

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Considering victims' minds in the evaluation of harmful agents' moral standing

Hironori Akechi^{1,2,3*} & Jari K. Hietanen^{3*}

1 UTokyo Institute for Diversity and Adaptation of Human Mind (UTIDAHM), University of Tokyo, Tokyo, Japan

2 Center for Evolutionary Cognitive Sciences, Graduate School of Arts and Sciences, University of Tokyo, Tokyo, Japan

3 Human Information Processing Laboratory, Faculty of Social Sciences/Psychology, Tampere University, Tampere, Finland

* Corresponding authors. (H. Akechi); Present address: Graduate School of Education, Kyoto University, Yoshida-honmachi, Sakyo-ku, Kyoto 606-8501, Japan. Email: akechi@cogn.jp. (J.K. Hietanen); Address: Human Information Processing Laboratory, Faculty of Social Sciences/Psychology, Tampere University, 33014 Tampere, Finland. Email: jari.hietanen@tuni.fi

Note

This work was supported by the Japan Society for the Promotion of Science (JSPS) grant #16H02836, #18H05060, #18K13291, Postdoctoral Fellowships for Research Abroad #801, the Grant for Environmental Research Projects from the Sumitomo Foundation #163421, and UTokyo Center for Integrative Science of Human Behaviour (CiSHuB) to H.A., and by the Finnish Cultural Foundation and the Academy of Finland (Mind Programme) grant #266187 to J.K.H.

Materials and data are available at Open Science Framework:
https://osf.io/rv8hf/?view_only=c261c77fcfe148c1957411cfa7ed7374

We thank all volunteers who participated in the survey, and Aalto Choice Tank for the help in data collection. We also thank Justin Sytsma for his helpful comments on an earlier draft of this article.

37
38

Abstract

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

An agent's moral standing is considered as depending on the agent's mind and their harmfulness toward a victim, but a victim's mind and species may also matter. To examine whether a victim's species (i.e., human or another) and a victim's mind are considered in the judgment of a harmful agent's moral standing, the present study modulated the mental capacities of an imaginary species. Only humans' suffering was considered when the other species' mental capacities were presumed to be low (Study 1), but humans' and the other species' suffering were equally considered when the other species had mental capacities that were presumed to be equivalent to those of humans (Study 2). The results suggest that our judgements of the moral standing of an agent 1) depend not only on the agent's mind but also on the victim's mind and 2) are not human species-oriented but human mind-oriented.

Keywords: moral judgement, mental capacities, suffering

1 Humans give moral considerations not only to humans but also to members of other
2 species who seem to have minds. Investigating properties that qualify one to be worthy of
3 moral consideration is directly linked to various practical and ethical issues such as animal
4 rights, abortion, and international conflicts and aid (Singer, 1993). This is an issue of *moral*
5 *standing*; “An entity has moral standing if and only if it can be morally wronged... Entities
6 that have moral standing deserve moral consideration” (Sytsma & Machery, 2012).

7 Traditional philosophical views on moral standing can be roughly divided into two
8 groups (Sytsma & Machery, 2012); one values the capacity to experience pain and pleasure,
9 i.e., *patency* (e.g., Bentham, 1789; Singer, 1993), and the other emphasizes complex and
10 sophisticated cognitive capacities, i.e., *agency* (e.g., Carruthers, 1992; Kant, 1785). Empirical
11 evidence also suggests that we perceive mind along two dimensions, corresponding to
12 *patency* and *agency*, respectively (Gray, Gray, & Wegner, 2007; Gray, Young, & Waytz,
13 2012)¹. Gray et al. (2007) asked respondents to evaluate 18 mental capacities of 13 animate
14 and inanimate entities. A factor analysis identified two dimensions of mind perception,
15 related to *patency* and *agency*, respectively. The *patency* factor included 11 capacities (e.g.,
16 feeling hunger, fear, and pain), while the *agency* factor included 7 capacities (e.g., self-
17 control, memory, and planning). The factor scores of *patency* were positively correlated with
18 the mean ratings of moral standing (i.e., painfulness for the self to harm the entity), calculated
19 for each entity across all respondents. Another study asking open responses to the question,

¹ Although some later studies have found the same two factors (Akechi, Kikuchi, Tojo, Hakarino, & Hasegawa, 2018; Takahashi, Ban, & Asada, 2016), other studies have identified different factors (Malle, 2019; Weisman, Dweck, & Markman, 2017). The different procedures used in different studies might have captured different aspects of mind perception, each of which could serve distinct roles in social reasoning (Weisman et al., 2017). Among several possible aspects of mind perception, this study focuses on the *patency*-*agency* aspect because (1) *patency* and *agency* have been long considered to be the key elements of moral standing, as described in the main text, and (2) *patency* and *agency* are empirically associated with moral standing and moral blameworthiness, respectively (Akechi et al., 2018; Bastian, Laham, Wilson, Haslam, & Koval, 2011; Gray, Gray, & Wegner, 2007).

1 why a man working with fish would want to know whether fish are capable of feeling or
2 remembering, also found an association between moral standing and patiency (Knobe &
3 Prinz, 2008).

4 Later studies experimentally modulated the agent's mental capacities and revealed
5 the association with moral standing more directly. Sytsma and Machery (2012) described the
6 patiency and agency of monkeys in a story to be high or low (2×2, between-participants
7 design) and asked participants how morally wrong it would be to use the monkeys for an
8 experiment. Moral standing increased when the monkey's patiency was described to be high,
9 but not when agency was described to be high. Jack and Robbins (2012) also found that
10 experimentally induced patiency, but not agency, of a lobster was associated with moral
11 standing. Agency was associated with moral standing only when an imaginary alien agent's
12 agency was described to be very high: very intelligent, highly social and political, having
13 highly developed literary, musical, and artistic traditions, and advanced sciences (Sytsma &
14 Machery, 2012). In sum, a key to the attribution of moral standing is whether an entity is
15 perceived to possess mind, especially patiency.

16 Along with mind (i.e., patiency and agency), harmfulness has recently been
17 proposed as another important factor of moral standing; *harmfulness* negatively affects moral
18 standing (Piazza, Landy, & Goodwin, 2014). Although the negative effect of experimentally
19 modulated harmfulness was reported previously (Opatow, 1993), it was unclear whether
20 harmfulness was an independent property or was associated with perceived minds. In Study
21 1, Piazza and colleagues first examined whether harmfulness emerged as an independent
22 factor, along with mind. The authors included harmfulness-related items (e.g., "Hostile,"
23 "Violent," "Dangerous," and "Aggressive") along with mind-related properties (i.e., patiency
24 and agency) in the questionnaire and asked people to what extent real animal species have
25 those properties. A factor analysis on the properties of real living animals resulted in two

1 factors, harmfulness and mind (including both patiency and agency). In Study 2, the
2 harmfulness and agency of an agent were separately modulated and the effect of harmfulness
3 on the agent's moral standing was found regardless of agency. The effect of agency emerged
4 only when the harmfulness was low. These results suggest that harmfulness decreases an
5 agent's moral standing independent of agency.

6 Given that "harmfulness" implies the existence or possibility of someone's suffering,
7 the *victim's* mind may matter in attributing moral standing to a harmful agent. Empirically,
8 the effect of a victim's mind on a harmful agent's moral standing was implied by Piazza et
9 al.'s (2014) Study 4, which showed that the moral standing of a harmful target (i.e., a dog)
10 was more strongly diminished when the harmful disposition was directed toward humans
11 than when directed toward other animals.

12 However, moral standing of a harmful agent could be affected not only by victim's
13 mind but also by species membership of the victim. In fact, Piazza and colleagues (2014)
14 concluded that our judgements of moral standing are parochial and human species-oriented.
15 In Piazza et al.'s study, the victims were "other animals" with allegedly lower mental
16 capacities; the manipulation of the victims' mental capacities was confounded with the
17 manipulation of their species, i.e., being humans vs. non-humans. Thus, it is essential to
18 experimentally modulate species membership and mental capacities independently to
19 distinguish human species-oriented and human mind-oriented moral senses.

20 The present study investigated whether the harmfulness effect of moral standing
21 stems from parochial concerns for human species or from a more general mind-oriented
22 moral sense. To modulate the species membership and mind independently, this study
23 adopted the imaginary extraterrestrial alien paradigm (Sytsma & Machery, 2012)². The

² The alien vignettes used in the present study might be unrealistic and cause low external validity. Yet, using these types of vignettes was essential to achieve the purpose of the study; it is difficult to modulate mental capacities perceived in real animals efficiently. For example,

1 present study also employed the triadic situation used in Piazza et al. (2014), in which human
2 species-oriented moral judgements were found. A combination of the two methods made it
3 possible to examine whether we consider the species of the victim (i.e., human or non-
4 human) and the victim's mind and suffering in judging the moral standing of a harmful agent.

5 **Study 1**

6 We first aimed to investigate whether a victim's mere suffering can decrease the moral
7 standing of a harmful agent regardless of the victim's species. Therefore, in Study 1, the
8 victim's (alien species) mental capacities were not described. If a harmful agent's moral
9 standing is influenced by the victim's suffering regardless of the victim's species, a main
10 effect of suffering should be observed. However, if humans have a human mind-oriented or
11 human species-oriented moral sense, they would consider humans' suffering but not aliens'
12 suffering in judging a harmful agent's moral standing; an interaction between victim species
13 and suffering is expected. Ethical approval for the study was obtained from the Ethics
14 Committee of the Tampere region beforehand.

15 **Method**

16 **Participants**

17 Data from 262 Finnish volunteers, who were recruited via the mailing lists of various
18 departments in Finnish universities, were included in the final analysis (Table 1). In previous
19 studies that employed a similar paradigm, data were analyzed from 202 respondents (Piazza
20 et al., 2014). Therefore, it was aimed that data at least from 200 respondents would be
21 collected. According to the study by Piazza et al., the effect size of a victim's suffering on
22 harmful agent's moral standing can be estimated as Cohen's $d = .48$, with which $n = 228$

in reality, it is hard to imagine an insect that has equivalent patiency and agency to humans.

1 would detect the effect with a probability of $1 - \beta = .95$ ($\alpha = .05$, two-tailed). The
2 advertisement was run several times until the sample size reached the desired size. The
3 volunteers participated in this study via the Internet and were randomly assigned to one of
4 four groups regarding the victim species (humans, aliens) and suffering (suffering, no
5 suffering): humans-suffering ($n = 61$); humans-no suffering (68); aliens-suffering (67); and
6 aliens-no suffering (66). Data from respondents whose responses were missing (2), whose
7 reported chronological age was zero (1), and whose responses were the same for all items (1)
8 were excluded from the analysis. Data from respondents whose IP address, age, years of
9 attending school, and time of data submission were identical were also excluded (2). To
10 confirm that all respondents understood the text written in Finnish language throughout the
11 survey, data from respondents with non-Finnish nationality (2) and who reported their
12 education years to be below those of compulsory education, 9 years in Finland (5), were
13 excluded. These exclusions did not significantly impact the results.

14 After the survey, the participants indicated their chronological age, gender,
15 nationality, and the number of years they had attended school. They also indicated how
16 religious and conservative they were on a 7-point scale (1 = not at all; 7 = very much).
17 Chronological age, gender ratio, education level, religiosity, and conservativeness were not
18 different between the four groups in the final analysis (all $ps > .05$) (Table 1).

19 Materials and procedures

20 The participants read a vignette (in Finnish) about two newly discovered alien
21 species, modified from vignettes used in previous studies (Piazza et al., 2014; Sytsma &
22 Machery, 2012). On page 1 of the Internet questionnaire, the first introductory paragraph and
23 the next three sentences were the same across conditions:

24

25 Imagine that, in the distant future, scientists discover life on a planet in a nearby solar

1 system. Imagine further that, on their first expedition to the planet, a team of scientists
2 encounters aliens and there seemed to be two types, both of which were about human-size.
3 They call these *katoras* and *mundas*. The scientists first start investigating the behavior of
4 *katoras* and after several months of investigation, they find them to have the following
5 characteristics:

6 *Katoras* use their time mainly for finding food and eating. The behavior of *katoras* seems to
7 be based only on their instincts.

8 The scientists also found that *katoras* behave in the following way toward humans and
9 *mundas*.

10

11 After this, on the same page, the participants read one of four descriptions about the victim
12 (i.e., the target of *katoras*' aggressiveness: humans, *mundas*) and suffering (suffering, no
13 suffering). The following description shows the conditions where *katoras* were aggressive
14 toward humans. For the sake of brevity, the manipulation of suffering is indicated in the
15 brackets. In the two other, compatible conditions, *katoras* were described to be aggressive
16 toward *mundas* but not toward humans.

17

18 **Human**

19 *Katoras* are aggressive toward humans [and/but] their
20 attacks cause [severe/no] pain for humans.

21 **Katora**

22 **Munda**

23 *Katoras* are not aggressive toward *mundas* and have never
24 attacked a *munda*.

25

1 After these descriptions, on the same page, the participants were asked to make five
2 judgments regarding katoras' moral standing using a 1–9-point scale (Piazza et al., 2014;
3 Sytsma & Machery, 2012):

4 How morally wrong do you think it would be for the scientists to harm a katora?

5 How morally wrong do you think it would be for the scientists to kill a katora?

6 To what extent do you think katoras deserve to be treated with compassion?

7 To what extent do you think katoras deserve to be protected from harm?

8 If katoras were endangered, how important would it be to protect them from extinction?

9 The reliability of the five items was high ($\alpha = .83$, both in Studies 1 and 2). On the next page
10 of the Internet questionnaire, the participants answered two manipulation check questions on
11 a 1–9-point scale:

12 To what extent are katoras a threat toward [humans/mundas]?

13 Finally, the participants rated katoras' (page 3), mundas' (page 4), and humans' (page 5)
14 patiency and agency by making six judgments for each on a 0–5-point scale (Akechi et al.,
15 2018; Gray et al., 2011): “How capable of X do you think [katoras/mundas/humans] are?” X
16 was replaced by one of three patiency-related capacities “feeling pain,” “feeling pleasure,”
17 and “feeling hunger,” or one of three agency-related capacities “exercising self-control,”
18 “remembering,” and “planning.”

19 Analysis

20 Analyses were conducted in *R* (cran.r-project.org). Scaled sum contrast coding was
21 applied for dichotomous factor variables, i.e. victim and suffering (–0.5 for human and no
22 suffering, +0.5 for munda and suffering), so that it tests the difference between groups. This
23 coding makes regression models analogous to standard analysis of variances (ANOVAs). In
24 ANOVAs, type III sums of squares were used to compensate for the unbalanced sample sizes

1 across groups.

2 *Manipulation check.* To check whether the manipulation worked, two-way ANOVAs with
3 victim (human, munda) and suffering (no suffering, suffering) were conducted for scores of
4 katoras' threat toward humans and threat toward mundas. The differences between perceived
5 minds, i.e., patiency and agency, of mundas and humans were examined with a paired t-test.

6 *Moral standing.* To investigate whether the moral standing of the harmful agents, katoras,
7 was associated with the victim's species and their suffering, a linear model was fitted to
8 scores of moral standing with victim and suffering as predictors, using the *lm* function in *R*.
9 To take into account the effect of the harmful agent's patiency and agency that had been
10 anticipated to be high (Sytsma & Machery, 2012), katoras' patiency and agency were also
11 included in the model. Estimated marginal means (EMMs), which were computed using the
12 package *emmeans* (cran.r-project.org/package=emmeans), are reported in the Results section.
13 An interaction term between victim and suffering was included in the model, because the
14 model with the interaction term provided a better fit ($F_{(1, 256)} = 4.80, p = .029$).

15 *Harmful agent's mind.* To examine whether the victim's species and suffering affected
16 respondents' perceptions of the mind of the harmful agent, two-way ANOVAs (victim,
17 suffering) for the harmful agent's patiency and agency were conducted.

18 **Results**

19 Manipulation check

20 *Threat.* The manipulation worked as expected. For katoras' threat toward mundas, a victim \times
21 suffering interaction was observed ($F_{(1, 258)} = 24.86, p < .0001, \eta_p^2 = .088$); the threat was
22 judged as higher in the suffering condition ($M = 6.9; SEM = 0.3$) than in the no-suffering
23 condition ($M = 4.7; SEM = 0.3$) when the victims were mundas ($p < .0001$). No suffering
24 effect was found when the victims were humans ($p = .880$). Likewise, for katoras' threat

1 toward humans, the interaction between victim and suffering was found ($F_{(1, 258)} = 7.80, p$
 2 $= .006, \eta_p^2 = .029$); the threat was judged as higher in the suffering condition ($M = 4.4; SEM$
 3 $= 0.3$) than in the no-suffering condition ($M = 3.1; SEM = 0.2$) when the victims were humans
 4 ($p < .0001$), but this suffering effect was not observed when the victims were mundas (p
 5 $= .948$).

6 *Victims' mind.* Both patience ($t = -14.67, p < .0001, d = 0.91$) and agency ($t = -14.24, p < .0001,$
 7 $d = 0.88$) were perceived to be lower in a munda than in a human (Table 3).

8 Moral standing

9 A coefficient of the interaction term between victim and suffering was discernible (b
 10 $= 0.75, t = 2.19, p = .029, 95\% CI [0.08, 1.43]$); katoras' moral standing was judged as lower
 11 in the suffering ($EMM = 7.17, SE = 0.18$) than in the no-suffering condition ($EMM = 8.00, SE$
 12 $= 0.17$) when the victim was a human ($t = 3.39, p = .0008, d = 0.60$), but this was not true
 13 when the victim was a munda ($t = 0.32, p = .751, d = 0.06$) (Table 2; Figure 1). Additionally,
 14 respondents who perceived higher patience in katoras attributed greater moral standing to
 15 katoras ($b = 0.64, t = 5.41, p < .0001, 95\% CI [0.41, 0.87]$). This was not reliable for agency
 16 ($b = 0.13, t = 1.50, p = .134, 95\% CI [-0.04, 0.30]$).

17 Harmful agent's mind

18 No significant effects of victim, suffering, or the interaction were observed on
 19 katora's patience and agency (all $ps > .198, \eta_p^2s < .007$)³.

20 Discussion

21 Mere suffering of the victim did not affect the harmful agent's moral standing. As the

³ This is also true when a linear model with similar predictors as in the model fitted to moral standing was used, i.e., when adding agency for the patience analysis and patience for the agency analysis (all $ps > .211, \eta_p^2s < .007$).

1 alien's (i.e., munda's) mind was perceived to be less valuable than the human's mind, it
2 remains unclear whether the suffering effect in the human condition stemmed from human-
3 orientedness or mind-orientedness. To distinguish between these possibilities, in the next
4 study, the alien species' mental capacities were described as equivalent to those of humans. If
5 the alien victim's suffering affects the moral standing of a harmful agent, in Study 2, it will
6 indicate that our moral judgement is not species-oriented but mind-oriented.

7 **Study 2**

8 **Method**

9 Participants

10 Data from 224 Finnish volunteers were included in the final analysis: humans-
11 suffering ($n = 52$), humans-no suffering (52), aliens-suffering (58), and aliens-no suffering
12 (62). Data from respondents who responded the same to all items (1), whose nationality was
13 not Finnish (1), and who reported their education years to be below 9 (6) were excluded from
14 the analysis. These exclusions did not significantly impact the results. The same rule for the
15 ending of data collection as in Study 1 was applied. Chronological age, gender ratio,
16 education level, religiosity, and conservativeness were not different between the groups (all
17 $ps > .05$) (Table 1).

18 Materials and procedures

19 The procedures were identical to those of Study 1 except that the descriptions of
20 mundas' mental capacities in the introductory paragraph were changed such that mundas
21 seemed to have high mental capacities, i.e., emotion and intelligence equivalent to those of
22 humans.

23

1 Imagine that, in the distant future, scientists receive a message from aliens living on a
2 planet in a nearby solar system. The aliens call themselves *mundas*. It becomes apparent
3 that they have emotion, intelligence, and level of technological development equivalent to
4 those of humans. Imagine further that a team of scientists visits and explores the planet
5 with help from the mundas. They encounter other aliens that are about human-size, just like
6 the mundas. The mundas call these *katoras*. The scientists start investigating the behavior
7 of katoras and find them to have the following characteristics:

8

9 After this introductory paragraph, all descriptions, items, and procedures were the same as in
10 Study 1.

11 Analysis

12 The same analyses as those used in Study 1 were conducted for *manipulation check*
13 and *harmful agent's mind*.

14 *Moral standing*. The same model as in Study 1 was fitted, except that an interaction term
15 between victim and suffering was not included, because the model with the interaction term
16 did not provide a better fit in Study 2 ($F_{(1, 218)} = 0.26, p = .608$).

17 *Studies 1 vs 2*. To check whether the change in the descriptions of mundas' mental capacities
18 affected perceived minds, mundas', humans', and harmful agents' minds in Studies 1 and 2
19 were compared. Finally, to investigate if the descriptions of the mundas' mental capacities
20 influenced the moral standing of the harmful agent, a linear model was fitted to the scores of
21 moral standing with victim (human, munda), suffering (no suffering, suffering), study
22 (Study1, Study 2), katora's patience, and katora's agency as predictors. To quantify the
23 suffering effects in Studies 1 and 2, the model included an interaction terms between victim,
24 suffering, and study, and the package *emmeans* was used to estimate the effects.

1 Results

2 Manipulation check

3 *Threat.* For katoras' threat toward mundas, the interaction between victim and suffering was
 4 observed ($F_{(1, 220)} = 33.38, p < .0001, \eta_p^2 = .132$); the threat toward mundas was higher in the
 5 munda suffering condition ($M = 6.4; SEM = 0.2$) than in the munda no-suffering condition (M
 6 $= 3.7; SEM = 0.2$) ($p < .0001$), but was irrelevant to humans' suffering ($p = .532$). Also, for
 7 katoras' threat toward humans, the interaction between victim and suffering was observed
 8 ($F_{(1, 220)} = 14.22, p = .0002, \eta_p^2 = .061$); the threat was judged as higher in the human
 9 suffering condition ($M = 4.9; SEM = 0.3$) than in the human no-suffering condition ($M = 2.8;$
 10 $SEM = 0.2$) ($p < .0001$), but mundas' suffering had no effect on the threat ($p = .062$).

11 *Victims' mind.* The patience of mundas was perceived to be high but still slightly lower than
 12 that of humans ($t = -4.52, p < .0001, d = 0.30$) (Table 3). Agency was not different between
 13 mundas and humans ($t = 0.67, p = .506, d = 0.04$).

14 Moral standing

15 Victims' suffering decreased the harmful agent's moral standing regardless of the
 16 species of the victims ($b = -0.58, t = -4.12, p < .0001, 95\% \text{ CI } [-0.85, -0.30]$); katoras'
 17 moral standing was judged as lower when their aggression caused suffering ($EMM = 7.65, SE$
 18 $= 0.10$) than when it caused no suffering ($EMM = 8.23, SE = 0.10$) ($t = 4.12, p = .0001, d =$
 19 0.55) (Table 2; Figure 2). Also, as in Study 1, katoras' perceived patience was positively
 20 associated with their moral standing ($b = 0.66, t = 5.08, p < .0001, 95\% \text{ CI } [0.41, 0.92]$), but
 21 agency was not ($b = 0.08, t = 1.09, p = .277, 95\% \text{ CI } [-0.07, 0.23]$).

22 Harmful agent's mind

23 No significant effects of victim, suffering, or the interaction were observed on the

1 agent's patency or agency (all $ps > .331$, $\eta_p^2s < .005$)⁴.

2 Studies 1 vs 2

3 *Moral standing.* Although a coefficient of the interaction term between victim, suffering, and
 4 study remained not discernible from zero ($b = -0.61$, $t = -1.34$, $p = .181$, 95% CI [-1.50, 0.28]),
 5 post hoc analyses were conducted to quantify the suffering effects in Studies 1 and 2. The
 6 results replicated those observed in each study, the victim \times suffering interaction was evident
 7 in Study 1 ($F_{(1, 476)} = 6.02$, $p = .015$, $\eta_p^2 = .012$), but not in Study 2 ($F_{(1, 476)} = 0.20$, $p = .657$,
 8 $\eta_p^2 = .0004$). In Study 2, katoras' moral standing was judged as lower when their aggression
 9 caused mundas' suffering ($EMM = 7.52$, $SE = 0.16$) than when it caused no suffering ($EMM =$
 10 8.03 , $SE = 0.16$) ($t = 2.25$, $p = .025$, $d = 0.41$), whereas the munda's suffering effect was not
 11 discernible in Study 1 (suffering: $EMM = 7.71$, $SE = 0.15$; no suffering: $EMM = 7.79$, $SE =$
 12 0.15 ; $t = 0.36$, $p = .721$, $d = 0.06$). When the victims were humans, the suffering effect was
 13 clear both in Study 1 (suffering: $EMM = 7.27$, $SE = 0.16$; no suffering: $EMM = 8.10$, $SE = 0.15$;
 14 $t = 3.80$, $p = .0002$, $d = 0.67$) and in Study 2 (suffering: $EMM = 7.55$, $SE = 0.17$; no suffering:
 15 $EMM = 8.21$, $SE = 0.17$; $t = 2.70$, $p = .007$, $d = 0.53$). Figure 3 represents the suffering effect
 16 (no suffering – suffering).

17 *Alien victims', human victims', and harmful agents' mind.* Mundas' patency ($t = 11.37$, p
 18 $< .0001$, $d = 0.99$) and agency ($t = 18.45$, $p < .0001$, $d = 1.62$) were higher in Study 2 than in
 19 Study 1 (Table 3). Humans' patency ($t = 2.71$, $p = .007$, $d = 0.24$) and agency ($t = 6.61$, p
 20 $< .0001$, $d = 0.59$) were also higher in Study 2 than in Study 1. Harmful agents' patency ($t =$
 21 5.59 , $p < .0001$, $d = 0.50$), but not agency ($t = -0.69$, $p = .488$, $d = 0.06$), was perceived to be
 22 higher in Study 2 than in Study 1.

⁴ This is also true when a linear model with similar predictors as in the model fitted to moral standing was used, i.e., when adding agency for the patency analysis and patency for the agency analysis (all $ps > .417$, $\eta_p^2s < .004$).

1 Discussion

2 When the alien victim was described as having high mental capacities comparable
3 with those of humans, both the alien's and the human's suffering had an effect on the moral
4 standing of the harmful agent. The analysis by study also indicated that the alien's suffering
5 was considered only in Study 2, where the alien victim's mental capacities were perceived as
6 high. These results suggest that the evaluation of the harmful agent's moral standing was
7 human mind-oriented, not human species-oriented. The harmful agent's patiency and the
8 human victim's agency and patiency were also greater in Study 2 compared to Study 1. It is
9 likely that this was a by-effect of the vignette that was intended to increase the alien victim's
10 patiency and agency.

11 General discussion

12 The present study revealed that not only a harmful agent's mind but also a victim's
13 mind matters in evaluating the agent's moral standing; an entity that causes suffering to
14 another entity with high mental capacities, irrespective of the species of this victim entity, is
15 given low moral standing. As the negative effect of harmfulness on moral standing (Opatow,
16 1993; Piazza et al., 2014) might stem from the potential suffering (i.e., capacity for feeling)
17 and actual suffering of the victim, the effect could be called the *sufferer* effect. Additionally,
18 respondents who perceived higher patiency in a harmful agent attributed greater moral
19 standing to the agent both in Studies 1 and 2. This is consistent with the philosophical views
20 that an agent's patiency is primal for moral standing (e.g., Bentham, 1789; Singer, 1993) and
21 empirical evidence supports those views (Akechi et al., 2018; Bastian, Laham, Wilson,
22 Haslam, & Koval, 2011; Gray et al., 2007; Jack & Robbins, 2012; Knobe & Prinz, 2008;
23 Sytsma & Machery, 2012). Therefore, the results support and corroborate traditional
24 philosophical views on moral standing, especially the utilitarian view appreciating the *utility*,

1 i.e., the sum of all pleasures minus suffering of anyone (Bentham, 1789).

2 One cannot conclude that humans are genuinely mind-oriented in evaluating an
3 agent's moral standing unless it can be shown that the attribution of moral standing is based
4 on the victim's mind and not on the victim's species membership. Previously, a harmful
5 agent's moral standing was shown to decrease when the harm was directed toward humans
6 but not when directed toward other animal species whose level of mental capacity was
7 unknown (Piazza et al., 2014). One of the goals of the present study was to distinguish
8 between two accounts of moral standing attribution: human species-orientedness vs. human
9 mind-orientedness. The present study overcame the confounding of the level of victims'
10 mental capacities and their species by modulating an imaginary alien species' mental
11 capacities (Sytsma & Machery, 2012). The present results suggest that when members of
12 another species that have high mental capacities equivalent to those of humans are
13 victimized, we lower the moral standing of a harmful agent who causes suffering to these
14 victims, regardless of the victims' species. This result supports the mind-oriented account.
15 One limitation of the present study was that it did not include humans with low mental
16 capacities as victims (Caviola, Everett, & Faber, 2019). Future studies might address this
17 issue.

18 Another possible account for the harmfulness effect on moral standing comes from
19 studies of dehumanization, i.e., denial of humanness, including minds (Haslam, 2006). Note
20 that the denial of mind can also occur toward non-human animals (Bastian, Loughnan,
21 Haslam, & Radke, 2012). In a recent study, higher harmfulness of a human was associated
22 with less agency, which was in turn associated with lower moral standing of the human; the
23 authors argued that the results were consistent with dehumanization accounts (Khamitov,
24 Rotman, & Piazza, 2016). However, in the present study, neither the victim's species nor
25 suffering was associated with patiency and agency perceived in the harmful agent. The reason

1 for the differences between findings is unclear, as there were many methodological
2 differences, for example, the targets of the moral standing evaluation were humans
3 (Khamitov et al., 2016) versus non-humans (the present study). However, taking the victim's
4 mind into account might be beneficial in future studies.

5 If concerns for a victim define the moral standing of a harmful agent as suggested in
6 the present study, in the real world it is crucial to assess who is defined as a victim. During an
7 intergroup conflict, both groups can be defined as either victims or victimizers. For example,
8 it is reportedly beneficial to emphasize one's suffering to escape moral blame (Gray &
9 Wegner, 2011). In addition, considering that there are cultural differences even in core
10 elements of moral judgements (Barrett et al., 2016; Graham et al., 2011), the sense of which
11 entities possess moral standing is likely to vary at individual and cultural levels. Genuinely
12 fair judgements by a third party cannot be achieved without an awareness of such cognitive
13 biases and cultural differences in a moral sense.

14 As a conclusion, the present study shows that the human judgements of the moral
15 standing of a harmful agent depend not only on the agent's mind but also on the victim's
16 mind and, most importantly, these judgements reflect human mind-orientedness instead of
17 human species-orientedness. Yet, many other variables, which are not considered in the study,
18 may influence evaluations of moral standing. Examinations of the factors influencing an
19 agent's moral standing are theoretically and practically important. One of the missions of
20 scientific research on morality is to offer empirically tested knowledge about our cognitions
21 and behavioral tendencies associated with the intractable social issues such as war, human
22 and animal rights, and environmental issues. Hopefully, this research will contribute to
23 advancing this mission.

24

1 **References**

- 2 Akechi, H., Kikuchi, Y., Tojo, Y., Hakarino, K., & Hasegawa, T. (2018). Mind perception and
3 moral judgment in autism. *Autism Research, 11*, 1239–1244.
- 4 Barrett, H. C., Bolyanatz, A., Crittenden, A. N., Fessler, D. M. T., Fitzpatrick, S., Gurven, M.,
5 ... Laurence, S. (2016). Small-scale societies exhibit fundamental variation in the role
6 of intentions in moral judgment. *Proceedings of the National Academy of Sciences of
7 the United States of America, 113*, 4688–4693.
- 8 Bastian, B., Laham, S. M., Wilson, S., Haslam, N., & Koval, P. (2011). Blaming, praising, and
9 protecting our humanity: The implications of everyday dehumanization for judgments
10 of moral status. *The British Journal of Social Psychology, 50*, 469–483.
- 11 Bastian, B., Loughnan, S., Haslam, N., & Radke, H. R. M. (2012). Don't mind meat? The
12 denial of mind to animals used for human consumption. *Personality & Social
13 Psychology Bulletin, 38*, 247–256.
- 14 Bentham, J. (1789). *An introduction to the principles of morals and legislation*. (J. H. Burns &
15 H. L. A. Hart, Eds.). Oxford: Clarendon Press (1996).
- 16 Carruthers, P. (1992). *The animals issue: Moral theory in practice*. Cambridge: Cambridge
17 University Press.
- 18 Caviola, L., Everett, J. A. C., & Faber, N. S. (2019). The moral standing of animals: Towards
19 a psychology of speciesism. *Journal of Personality and Social Psychology, 16*, 1011–
20 1029.
- 21 Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the
22 moral domain. *Journal of Personality and Social Psychology, 101*, 366–385.
- 23 Gray, H. M., Gray, K., & Wegner, D. M. (2007). Dimensions of mind perception. *Science, 315*,
24 619.
- 25 Gray, K., Jenkins, A. C., Heberlein, A. S., & Wegner, D. M. (2011). Distortions of mind

- 1 perception in psychopathology. *Proceedings of the National Academy of Sciences of the*
2 *United States of America*, 108, 477–479.
- 3 Gray, K., & Wegner, D. M. (2011). To escape blame, don't be a hero—Be a victim. *Journal of*
4 *Experimental Social Psychology*, 47, 516–519.
- 5 Gray, K., Young, L., & Waytz, A. (2012). Mind perception is the essence of morality.
6 *Psychological Inquiry*, 23, 101–124.
- 7 Haslam, N. (2006). Dehumanization: An integrative review. *Personality and Social Psychology*
8 *Review*, 10, 252–264.
- 9 Jack, A. I., & Robbins, P. (2012). The phenomenal stance revisited. *Review of Philosophy and*
10 *Psychology*, 3, 383–403.
- 11 Kant, I. (1785). *Grundlegung zur Metaphysik der Sitten [Groundwork for the Metaphysics of*
12 *Morals]*. (M. J. Gregor & J. Timmermann, Trans.). Cambridge: Cambridge University
13 Press (2012).
- 14 Khamitov, M., Rotman, J. D., & Piazza, J. (2016). Perceiving the agency of harmful agents: A
15 test of dehumanization versus moral typecasting accounts. *Cognition*, 146, 33–47.
- 16 Knobe, J., & Prinz, J. (2008). Intuitions about consciousness: Experimental studies.
17 *Phenomenology and the Cognitive Sciences*, 7, 67–83.
- 18 Malle, B. (2019). How many dimensions of mind perception really are there? In A. K. Goel, C.
19 M. Seifert, & C. Freska (Eds.), *Proceedings of the 41st Annual Meeting of the Cognitive*
20 *Science Society* (pp. 2268–2274). Montreal, QC: Cognitive Science Society.
- 21 Opatow, S. (1993). Animals and the scope of justice. *Journal of Social Issues*, 49, 71–85.
- 22 Piazza, J., Landy, J. F., & Goodwin, G. P. (2014). Cruel nature: Harmfulness as an important,
23 overlooked dimension in judgments of moral standing. *Cognition*, 131, 108–124.
- 24 Singer, P. (1993). *Practical Ethics* (2nd ed.). Cambridge: Cambridge University Press.
- 25 Sytsma, J., & Machery, E. (2012). The two sources of moral standing. *Review of Philosophy*

1 *and Psychology*, 3, 303–324.

2 Takahashi, H., Ban, M., & Asada, M. (2016). Semantic Differential Scale Method Can Reveal

3 Multi-Dimensional Aspects of Mind Perception. *Frontiers in Psychology*, 7, 1717.

4 Weisman, K., Dweck, C. S., & Markman, E. M. (2017). Rethinking people’s conceptions of

5 mental life. *Proceedings of the National Academy of Sciences of the United States of*

6 *America*, 114, 11374–11379.

7