ($\alpha = .94$). Agreement with these items was rated on a 1 (*Strongly disagree*) to 9 (*Strongly agree*) scale.

To ensure that our disposition and agency manipulations were effective, on a separate page, participants rated how harmful they perceived the dog to be, on five trait items: *aggressive*, *mean*, *hostile*, *peaceful* (reverse scored), and *gentle* (reverse scored) ($\alpha = .99$), and how agentic they perceived the dog to be, with two trait items: *effective* and *capable* ($\alpha = .86$), all on a 1–9 scale. All participants were debriefed and paid after answering some final demographic questions. No other measures were collected.

4.2. Results and discussion

4.2.1. Manipulation check

The agency manipulation was successful: The dog was rated as more agentic in the high agency condition

($M = 6.14$, $SD = 2.01$) than in the low agency condition ($M = 4.22$, $SD = 21.5$), $F(1,200) = 43.27$, $p < .001$, $\eta_p^2 = .18$, but not more harmful, $F(1,200) = 1.30$, $p = .26$. The disposition manipulation was also successful: The dog was perceived to be more harmful in the harmful disposition condition ($M = 7.80$, $SD = 1.33$) than in the benevolent disposition condition ($M = 1.53$, $SD = 0.94$), $F(1,200) = 1485.47$, $p < .001$, $\eta_p^2 = .88$.⁸ The disposition manipulation also incidentally enhanced perceptions of agency: the benevolent dog was rated more effective/capable ($M = 5.90$, $SD = 2.06$) than the harmful dog ($M = 4.50$, $SD = 2.30$), $F(1,200) = 26.62$, $p < .001$, $\eta_p^2 = .12$.

4.2.2. Attributions of moral standing

A 2 (disposition) \times 2 (agency) ANOVA was conducted on the moral standing index. As can be seen in Fig. 3, there was a main effect of disposition, such that the dog was attributed less moral standing when it had a harmful disposition ($M = 6.65$, $SD = 2.18$) than when it had a benevolent disposition ($M = 8.57$, $SD = 0.81$), $F(1,200) = 67.19$, $p < .001$, $\eta_p^2 = .25$. There was no effect of agency on judgments of moral standing ($M_{\text{high}} = 7.57$ vs. $M_{\text{low}} = 7.61$), $F < 1$, $p = .90$, $\eta_p^2 = .00$, and, critically, there was no interaction of disposition and agency, $F < 1$, $p = .33$, $\eta_p^2 = .005$ (see Fig. 3). In short, judgments of moral standing were affected by the perceived harmful disposition of the animal, but not by the perceived capacity of the animal to act upon its disposition.

Because we are relying on the absence of an interaction as evidence for our hypothesis, we conducted a post hoc power analysis to determine the likelihood of failing to detect a significant interaction given our sample size and the observed effect size of the interaction. The achieved power of our analysis was only .17, which indicates a probability of committing a Type II error of .83, assuming that the interaction is a real effect. However, while not ideal, the low power of the analysis reflects the very small effect size of the interaction, $\eta_p^2 = .005$, which is effectively zero. Our overall sample size was not unusually small for studies of this general sort, $N = 204$ (approximately 50 participants per cell). But, because of how small the effect is, we would have required a sample size of 1564 participants for the observed interaction to be significant at the $\alpha = .05$ level. Moreover, the interaction effect is dwarfed by the main effect of disposition, which was fifty times larger. Thus, this interaction is not only non-significant, it is practically non-existent.

Since the disposition manipulation had an incidental effect on agency (the benevolent dog was perceived to be more effective/capable than the harmful dog), we conducted a multiple-mediation bootstrapping analysis (5,000 resamples) to confirm that the disposition manipulation had its effect on moral standing through perceptions

⁸ Although the effect of the disposition manipulation on its corresponding traits (the five harmfulness traits) was more potent than the agency manipulation on its corresponding traits (*effective, capable*), the effect size of the agency manipulation on these traits was by no means trivial ($\eta_p^2 = .18$) – thus, any absence of an effect of agency on moral standing, or of an interaction of agency and harmful disposition, cannot be attributed to a failure to manipulate agency sufficiently.

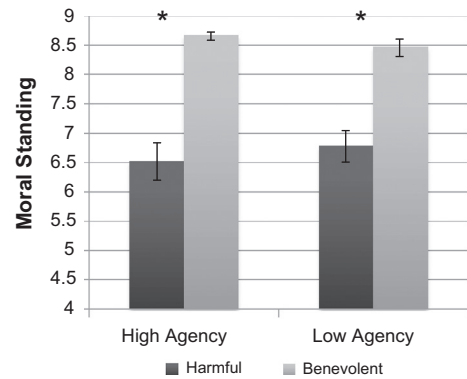


Fig. 3. Moral standing attributions as a function of disposition (harmful vs. benevolent) and agency (high vs. low), in Study 3. Moral standing attributions were affected by disposition but not agency. Error bars ± 1 S.E. Asterisk indicates a mean difference at $p < .001$.

of the dog's harmful disposition and not perceptions of its agency. We entered indices of harmfulness and agency simultaneously as mediators in the analysis. The indirect effect of disposition on moral standing through harmfulness was significant, $ab_{\text{harmfulness}} = -2.04$ (95% bias corrected CIs $[-3.78, -.58]$), but the indirect effect through agency was not, $ab_{\text{agency}} = -.15$ $[-.38, .002]$, confirming that the effect of the disposition manipulation was limited to its impact on perceptions of the dog's harmful disposition. Thus, Study 3 ruled out harmful agency (i.e., an animal's capacity to act upon its harmful disposition or inclinations) as the mechanism underlying the influence of harmfulness on moral standing judgments, and isolated the disposition of the animal (i.e., its inclination towards harming others) as the specific mechanism. Thus, it would seem that it is not an animal's capacity to inflict harm that causes people to alter their moral consideration of it, but purely the fact that the animal is disposed to harm others – in other words, that harming is *in its nature*.

5. Study 4 – What is the motivation underlying the effect of harmfulness on moral standing?

One final unanswered question is whether a concern for harmfulness derives from a parochial or speciesist motivation to protect oneself and other people from harm, or whether it derives from a non-speciesist, utilitarian motivation to protect all sentient beings capable of being harmed. This is the question to which we turned in Study 4. Although we suspect that some people do strive to be non-speciesist utilitarians, considering the interests of all species in the manner outlined by Singer (1975/2009, 2011), we surmise that most people are intuitive speciesists (see Herzog, 2010; Ryder, 1971), in that they tend to elevate the needs and interests of their own species above those of other species, particularly when species' interests conflict. Thus, with regards to judgments of the moral standing of animals, we predicted that harmfulness affects moral standing primarily through concerns for the safety of one's own species, rather than through concerns for the safety of other species. We sought to tease apart these

two possibilities by experimentally manipulating whether the harmful disposition of an animal (harmful vs. benevolent) was directed at human beings versus other animals. We predicted that moral standing judgments would be most affected by an animal's harmful disposition directed at humans, and less so by an animal's harmful disposition directed at other animals.

5.1. Method

5.1.1. Participants

A new sample of 202 adults (104 male; $M_{age} = 31.57$ years, $SD = 10.64$), located in the US, were recruited using the same web service as before, in exchange for payment, again excluding individuals who participated in the previous studies.

5.1.2. Design

We used a 2 (harmful towards people vs. benevolent towards people) \times 2 (harmful towards other animals vs. benevolent towards other animals) between-subjects design.

5.1.3. Materials and procedures

Similar to Study 3, participants imagined that a stray dog was found in their neighborhood, with characteristics pertaining to our two independent variables crossed:

Harmful towards both people and animals: "The dog is aggressive towards people and other animals. It has been known to attack both people and other animals."

Benevolent towards both people and animals: "The dog is very good-natured and friendly towards people and other animals. It has never attacked a person or any other animal."

Harmful towards people, benevolent towards other animals: "The dog is aggressive towards people, and has been known to attack them viciously. However the dog is not aggressive towards other animals. It is very good-natured and friendly towards other animals, and has never attacked another animal."

Benevolent towards people, harmful towards other animals: "The dog is aggressive towards other animals, and has been known to attack them viciously. However the dog is not aggressive towards people. It is very good-natured and friendly towards people, and has never attacked a person."

Immediately afterwards, participants answered the same four moral standing items from Study 3 ($\alpha = .89$). They also completed two manipulation check items: they rated on a 1–9 scale the extent to which the dog is "a threat to people" and "a threat to other animals." We also had participants rate how much they "pitied" the dog⁹ on the same 1–9 scale, before answering basic demographic questions, being debriefed and paid. No other measures were collected.

⁹ We surmised that participants might infer that the dog that was aggressive towards people had a history of abuse at the hands of humans, and therefore they would have more pity for the aggressive dog. Quite the contrary, greater pity was felt towards the dog when it was friendly towards people ($M = 7.48$, $SD = 1.70$) than when it was aggressive towards people ($M = 6.32$, $SD = 2.31$), $F(1,198) = 16.29$, $p < .001$. Thus, we did not analyze this variable (pity) further.

5.2. Results and discussion

5.2.1. Manipulation check

The manipulations were successful. The dog was rated as a greater threat to people in the harmful towards people condition ($M = 7.52$, $SD = 1.71$) than in the benevolent towards people condition ($M = 2.02$, $SD = 1.54$), $F(1,198) = 571.68$, $p < .001$, $\eta_p^2 = .743$, but was not rated as a greater threat to other animals, $F(1,198) = 1.51$, $p = .22$. Likewise, the dog was rated as a greater threat to other animals in the harmful towards other animals condition ($M = 7.81$, $SD = 1.32$) than in the benevolent towards other animals condition ($M = 2.06$, $SD = 1.64$), $F(1,198) = 742.52$, $p < .001$, $\eta_p^2 = .789$, but was not rated as a greater threat to people, $F(1,198) = 1.46$, $p = .23$ (all interactions, $ps > .49$).

5.2.2. Main analysis

We ran a 2 \times 2 ANOVA on moral standing scores as our main analysis. Overall, when the dog was perceived as harmful towards people it was attributed less moral standing ($M = 7.22$, $SD = 1.78$) than when it was perceived as benevolent towards people ($M = 8.15$, $SD = 1.19$), $F(1,198) = 18.28$, $p < .001$, $\eta_p^2 = .085$. However, being dispositionally harmful towards other animals did not affect moral standing attributions ($M_s = 7.62$ vs. 7.75), $F < 1$, $p = .62$, $\eta_p^2 = .001$. There was a significant interaction of the harmful towards people and harmful towards other animals variables, $F(1,198) = 4.64$, $p = .032$, $\eta_p^2 = .023$. Simple effects tests revealed that when the dog was harmful towards people, being harmful towards other animals made no additional contribution to moral standing attributions ($M_{\text{harmful_to_animals}} = 7.40$, $SD = 1.71$ vs. $M_{\text{benevolent_to_animals}} = 7.05$, $SD = 1.85$), $F(1,98) = 0.96$, $p = .33$ (see Fig. 4). However, when the dog was benevolent towards people, being harmful towards other animals caused a significant decline in moral standing ($M_{\text{harmful_to_animals}} = 7.85$, $SD = 1.30$ vs. $M_{\text{benevolent_to_animals}} = 8.41$, $SD = 1.03$), $F(1,100) = 5.91$, $p = .017$.

In sum, an animal's (dog's) having a harmful or aggressive disposition directed towards human beings exerted a main effect on judgments of its moral standing, independent of its being dispositionally harmful/aggressive towards other animals. By contrast, an animal's having a harmful disposition directed towards other animals did not have a main effect on judgments of its moral standing, but did exert an effect when the animal was perceived to be benevolent towards people. Thus, the results were mostly consistent with our prediction that a parochial concern for the welfare of people is the primary motivation underlying the influence of harmfulness on moral standing attributions. It would seem that a non-speciesist, utilitarian concern for the safety of other animals plays a far weaker role that is conditional on an animal's disposition towards people.

6. General discussion

Past research on folk judgments of moral standing has focused exclusively on two factors: patency, i.e., the capacity to suffer or experience pleasure; and intelligence,

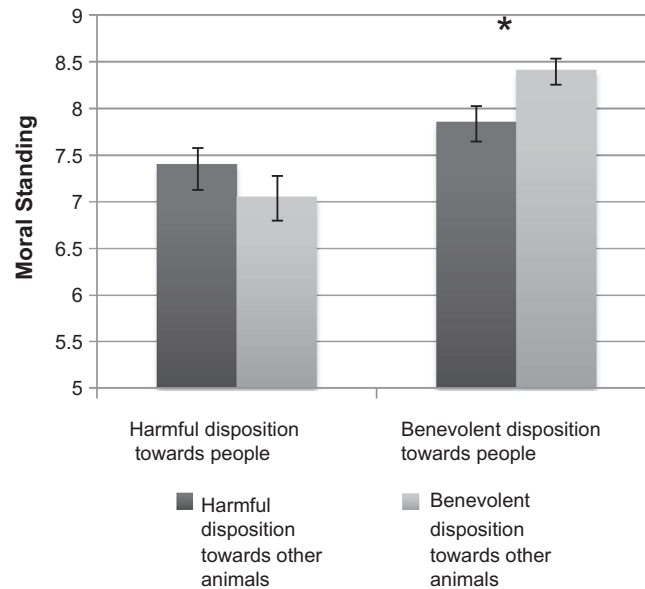


Fig. 4. Moral standing attributions as a function of an animal's having a harmful disposition towards people vs. a harmful disposition towards other animals (Study 4). Error bars ± 1 S.E. Asterisk indicates a mean difference at $p < .02$.

i.e., the possession of sophisticated cognitive traits, such as imagination, planning, or self-awareness (e.g., Gray et al., 2007; Knobe & Prinz, 2008; Sytma & Machery, 2012). In this research, we postulated that a third factor, harmfulness (possessing a harmful disposition), also affects lay judgments of moral standing, and does so independently of both patience and intelligence. Across four studies, one correlational and three experimental, we found strong support for this hypothesis, such that animals who possess harmful dispositions are judged as less deserving of moral consideration (e.g., they are seen as less deserving of compassion and protection from harm, they attract less sympathy and respect, and harming them is seen as less morally wrong) than animals who possess benevolent dispositions. In Study 1, we relied on participants' ratings of a diverse array of animals, and found that traits related to harmfulness loaded on a factor separate from traits related to patience and intelligence (which loaded together on a different factor). Furthermore, in this study, the harmfulness factor emerged as a unique predictor of moral standing judgments independent of the patience/intelligence factor. Study 2 replicated these findings with an experimental paradigm, in which we manipulated the perceived harmfulness, patience, and intelligence of a novel, alien species. In this study, the effect of harmfulness on moral standing was substantial, and larger than the effects of patience and intelligence. Study 3 investigated the mechanism underlying the effect of harmfulness on judgments of moral standing, and isolated the disposition of the animal (its inclination to harm), rather than its capacity to act upon its harmful disposition (harmful agency) as the precise mechanism. Finally, Study 4 revealed a parochial or speciesist concern for the safety of human beings as a primary factor driving the influence of harmfulness on judgments of moral standing. Thus, together these results

reveal a striking and consistent influence of harmfulness on judgments of animals' moral standing – animals with harmful dispositions are judged to have less moral standing.

The combined results of Studies 3 and 4 may seem to pose a conflict. Study 4 found that the perceived harmfulness of an animal reduces our sense that an animal deserves moral consideration primarily because of a parochial concern we have for the safety of other humans, rather than a more universal concern for the suffering of other sentient animals. On the surface, it might seem that there is a tension between this result and the finding in Study 3 that only an animal's core harmful disposition, and not its capacity to act upon that disposition, decreased attributions of moral standing. However, while participants in Study 4 likely presumed that the animal targets were able to act on their dispositions, this capacity was not itself manipulated. Therefore, the results of Study 4 simply show that the particular *target* of an animal's harmful disposition matters. They do not show that the animal must be able successfully to act upon that disposition. These results are therefore consistent with those of Study 3.

However, the results of Study 3 – that what mattered to participants was the internal, harmful disposition of the animal, and not the current threat it posed – may themselves seem puzzling at first. Why would not the actual threat posed by an animal be of special importance when individuals judge its moral standing? Nonetheless, we think this result makes sense overall, because judgments of moral standing pertain to what is owed to an animal, and therefore are only weakly related to how much we might fear or desire to incapacitate it. By way of analogy, it seems doubtful that people would think that the moral standing of an incarcerated criminal, who is thereby incapacitated and no longer threatening, is appreciably higher than the moral standing of an uncaught

criminal – notwithstanding the fact that the incapacitated criminal's agency (and therefore the threat he poses and the fear he induces) is greatly diminished.

6.1. Implications for current ethical issues regarding animals

These findings have implications for the treatment of animals in the real world. A growing body of research in psychology has focused on the ethical decisions people make with regard to animal products and the use of animals as food. This research has found animal intelligence to be an important variable within this context (Bastian, Loughnan, et al., 2012; Loughnan, Haslam, & Bastian, 2010; Ruby & Heine, 2012). Animals with high intelligence tend to be seen as less appealing (more disgusting) to eat (Ruby & Heine, 2012). People also find it less morally justifiable to use highly intelligent animals as food (Bastian, Loughnan, et al., 2012; Loughnan et al., 2010). Other research has found perceptions of patiency also to be important (Bastian, Costello, Loughnan, & Hodson, 2012; Bratanova, Loughnan, & Bastian, 2011). For example, one study found that having people categorize animals as “animals,” rather than as “food,” led to greater moral concern for them, and that this effect was mediated through perceptions that the animal has the capacity to suffer (Bratanova et al., 2011).

Although we are unaware of any published experimental studies that have examined the role of harmfulness in people's *actual* treatment of animals, our findings indicate that perceiving an animal as having a benevolent disposition enhances people's moral consideration for that animal, which is likely to promote better treatment of it. This hypothesis sheds light on some real-world events involving the treatment of animals. For instance, in the United States, each year Wildlife Services is responsible for “eradicating” thousands of predatory animals (e.g., coyotes, wolves) perceived as “pests” by farmers who own livestock. Even though less than 1% of livestock loss is due to predation, and the number of predatory animals killed by Wildlife Services rivals the number of livestock lost to predation, it would seem that the perception of these animals as ruthless killers is what drives our treatment of them (see Bekoff, 2007). Indeed, the state of Michigan recently lifted a two-decade ban on wolf hunting largely as a result of embroidered rumors that Michigan wolves were an increasing threat not only to livestock but to people as well (Keep Michigan Wolves Protected, 2013).

The findings of Study 4 – demonstrating a species-centric parochialism – are consistent with the claim that, despite the prescriptions of sentientist philosophers (e.g., Singer, 1975/2009) and animal rights activists (e.g., Dunayer, 2004), people are largely intuitive speciesists, whose moral concern is directed mainly towards other humans (Herzog, 2010; though not entirely, see Laham, 2009). This is not to say that participants in our samples were not motivated at all by the suffering of nonhuman animals. But, this concern was conditional, such that it was only when the target animal was friendly towards humans that its harmfulness toward other animals led to reductions in the target animal's moral standing. Human

suffering was clearly the main priority for our participants. Hence, our results suggest that the efforts of animal rights groups may be best spent targeting public perceptions of the dispositions predatory animals have toward humans, and only secondarily their dispositions towards other animals.

6.2. Integrating our findings with past research

The importance of harmfulness for moral standing is largely consistent with research from the person perception literature, which has shown the perception of benevolence (whether labeled “morality,” “warmth,” or “communion”) to be an important determinant of global evaluations and interpersonal outcomes (e.g., Abele & Wojciszke, 2007; Brambilla et al., 2012; Fiske et al., 2002, 2007; Goodwin et al., 2014; Wojciszke, Bazinska, & Jaworski, 1998). By contrast, people who are perceived to have a harmful disposition (i.e., individuals who are likely to harm, deceive, or corrupt, rather than help, cooperate, or inspire) are condemned, rejected or avoided as interaction partners because of the costs or damages they might impose (e.g., Cottrell et al., 2007; Kurzban & Leary, 2001; Kurzban & Neuberg, 2005). In the present studies, we demonstrated that perceptions of an agent's harmfulness extends to non-human agents as well, and that this dimension is key to the judgments people make regarding which animals deserve moral consideration.

Our findings also help clarify the nature of the relationship between patiency and intelligence as perceived characteristics of nonhuman entities. While past perspectives (e.g., Gray et al., 2007; Sytsma & Machery, 2012) have treated patiency and intelligence (usually labeled “agency”) as distinct and possibly independent factors, the results from Studies 1 and 2 evince much greater overlap between these dimensions than previously suggested (though note the strong positive correlation that was obtained when revisiting Gray et al.'s original data set; see Introduction). In Study 1, we found that participants perceived animal intelligence as highly co-occurrent with patiency. Furthermore, in Study 2 we found that a manipulation of animal intelligence simultaneously enhanced perceptions of intelligence *and* patiency. How can these results be reconciled with the studies of Sytsma and Machery (2012), in which intelligence and patiency affected judgments of moral standing independently of one another? At the outset, we should be clear that Sytsma and Machery (2012) do not explicitly claim that intelligence and patiency will be perceived as independent dimensions within naturally occurring entities; they only argue that “experience” (or patiency) and “agency” (which they operationalize mainly in terms of intelligence) produce independent effects on moral standing. This claim is, in fact, consistent with the results of our Study 2, in which intelligence and patiency manipulations produced at least partially independent effects – the manipulation of patiency affected moral standing only through trait measures of patiency, while the manipulation of intelligence affected moral standing through trait measures of both intelligence (primarily) and patiency. However, Sytsma and Machery's studies did not include participant ratings of intelligence or patiency, meaning it

is somewhat difficult to know exactly how closely our results match theirs. It is possible that, in their studies, some degree of the effect of their intelligence manipulation on moral standing may be attributable to the simultaneous manipulation of patency, but in the absence of trait ratings there is no way to know for sure.

Nonetheless, it is clear that the present findings do have implications for theories that have argued that agency and patency are orthogonal or inversely related. Intelligence is clearly an important component of agency, even if not entirely overlapping with it, and yet our findings show that intelligence and patency are positively related to a quite high degree. Moreover, as we saw in Study 1, even the activity/striving component of agency also correlates positively with patency. Thus, whichever way agency is construed, these findings should give pause to theorists who have argued that moral agency and moral patency are orthogonal or inversely related (Gray & Schein, 2012; Gray & Wegner, 2009; Gray et al., 2011, 2012).

6.3. Limitations and future research

One area of inquiry that deserves further attention is the extent to which the dimensions of patency, intelligence, and harmfulness share a common feature, which might provide a deeper explanation for their contributions to moral standing. One possibility is that patency, intelligence, and harmfulness matter for moral standing insofar as they each provide a measure of similarity or commonality between animals and humans (see e.g., Bastian, Costello, et al., 2012). Indeed, people tend to give particular priority to the interests of animals that are behaviorally or morphologically similar to humans, such as chimpanzees, with whom we share a recent common ancestor and the vast majority of our genes (see de Waal, 2012; Singer & Cavalieri, 1993). The role that similarity might play in explaining the effects of these dimensions on moral standing is clearest in the case of intelligence; intuitions about intelligence may provide evidence for similarity, thereby underlying our fondness for animals who look and behave like us (see Wise, 2002). It is somewhat less obvious that patency can be directly tied to similarity. An animal that can suffer is more similar to us than one that cannot, but it seems implausible that this difference in similarity is what fundamentally drives the attribution of moral standing, rather than the capacity for suffering itself. It is also not obvious that the role of harmfulness in driving moral standing is primarily attributable to perceptions of similarity. Of course, insofar as most people tend to think of themselves as kind, or at least not harmful (see Allison, Messick, & Goethals, 1989; Van Lange & Sedekides, 1998), it is possible that the perception of harmfulness in animals may affect judgments of moral standing by reducing our sense of kinship with them (the irony being that human-perpetrated cruelty towards aggressive animals would be seen as less despicable as a result). However, we have our doubts that “animal-human similarity” will provide a complete, or even substantial, explanation for the role harmfulness plays in judgments of moral standing. Once again, it seems more plausible to us that harmfulness exerts its primary effect on moral standing directly – a

harmful disposition is seen as immediately reducing an entity's rights to moral consideration – rather than more indirectly through perceptions of similarity. Nonetheless, future studies would be needed to address this possibility systematically.

7. Conclusion

While previous studies have focused on the role of intelligence and patency in the decisions people make regarding the attribution of moral standing to animals, the present research has shown that perceptions of an animal's harmful disposition are an equally if not more important factor driving such judgments. Much like we perceive people who harm others to be less deserving of moral consideration (e.g., Bastian et al., 2011), we seem to apply this same kind of thinking more broadly to other, non-human entities as well. Thus, consistent with some other work we have conducted (e.g., Goodwin & Benforado, 2014), it would appear that on some level we hold animals responsible for their harmful dispositions – particularly when they are directed at human beings. An unfortunate consequence of this is that when the welfare of a notorious predatory species is under consideration, misperceptions about the actual ferociousness of an animal (reinforced by sensational media stories) may interfere with level-headed decision-making. As biologist Jonathan Balcombe points out, “Ask someone to name a species of shark; if they know any at all, it's most likely to be one of the few species that have made rare attacks on humans, such as great white or tiger sharks. Most of us have never heard of the benign species which comprise the great majority of the 360 living shark species” (2010, pp. 146–147). On a more positive note, this research seems to validate efforts made by some biologists and animal-welfare groups to amend the public's distorted perception of the “brute” nature of wild animals.

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Appendix A.

Vignettes used in Study 3 by condition (agency/disposition).

A.1. High agency/harmful

The dog has healthy, perfect vision. The dog is vicious and aggressive. It attacks any person that comes near to

it. In sum, the dog has a mean disposition, and acts effectively on it.

A.2. High agency/benevolent

The dog has healthy, perfect vision. The dog is playful and friendly. It gently licks any person that comes near to it. In sum, the dog has a good-natured disposition, and acts effectively on it.

A.3. Low agency/harmful

The dog is completely blind and has been since birth. The dog is vicious and aggressive. When people come near to it, it tries to attack them, but always fails because of its lack of sight. In sum, the dog has a mean disposition, but does not act effectively on it.

A.4. Low agency/benevolent

The dog is completely blind and has been since birth. The dog is playful and friendly. When people come near to it, it tries to gently lick them, but always fails because of its lack of sight. In sum, the dog has a good-natured disposition, but does not act effectively on it.

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