

The paradox of aversive punishment¹

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Although most people profess that ordinary criminals should not be tortured, US incarceration practices routinely inflict severe physical and mental trauma. What explains this discrepancy? We explored the factors that determine whether people consider various forms of punishment permissible or impermissible. We find that permissibility judgments are generally not based on perceptions of how much suffering a punishment causes, but instead on how aversive we find the actions associated with enacting the punishment. Across three studies this pattern of results consistently holds when judging which forms of punishments are appropriate or inappropriate for others. We identify only one condition in which people reject punishments based on suffering: When judging which forms of punishment would be appropriate for them to personally receive. In sum, the forms of punishment that ordinary people condemn may not be those that cause excessive suffering, but rather those that are most unpleasant to administer.

Introduction

Popular attitudes towards punishment embody a striking paradox. On the one hand, there is broad consensus that punishment should not involve torture: any “act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person”, as defined by the United Nations. The US constitution similarly prohibits “cruel and unusual” punishments. And, while Americans are divided over whether torture should ever be used to obtain intelligence from terrorists (Tyson, 2017), there is no serious public debate in the United States over the principle that American citizens, convicted of routine crimes, should not be tortured as part of their sentence.

Yet, US incarceration practices do routinely inflict severe physical and mental trauma. For example, solitary confinement causes severe and lasting harm (Brinkley-Rubinstein, et al., 2019;

Grassian, 2006; Hagan et al., 2018; Kaba, et al., 2014; Smith, 2006; Williams, 2016), but on any given day 55,000-65,000 inmates in the United States are in solitary confinement (Bertsch et al., 2020), including 10% who have been in isolation for at least three years (Resnik et al., 2018). For many American citizens, a sentence to prison also entails a considerable likelihood of physical or sexual assault. In 2011, 4% of imprisoned adults reported that, within the past year, they had been victims of sexual assault while in detention (Beck et al., 2013). And in recent years as many as 1 in 8 incarcerated children have reported being sexually assaulted or abused while in juvenile correction facilities (Beck et al., 2013). Actual rates of assault are almost certainly much higher (Wolff et al., 2007).

If there is widespread agreement that criminals should not be sentenced to torture, why are they routinely sentenced to prison environments equivalent

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to torture? One possible explanation is that our perceptions of the suffering caused by punishments like solitary confinement, and imprisonment more generally, is mis-calibrated. Perhaps we continue to find such punishments acceptable because we do not believe they cause suffering. Another possibility is that we are hypocritical: committed to high-minded principles in theory, but simply uncaring in practice. Our work does not directly test these possibilities, both of which may be important.

Instead, we focus on a relatively unexplored possibility: that our willingness to condone or condemn a punishment as impermissible “torture” is driven less by our sense of how it would feel to receive it than by how it would feel to impose it. Put simply, our intuitive sense of what counts as torture isn’t driven by our perception of the prisoner’s “ouch” when harmed, but rather the punisher’s “ick” when carrying it out. Contemporary forms of institutionalized punishment, we suggest, occupy a niche that often imposes a great deal of suffering without triggering the emotional responses that usually make us averse to doing harm.

Models of moral cognition differentiate between the motivating value of outcomes—how much harm or benefit an act causes others—and the motivating feelings associated with engaging in the act itself, including its sensorimotor properties (Crocket, 2013; Cushman, 2013; Gesiarz & Crocket, 2015; Yudkin, Prosser, & Crockett, 2019). These can be dissociated: Administering a poisonous pill might not feel aversive even if it happens to cause tremendous suffering, while performing a swift decapitation may not cause suffering and yet still feel very aversive to do. While a concern for others’ outcomes clearly motivates us, research has demonstrated a surprising effect of action-based aversions as well. For instance, engaging in a typically harmful action is psychologically aversive, even when it is ultimately harmless (e.g. firing an unloaded fake handgun at a consenting experimenter; Cushman, Gray, Gaffey, & Mendes, 2012), and is more aversive than witnessing the identical action being performed by a third party. The aversion to performing these sorts of typically harmful actions contributes to individuals’ moral condemnation of them (Lieberman & Lobel, 2012; Miller, Hannikainen, & Cushman, 2014; Miller & Cushman, 2013), even when the outcome is harmless, neutral, or net-beneficial (Cushman, 2013; Greene et al., 2009). For example, in one study participants were asked to consider a variety of actions they could perform to assist a consenting, terminally ill friend in committing suicide, and judge how morally wrong (if at all) each would be. To measure outcome value, others were asked to evaluate how much suffering they believed each action would cause (e.g. burying your

friend alive may be perceived as causing him more suffering than shooting him in the head). A third group of participants was asked to imagine they were simulating these actions by harmlessly performing them in a theatrical production and, rating how upsetting it would be to perform each action (e.g. simulating stabbing a fellow actor in the throat may be more upsetting than pretending to give him a fatal dose of medication). The moral wrongness of the actual harms was determined separately, and to equal degrees, by both the suffering an action caused and how upsetting it would be to perform that action (Miller, Hannikainen, & Cushman, 2014).

Building on this prior research, we propose that our condemnation of some punishments, such as those ordinarily described as “torture”, is not solely driven by the degree to which we perceive them as causing extreme suffering. Rather, we are also motivated by the way engaging in the punishing action makes us feel. (We measure this by asking people how uncomfortable people would find it to perform various forms for punishment on an unfeeling but perceptually human-like android). Specifically, we predict that actions perceived as more aversive to engage in are less likely to be endorsed as acceptable forms of punishment, above and beyond the degree of suffering these actions are believed to cause. For example, we expect that people will judge that breaking a prisoner’s finger by bending it backwards should be prohibited with greater conviction than an extended period of solitary confinement, despite believing that the latter causes more suffering, because the former is a more aversive action to imagine performing even on an unfeeling android. We test this prediction across three experiments.

Study 1: The effects of action aversiveness and outcome harmfulness on punishment endorsement.

In Study 1 we investigated the relationship between perceptions of a particular action’s aversiveness, how much suffering it was believed to cause, and how likely it was to be endorsed as a punishment for a convicted criminal.

Study 1a: Stimulus selection.

As a first step, we sought to identify a set of scenarios for which variability in action aversiveness and outcome harmfulness were approximately orthogonal. This was necessary to ensure that we could independently evaluate the effects of each of these factors on perceptions of punishment acceptability. Identifying and validating this orthogonal stimulus set was the objective of Study 1a.

Participants. For all studies described in this paper, data was collected through Amazon Mechanical Turk. Recruitment was restricted to participants living in the United States, who had participated in at least 50 studies, and who had at least a 99% approval rating. The structure of our analyses (correlations defined at the stimulus level, rather than the participant level) makes a traditional power analysis difficult to perform. Therefore, our approach across all three studies followed a pilot-replication format. This allowed us to leverage an initial round of data collection to conduct preliminary, exploratory analyses, which then guided a pre-registered replication that involved recollection of all data. In Study 1a, data was collected from 73 participants. Of these, 17 were excluded for failure to pass the attention check questions (see details below). The remaining 56 participants were included in all subsequent analyses.

Measures. In Study 1a, we collected participants' judgments about 55 different potential punishments. These punishments ranged from very mild (e.g. "force someone to do community service for one year") to very extreme (e.g. "give someone electric shocks to the brain that reduce feelings of aggression or a tendency to behave immorally, but also causes permanent brain damage"). They also varied in the amount of harmful, aversive, or aggressive personal physical contact required to implement (e.g. low-contact actions like "lock someone in complete isolation for 20 years" vs. high-contact actions like "slap someone across the side of the face").

Participants were placed in one of two conditions. In the *Action Aversion* condition ($n = 26$), we sought to evaluate the degree to which participants found engaging in each specific action to be aversive. In particular, it was critical that we were measuring the aversiveness of the action itself rather than any concern about potential harm the action would cause. Therefore, we had participants imagine they were engaging in these actions directed towards a perfectly life-like, but unfeeling android. To this end, participants in this condition received the following instructions:

Imagine that you had to do each of the following things to a perfectly life-like but unfeeling android. This android looks and acts in every way exactly like a real human. It will respond to you just like a real human would if these things happened to a real human. But on the inside the android feels nothing. It is just a machine. For each of the following actions, please rate how upset it would make you feel to do them to the android.

Participants used a slider bar to respond to this question on a 0-100 scale, anchored at "Not upset at all" at 0 and "Extremely upset" at 100.

In the *Outcome Harmfulness* condition ($n = 30$), we sought to evaluate perceptions of how much suffering each action caused its recipient. In this condition, participants received the following instructions:

Imagine somebody you don't know was being subjected to the following actions. For each action, please rate how much suffering you think this person would experience if he or she was subjected to that action.

Once again, participants used a slider bar to respond to this question on a 0-100 scale, with 0 being "Almost no suffering" and 100 being, "A great deal of suffering".

Once participants responded to all 55 scenarios, they completed three attention check questions. Two of these were multiple choice and one required a written response. Participants were only included in the analyses if they responded correctly to both multiple-choice questions and the written response was intelligible and relevant. Written responses were evaluated separately by two researchers and any points of disagreement were resolved through discussion.

Results. To evaluate the relationship between action aversiveness and outcome harmfulness ratings for each scenario, we first computed an average within-condition rating across participants for each scenario (e.g. average action aversiveness rating for the "slap someone across the side of the face" scenario across participants). We then computed the correlation between action aversiveness and outcome harmfulness across all 55 scenarios. We found that these two variables were strongly correlated across our original set of scenarios ($r = .72$).

To identify a subset of scenarios in which action aversiveness and outcome harmfulness are orthogonal we visually inspected a scatter plot of the relationship between these two variables and eliminated the scenarios that fell in the most extreme ends of the upper-right (where both action aversiveness and outcome harmfulness are high) and lower-left (where both variables are low) quadrants. Our objective here was to retain the maximal number of scenarios while keeping the correlation at or near zero. After removing these most strongly correlated scenarios we were left with 33 scenarios for which action aversiveness and outcome harmfulness were approximately orthogonal ($r = -.01$). Only these 33 scenarios were used for all subsequent analyses.

Study 1b: Preliminary study

In Study 1b, we evaluated the relationships between action aversiveness, outcome harmfulness, and punishment endorsement.

Participants. In Study 1b, data was collected from 36 participants. Although data for Studies 1a and 1b were collected concurrently, the analyses for Study 1b were only conducted once Study 1a was complete. Four participants were excluded from Study 1b for failure to pass the attention check questions described above. The remaining 32 participants were included in all subsequent analyses.

Measures. In Study 1b, we asked participants to evaluate how acceptable each of the actions would be to use as a punishment for somebody who committed a crime. In this condition, participants received the following instructions:

Imagine you work for the government of a newly formed nation. You are on a committee that is trying to create a new set of laws, and punishments to use when people violate those laws. Your job is to approve or disapprove of potential punishments. You want to make sure to approve punishments that range in how severe they are so that you have some that are appropriate for very terrible crimes, and others that are appropriate for very small crimes. In all cases, these punishments would only be used if a perpetrator was found guilty beyond a reasonable doubt. For each of the punishments below, please rate how likely you would be to approve it as a punishment used by your government.

As in Study 1a, participants used a slider bar to respond to this question on a 0-100 scale, with 0 being “Definitely would not approve” and 100 being “Definitely would approve”. The data for Studies 1a and 1b were collected simultaneously. Therefore, participants in Study 1b responded to all 55 of the original scenarios. However, only their responses to the final 33 scenarios were included in any analyses. Upon completing their evaluations of the scenarios, participants responded to the same series of attention check questions described in Study 1a, and the same exclusion criteria were applied.

Results. To test our hypothesis that action aversiveness independently predicts punishment condemnation, we ran a multiple linear regression predicting the average punishment acceptability rating across subjects for each of the 33 scenarios from perceptions of both action aversiveness and outcome harmfulness.

Critically, recall that these ratings are independent of one another in the sense that separate groups of subjects evaluated action aversiveness, outcome

harmfulness, and punishment acceptability. As predicted, controlling for the effect of outcome harmfulness, we found that action aversiveness significantly negatively predicted punishment acceptability ($b = -2.155$, $t(30) = -4.366$, $p < .0005$; Figure 1a). In other words, the more participants perceive engaging in an action as aversive (even though that action is performed on an unfeeling android), the less likely they are to endorse that action as a punishment for an individual convicted of a crime. We did not find a significant effect of outcome harmfulness when controlling for action aversiveness ($b = -0.36$, $t(30) = -1.89$, $p = 0.07$; Figure 1b). A follow-up Wald test for the difference in betas revealed that action aversiveness predicted punishment acceptability significantly better than outcome harmfulness ($F(30, 1) = 11.66$, $p < .005$).

Study 1c: Preregistered Replication

Study 1c was a preregistered direct replication of Studies 1a and 1b (OSF Preregistration: <https://osf.io/axgpn>), using only the final set of 33 scenarios.

Participants. Given the use of scenario, rather than participant, as the random effect of interest in our regression models, the straightforward application of traditional power analysis methods would not estimate the necessary number of participants to test. Therefore, we used our preliminary analyses as a guide and specified in our preregistration that we would aim to collect usable data for 100 participants in each of the three conditions. In order to achieve that goal, we oversampled, collecting data from 419 participants. Of these, we excluded 102 for providing incomplete data or for failure to pass the attention check questions (see details below). We included the remaining 317 participants in all subsequent analyses.

Measures. Participants were randomly assigned to make one of the three possible judgments (how aversive the action would be to perform on an unfeeling android, how much suffering the action would cause, and how strongly they would endorse that action as a punishment) about each of the final set of 33 scenarios. In addition, participants responded to two multiple-choice and three open-response attention/bot check questions. Once again, responses to these questions were independently reviewed by two experimenters for intelligibility and relevance. Participants were excluded if they did not pass one or more of the attention check questions.

Results. As in Study 1a and 1b, responses for each scenario were averaged across subjects, creating a single value for each measure for each scenario. We

found that, just as in the original study, perceptions of action aversiveness and outcome harmfulness were sufficiently uncorrelated across scenarios ($r = .26$). We then used multiple linear regression to test the effect of perceptions of action aversiveness and outcome harmfulness on punishment acceptability ratings across all 33 scenarios. Replicating our findings from Study 1a, controlling for the effect of outcome harmfulness, we found that action aversiveness

significantly negatively predicted punishment acceptability ($b = -1.55$, $t(30) = -3.096$, $p < .005$; Figure 1a). Once again, we did not find a significant effect of outcome harmfulness when controlling for action aversiveness ($b = 0.08$, $t(30) = 0.305$, $p = 0.76$; Figure 1b). And, again, we found that action aversiveness predicted punishment acceptability significantly better than outcome harmfulness (Wald test: $F(30, 1) = 6.96$, $p < .05$).

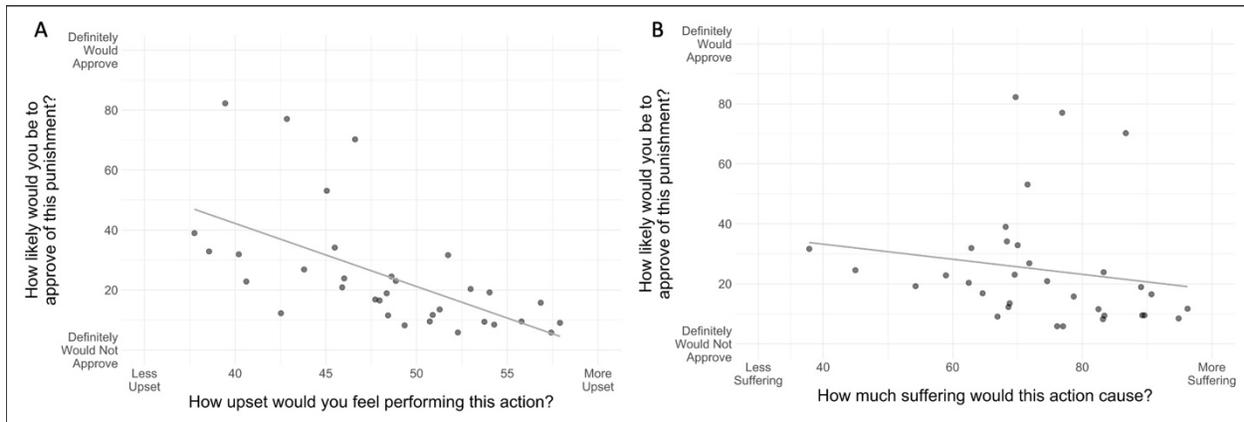


Figure 1. Effects of action aversiveness (a) and outcome harmfulness (b) on punishment acceptability. Data is averaged across Studies 1b and 1c.

Study 2: Punishment directed at ingroups vs. outgroups

In Study 1 we found that the aversiveness of actions better predicts punishment endorsement than the harmfulness of an outcome. In other words, people disfavor punishments that feel unpleasant to perform more than those that cause actual suffering. This may be because people *want* criminals to suffer during their punishments, consistent with some prior research showing that people sometimes want to cause others to suffer when they are outgroup members, competitors, or moral antagonists (Cikara, 2015; Rai, Valdesolo, & Graham, 2017). We reasoned that perhaps people would be more concerned about the suffering of individuals specifically described as ingroup members. To further explore this possibility, in Study 2 we investigated how people endorse punishment for ingroup versus outgroup members.

Study 2a: Preliminary study

Again, we used a preliminary study (Study 2a)/direct preregistered replication (Study 2b) model for this study (OSF Preregistration: <https://osf.io/axgpn>).

Participants. Data was collected from 60 participants. Following completion of the main task, participants responded to two multiple choice

comprehension/attention check questions and three open response comprehension questions. Participants were excluded from further analyses if they did not respond correctly to either of the multiple choice questions or any of their open responses were unintelligible or irrelevant. After applying this exclusion criteria 55 participants remained and were included in all subsequent analyses.

Materials. In Study 2a we collected responses only to the punishment acceptability question, but this time participants were placed in one of two conditions. In the ingroup condition ($N = 28$), participants were asked to imagine that they worked for the government in the state where they lived (all participants were residents of the United States) and they were identifying punishments that would be “most appropriate for people in [the state where they lived] who break the law.” In the outgroup condition ($N = 27$), participants were asked to imagine that they worked for an American government agency that helps newly formed developing nations create a new set of laws. They had been assigned to work with the government of a newly-formed very distant country and were identifying punishments that would be “most appropriate for people in [that country] who break the law.” Participants made judgments about each of the 33 scenarios selected in Study 1a, rating on a 0-100 scale how much they would approve of each scenario

as a punishment. This data was combined with the action aversiveness and outcome harmfulness judgments collected in Study 1a.

Results. Once again, we expected that action aversiveness would negatively predict punishment endorsement independent of outcome harmfulness. We also expected to find a main effect of condition, such that punishments would be more strongly endorsed for outgroup than ingroup members. Finally, we expected an interaction between outcome harmfulness and condition, such that outcome harmfulness would be positively related to punishment endorsement in the outgroup condition (the more harmful punishments would be more strongly endorsed) but negatively related to punishment acceptability in the ingroup condition (more harmful punishments would be less strongly endorsed).

To test these predictions, we ran a linear mixed effects model implemented with *lmer* from the *lme4* package in R (Bates et al., 2015). The model included outcome harmfulness, action aversiveness, and condition as fixed effects, outcome-condition and action-condition interaction terms, and a random intercept for scenario. Condition was effect coded (1 for ingroup, -1 for outgroup) and our continuous predictor variables (outcome harmfulness and action aversiveness) were mean centered.

Using the *anova* function to derive a traditional measure of statistical significance, we found that this original model predicted punishment acceptability significantly better than a model that excluded action aversiveness ($b = -2.43$, $\chi^2(1, N = 33) = 19.48$, $p < .0001$; Figure 2), indicating the predicted main effect for action aversiveness on punishment endorsement. In other words, controlling for condition, outcome harmfulness, and both interaction terms, the more aversive an action is to perform, the less likely it is to be endorsed as a punishment. In contrast, we did not find a main effect for outcome aversiveness. The model excluding outcome aversiveness did not perform significantly better than the original model ($b = -0.19$, $\chi^2(1, N = 33) = 1.10$, $p = .29$; Figure 2). A Wald test to compare the *beta* terms for action aversiveness and outcome harmfulness revealed that the effect of action aversiveness on punishment acceptability was significantly stronger than the effect of outcome harmfulness ($\chi^2(1, N = 33) = 18.00$, $p < .0001$).

As predicted, we also found a main effect of condition. Comparison of our original model to a reduced model excluding only condition revealed that our original model predicted punishment acceptability better than this reduced model ($b = -8.90$, $\chi^2(1, N = 33) = 31.47$, $p < .0001$). Participants were significantly

more likely to endorse punishments overall for outgroup members ($M = 23.67$, $sd = 22.84$) than ingroup members ($M = 14.77$, $sd = 16.06$).

Finally, using the same model comparison approach, we did not find the predicted interaction between condition and outcome harmfulness ($b = .04$, $\chi^2(1, N = 33) = .70$, $p = .40$). Unexpectedly, we did find a significant interaction between action aversiveness and condition ($b = .47$, $\chi^2(1, N = 33) = 13.065$, $p < .005$) such that the aversiveness of an action more strongly negatively predicts punishment acceptability in the outgroup condition than in the ingroup condition.

Study 2b: Preregistered replication

Participants. In our preregistration we specified that we would collect data until we had at least 100 participants per ingroup/outgroup condition who passed all of the attention/bot check questions. Therefore, we oversampled, collecting data from 248 participants. Once again, participants who failed to pass all of our attention/bot check questions were excluded, leaving us a final sample of 212 participants.

Materials. As in Study 2a, participants in this study only made punishment acceptability judgments and were randomly assigned to either the ingroup ($N = 109$) or outgroup ($N = 103$) condition. This data was then combined with the action aversiveness and outcome harmfulness judgments collected in Study 1c.

Results. Once again, we ran a linear mixed effects regression predicting punishment acceptability from action aversiveness, outcome harmfulness, condition, condition x action and condition x outcome interactions, and a random intercept for scenario. We found that this original model predicted punishment acceptability significantly better than a model that excluded action aversiveness ($b = -1.27$, $\chi^2(1, N = 33) = 7.81$, $p < .01$; Figure 2), indicating the predicted main effect for action aversiveness on punishment acceptability. Again, we did not find a main effect for outcome aversiveness. The model excluding outcome aversiveness did not perform significantly better than the original model ($b = 0.04$, $\chi^2(1, N = 33) = 0.04$, $p = .84$; Figure 2). A Wald test to compare the *beta* terms for action aversiveness and outcome harmfulness revealed that the effect of action aversiveness on punishment acceptability was significantly stronger than the effect of outcome harmfulness ($\chi^2(1, N = 33) = 5.64$, $p < .05$).

We also replicated the main effect of condition. Comparison of our original model to a reduced model excluding only condition revealed that our original model predicted punishment acceptability

significantly better than this reduced model ($b = -2.88$, $\chi^2(1, N = 33) = 18.83$, $p < .0001$). Participants were once again significantly more likely to endorse punishments overall for outgroup members ($M = 27.59$, $sd = 18.63$) than ingroup members ($M = 24.71$, $sd = 18.59$).

Finally, unlike in Study 2a, here we did find a significant interaction between condition and outcome harmfulness ($b = .07$, $\chi^2(1, N = 33) = 8.63$, $p = .005$). However, this interaction was not in the predicted direction. Participants' approval for punishments decreases as outcome harmfulness increases when punishing outgroup members, but the two variables appear unrelated when making decisions about punishing ingroup members. Unlike in Study 2a, we no longer found an interaction between action

aversiveness and condition ($b = 0.007$, $\chi^2(1, N = 33) = .025$, $p = 0.88$).

In summary, across both studies, we found a consistent effect of action aversiveness on punishment approval but no effect of outcome harmfulness on punishment approval. Moreover, we consistently found that action aversiveness predicts punishment approval significantly better than outcome harmfulness. In addition, we found that participants across both studies were significantly more likely to approve of punishments for outgroup members than ingroup members. Despite this, we did not find consistent evidence that ingroup versus outgroup status moderates the importance of action aversion or outcome harmfulness on punishment approval.

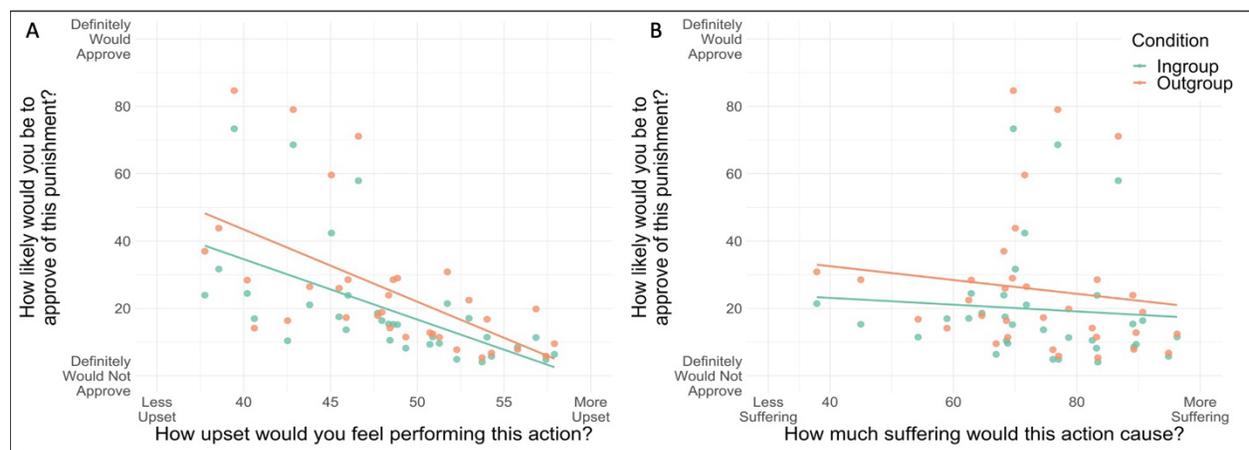


Figure 2. Effects of action aversiveness (a) and outcome harmfulness (b) on punishment acceptability in the ingroup vs. outgroup conditions. Data is averaged across Studies 2a and 2b.

Study 3: Self vs. other-directed punishments

Whether group membership is specified (Study 2) or not (Study 1), we find that people tend to reject punishments on the basis of how aversive it would feel to carry them out, but not on the basis of how much suffering it causes to be subjected to them. Possibly, people are simply insensitive to the suffering caused by punishments in any context, or we have failed to measure their perceptions of suffering appropriately. Alternatively, it may be that people's judgments about the permissibility of punishment are much more attuned to the feelings and experiences of the individual administering the punishment rather than the individual receiving it. If so, then we might observe quite a different pattern of results when choosing punishments for ourselves: We should be motivated to minimize our own suffering and, therefore, reject punishments principally based on the amount of suffering they cause. To test this explanation, we asked participants to make punishment judgments either when considering

punishments for themselves or for others. Once again, we used a preliminary study (Study 3a)/direct preregistered replication (Study 3b; OSF Preregistration: <https://osf.io/axgpn>) model.

Study 3a: Preliminary study

Participants. Data was collected from 61 participants. At the end of the study, participants completed two multiple choice comprehension/attention check questions and three open response comprehension questions. Participants were excluded from further analyses if they provided incorrect answers to either multiple choice questions or any of their open responses were intelligible or irrelevant. After applying these exclusion criteria 52 participants remained and were included in all subsequent analyses.

Materials. In Study 3a we collected responses only to the punishment acceptability question, and once again placed participants in one of two conditions. In both

conditions participants were told that they were to imagine they worked for the government of a newly formed nation and were trying to create a new set of punishments to use when people violate the law. Then, in the “self” condition ($N = 28$), participants were instructed, “Specifically, you are asked to do this by asking yourself, ‘What punishments would be acceptable to me if I were convicted of a crime?’”. Alternatively, in the “other” condition ($N = 24$), participants were instructed, “Specifically, you are asked to do this by asking yourself, ‘What punishments would be acceptable for somebody convicted of a crime?’”. In both conditions, participants responded to each of the 33 scenarios selected in Study 1a, rating on a 0-100 scale how much they would approve of each scenario as a punishment if [you/somebody] were convicted of a crime. This data was then combined with the action aversiveness and outcome harmfulness judgments collected in Study 1a for all of the following analyses.

Results. We predicted that individuals are primarily motivated by self-interest when judging punishment acceptability. When judging punishments for others, participants seek to minimize the aversiveness of the actions associated with implementing the punishment. But when judging punishments for themselves, participants seek to minimize the suffering caused by the punishment. Therefore, we expected interactions between action aversiveness/outcome harmfulness and condition in predicting punishment endorsement. We also expected to find a main effect of condition, such that participants were less likely to endorse punishments for themselves than punishments for others.

To test these predictions, we ran a linear mixed effects model implemented with *lmer* from the *lme4* package in R (Bates et al., 2015). The model included outcome harmfulness, action aversiveness, condition, and outcome-condition and action-condition interaction terms, as well as a random intercept for scenario as predictors, and punishment acceptability as the outcome variable. As in Study 2, condition was effect coded (1 for self, -1 for other) and our continuous predictor variables (outcome harmfulness and action aversiveness) were mean centered.

Using a model comparison approach we found that, as predicted, the model including the condition x action aversiveness interaction term performed significantly better than a model excluding that interaction ($b = 0.33$, $\chi^2(1, N = 33) = 4.83$, $p < .05$; Figure 3). The negative relationship between the aversiveness of an action and punishment endorsement was stronger in the other condition than in the self condition. Likewise, we found that the condition x outcome harmfulness interaction also

strongly significantly predicted punishment endorsement ($b = -0.30$, $\chi^2(1, N = 33) = 20.24$, $p < .0001$; Figure 3). Consistent with the two previous studies, when judging punishments for others, we found no relationship between outcome harmfulness and punishment endorsement. However, when making judgments about punishments for the self, participants were strongly motivated by outcome harmfulness: The more suffering a punishment caused the less likely they were to endorse that punishment for themselves.

As predicted, we also found a main effect of condition ($b = -5.34$, $\chi^2(1, N = 33) = 10.66$, $p < .005$). Participants were much more likely to endorse punishments for others ($M = 29.89$, $sd = 3.41$) than for themselves ($M = 24.54$, $sd = 3.14$). We also found a strong significant main effect of action aversiveness ($b = -2.10$, $\chi^2(1, N = 33) = 17.75$, $p < .0001$) as well as a weak but significant main effect of outcome harmfulness ($b = -0.35$, $\chi^2(1, N = 33) = 4.11$, $p < .05$).

Study 3b: Preregistered replication

Participants. Our goal was to collect high-quality data from at least 100 participants per self/other condition. Therefore, we oversampled, collecting data from 275 participants. Once again, participants who failed to pass all of our attention/bot check questions were excluded, leaving us a final sample of 213 participants.

Materials. Once again, participants in this study only made punishment acceptability judgments and were randomly assigned to either the self ($N = 110$) or other condition ($N = 103$). This data was then combined with the action aversiveness and outcome harmfulness judgments collected for each scenario in Study 1c.

Results. Our analyses for Study 3b were identical for those for Study 3a. Replicating our findings from Study 3a, we found the model including the condition x action aversiveness interaction term performed significantly better than a model excluding that interaction ($b = 0.24$, $\chi^2(1, N = 33) = 8.25$, $p < .005$; Figure 3). Once again, the negative relationship between the aversiveness of an action and punishment endorsement was stronger in the other condition than in the self condition. Likewise, we found that the condition x outcome harmfulness interaction also strongly significantly predicted punishment endorsement ($b = -0.22$, $\chi^2(1, N = 33) = 21.45$, $p < .0001$; Figure 3). Consistent with all of our previous studies, we found that when judging punishments for others, there was little relationship between outcome harmfulness and punishment endorsement. However, when making judgments about punishments for themselves, participants were once again much less

likely to endorse punishments that caused more suffering.

As in Study 3a, we also found a main effect of condition ($b = -5.34$, $\chi^2(1, N = 33) = 4.95$, $p < .05$). Participants were more likely to endorse punishments for others ($M = 28.81$, $sd = 19.24$) than for themselves

($M = 26.42$, $sd = 15.80$). We also continued to find a significant main effect of action aversiveness ($b = -1.13$, $\chi^2(1, N = 33) = 7.94$, $p < .005$) however the effect of outcome harmfulness was no longer significant ($b = -0.12$, $\chi^2(1, N = 33) = 1.47$, $p = 0.23$).

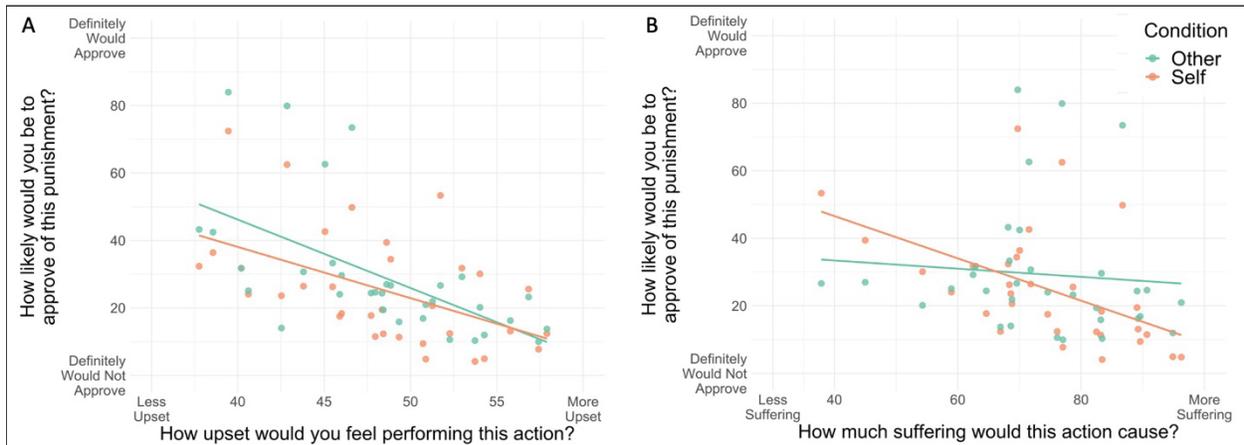


Figure 3. Effects of action aversiveness (a) and outcome harmfulness (b) on punishment acceptability in the self vs. other conditions. Data is averaged across Studies 3a and 3b.

Discussion

Many people, in keeping with international law, hold that it is wrong to use torture as a punishment. It is widely assumed that torture is defined by the suffering it causes. Yet punishments that cause tremendous suffering, like many years in social isolation, are routinely used in the United States. What explains this discrepancy?

Across three studies and three accompanying pre-registered replications, we find that the more uncomfortable people would be enacting some form of punishment on an unfeeling android, the more unacceptable they consider that punishment when applied to criminals. But, once accounting for this effect, we find no further relationship between the amount of human suffering that a punishment causes and judgments of its unacceptability. Even when making judgments about punishments for ingroup (versus outgroup) members, the suffering caused by the punishment has little impact on punishment approval. In fact, in our studies, participants only showed concern for the suffering caused by a punishment when they were selecting punishments for themselves. Participants are, then, perfectly capable of

taking suffering into account when making judgments about punishment permissibility; it's just that, when the person being punished is somebody else, they tend not to.

These findings complement prior work showing that many of our moral judgments are motivated not just by the value of an action's outcome, but by the feelings associated with the action itself (Crocket, 2013; Cushman, 2013; Gesiarz & Crockett, 2015; Yudkin, Prosser, & Crockett, 2019). They are also limited in several ways that should be addressed in future research. Our surveys posed hypotheticals that may not fully capture decision-making in real world contexts. Our respondents were laypeople, and it would be interesting to know whether they align with the judgments of experts, jurists, and policymakers. Finally, our convenience sample of respondents on Amazon Mechanical Turk affords limited generalizability.

Nevertheless, our findings suggest that those wishing to limit the suffering of imprisoned people may need to carefully consider whether ordinary intuitions about the permissibility of torture are suitably aligned with their ultimate goals

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