Cognition 256 (2025) 106040

Contents lists available at ScienceDirect

Cognition

journal homepage: www.elsevier.com/locate/cognit

Is an eye truly for an eye? Magnitude differences affect moral praise more than moral blame

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ARTICLE INFO

Keywords:
Moral judgment
Praise
Blame
Dual-process theories

ABSTRACT

Does the amount of perceived moral responsibility correspond to the magnitude of the act to the same degree regardless of whether the act is moral or immoral? In four experiments ($N = 1617$; all preregistered), we found that—when evaluating two agents who performed similar acts but with different magnitude—observers judged greater differences in their moral responsibility when those acts were moral than when they were immoral. That is, the same difference in magnitude had greater influence on perceived moral responsibility for moral acts compared to immoral acts. Furthermore, we also found that the asymmetry effect impacted perceivers' judgment of the moral character of the agent (Studies 2 and 3). Evaluating immoral (vs. moral) acts led participants to use a more affect-based (vs. reason-based) decision mode, which, in turn, led them to be more scope insensitive to the magnitude difference of the two acts (Study 3). Lastly, we showed that this asymmetry effect is moderated by the individual's concern with the relevant moral issue (Study 4). When perceivers care less about the issue (e.g., animal welfare), the asymmetry effect attenuates. These results together suggest that, when comparing the moral responsibility of different moral agents, magnitude of behavior matters more for positive than for negative acts.

1. Introduction

"An eye for an eye, a tooth for a tooth" (Exodus 21:24)".

Is a criminal who stole $100 on two separate occasions twice as blameworthy as another who stole $100 just once? Likewise, is a Samaritan who helped ten individuals twice as praiseworthy as another who only helped five? Furthermore, is the difference in blame between the criminals the same as the difference in praise for the Samaritans? Acts of morality and immorality do not occur in a vacuum; while deciding how much praise or punishment to mete out, people often 1) encounter agents who have committed more than one moral or immoral act, and 2) must compare between such agents. In the justice system, a judge might decide how much punishment to hand down to a person found guilty of theft by comparing the aggregated sum of criminal activity to past punishments for similar crimes. The judge might consider if more severe punishment is needed for someone who stole from ten homes compared with another who stole from only two. This process could also be applicable in the workplace. For instance, a manager might wonder how much more they should reward an employee who has helped ten coworkers over the last quarter compared to another who has only helped two.

The idea that moral responsibility should correspond proportionally with the act itself is an age-old concept, dating at least as far back as the Babylonian empire's era (Fish, 2008). Moral evaluation and the assignment of moral responsibility are intrinsically associated with norms of fairness (Arneson, 2008); that is, people would likely find it unfair to punish someone who committed fewer immoral acts as harshly as someone who committed more immoral acts. Similarly, people might also see awarding the same amount of moral praise to two individuals who performed vastly different number of moral acts as a form of unfairness. Hence, the natural intuition might be to assume that the degree of moral responsibility should correspond to the magnitude of the act regardless of its morality.

In the present research, we examine whether people make asymmetric evaluations of two agents who have performed immoral acts varying in total magnitude compared with two agents who have performed moral acts with the same magnitude difference. Drawing from the literature on comparative processing (Noguchi and Stewart, 2014; Sokolova et al., 2020) and dual process theory (Blunden et al., 2022; Greene, 2023; Guzmán et al., 2022; Moore et al., 2011a, 2011b), we test if people evaluating immoral acts use a more affect-based (vs. reason-based) decision process compared with those evaluating moral acts.

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https://doi.org/10.1016/j.cognition.2024.106040
Received 26 April 2024; Received in revised form 3 December 2024; Accepted 5 December 2024
Available online 12 December 2024

Given that affect-based decision mode leads to greater scope insensitivity (Hasford et al., 2015; Hsee and Rottenstreich, 2004), we argue that observers judging two immoral acts would perceive the acts to be more similar than those judging two moral acts, even when the two immoral acts have the same magnitude difference as the two moral acts.

1.1. Assigning moral responsibility

When faced with a moral act (positive or negative), observers often engage in a process of assigning *moral responsibility*, determining not just who caused the act but also the agent's reasons, motives, and intentions (or lack thereof) for causing the act. However, many prominent psychological theories on how people assign moral responsibility have tended to focus on immoral acts and their agents (Cushman, 2008; Guglielmo and Malle, 2010; Malle et al., 2014; Shaver and Drown, 1986). For example, past research has found that how people assign blame to a perpetrator depends on whether the perpetrator intended to commit harm and if they have a causal link to the harmful outcome (Cushman, 2008). In this way, research and theory has frequently overlooked the potentially unique processes involved in assigning moral responsibility for positive acts (e.g., praise) versus for negative acts (e.g., blame; see Anderson et al., 2020 for a review).

The focus of past research on immoral acts is unsurprising given the importance of holding immoral actors accountable in ensuring order in a social group (Fehr and Gächter, 2002; Rockenbach and Milinski, 2006). Nevertheless, it is also crucial for a society to assign moral responsibility—and the corresponding social benefits—to agents who commit moral acts when appropriate (Rai and Fiske, 2011). Assigning moral responsibility based on moral acts helps members of a society to distinguish what actions are praiseworthy (i.e., morally desirable) and what are not, thus encouraging prosocial acts (Simpson et al., 2017). Moral praise could then help to encourage people to carry out moral acts that could benefit society as a whole (Simpson et al., 2017; Wren, 1982).

1.2. Asymmetries in judging moral blame and praise

Would changes in magnitude have a greater effect on moral praise or moral blame? Among the comparatively few papers which examined both moral acts and immoral acts (e.g., Bostyn and Roets, 2016; Guglielmo and Malle, 2019; Pizarro et al., 2003), perhaps the most frequent conclusion has been that blame is more sensitive to situational factors than praise. For example, Pizarro et al. (2003) found that people blame the agent less when the negative moral act is committed impulsively than when it is not, whereas they give the agent the same amount of praise regardless of whether the positive moral act is committed impulsively or not. Guglielmo and Malle (2019) found support for another asymmetry between the assignment of blame and praise — people are more prone to differentiating different mental states behind one's actions when assigning blame than when assigning praise.

More directly connected to the present topic, Klein and Epley (2014) examined how people react when an agent behaves selfishly (i.e., choosing to benefit themselves over another person), equitably (i.e., choosing to benefit themselves and another equally), or selflessly (i.e., choosing to benefit another person over themselves). They found that perceivers judged the selfish act more negatively than the equitable act but did not judge the selfless act as significantly different from the equitable act. Their finding suggests that people might be scope-insensitive to moral acts but sensitive to changes in immoral acts. Likewise, Gneezy and Epley (2014) found a similar effect regarding the breaking versus exceeding of promises, whereby broken promises are judged more harshly than exceeded promises are judged more positively. In a similar vein, past studies have found that negative deviations from the norm (i.e., immoral acts) affect moral judgments more than positive deviations from the norm (i.e., moral acts; Guglielmo and Malle, 2019; Monroe et al., 2018).

Extant research on the attribution of moral responsibility based on moral or immoral acts has suggested that people are more sensitive to any variation or information about an immoral behavior than about a moral behavior, including those pertaining to the agent's causality (Siegel et al., 2017), intentionality (Pizarro et al., 2003), and outcomes (Yudkin et al., 2019). Some researchers put forth the argument that this heightened sensitivity toward moral blame (compared to moral praise) is because of the high social stakes that follow if moral blame is assigned incorrectly, with praise lacking such concerns (Schein et al., 2020). Being accused of wrongdoing (whether deserved or not) can lead to resentment (Aquino et al., 2001) or revenge and retaliation (Dreber et al., 2008; McCullough et al., 2013). Praise has no such risk: People rarely get upset about being praised, even for something they did not do. Thus, it seems plausible based on these findings from past research that people will also be more discerning when evaluating the moral responsibility of two agents who committed immoral acts of similar nature but different magnitude, than when moral acts were committed.

However, in this research, we predict the opposite – people will be less discerning when comparing two immoral acts than when comparing two moral acts. We argue that this is because the dominant decision mode of the observer can affect the very act of assigning moral responsibility to actions. Drawing on dual process theories (Chaiken and Trope, 1999; Greene, 2023), we predict that when comparing immoral acts, a dominant affect-based (vs. reason-based) decision mode makes people more scope insensitive to the magnitude of the acts.

1.3. Decision process and scope sensitivity when evaluating moral responsibility

Dual-process theories are not new to the field of moral judgment (Blunden et al., 2022; Greene, 2023; Guzmán et al., 2022; Moore et al., 2011b). The dual-process theory of moral judgment posits that when evaluating information in a moral context, there are two competing psychological processes that could occur — affect-based and reason-based (Kvaran et al., 2013). When an individual uses an affect-based decision mode, they are more likely to base their decision on how they intuitively feel about an action and the process tends to be fast (Gärtner et al., 2022; Kvaran et al., 2013; Schwarz, 2000). When an individual uses a reason-based decision mode, they deliberate and weigh the factors that guide their decision (Kvaran et al., 2013).

The dual-process theory in the moral judgment literature has mainly been applied to how people make decisions in a moral dilemma (e.g., the trolley problem; Gärtner et al., 2022; Greene, 2007; Kvaran et al., 2013). When it comes to evaluating moral character or moral responsibility of an agent, it is yet unclear if perceivers use different decision modes depending on the valence of the acts and what effect different decision modes could have. Although there is some discussion on what decision modes people use when determining the moral responsibility of an agent who has performed immoral acts (Decety et al., 2012; Greene, 2007; Malle et al., 2014), the assumption is that it should not affect the perceiver's evaluation of moral responsibility (Malle et al., 2014). We argue that that is not the case. Specifically, we argue that evaluating immoral acts lead people to have a predominantly affect-based (vs. reason-based) decision mode compared with evaluating moral acts.

People often have greater emotional reactions when hearing about negative news than when hearing about positive news (Rozin and Royzman, 2001; Vaish et al., 2008). Similarly, people react more strongly to negative news versus to neutral or positive news, as evidenced by measurements of biological markers such as heart rate and skin-conductance (Soroka et al., 2019). Furthermore, negative information, including those involving immoral activities such as crimes and scandals, is "stickier" in attracting and maintaining people's attention than neutral information (Veerapa et al., 2020). Moral wrongs are seen as more objectively wrong than moral goods are seen as objectively right (Goodwin and Darley, 2012), providing additional evidence that the valence of a behavior influences the perception of its strength. In addition, this attention to negativity emerges early in life, with both children

and adults having greater memory for threatening over non-threatening others (Kinzler and Shutts, 2008).These findings suggest that an affect-based decision mode is more dominant than a reason-based mode when a person has to evaluate the moral responsibility of an agent who has performed immoral acts.

Using affect when making decisions could, however, lead to unintended effects. One study found that using affect-based decision mode tends to lead people to be "scope insensitive" (Hsee and Rottenstreich, 2004). When people were shown cute panda photos (prompting more affective processing), the amount of money they were willing to donate to save one versus four pandas was not significantly different. On the other hand, people who were shown dots to represent the pandas (prompting more reason-based processing) were willing to donate much more to save four pandas than one. These results not only suggest that using emotions during decision-making could make people become insensitive to variations in scope, but also that using more deliberative and calculative processing could sensitize people to variations of scope. (Hasford et al., 2015; Hsee and Rottenstreich, 2004).

In the present research, we theorize that an observer's dominant decision-making mode when comparing two agents that performed varying magnitudes of moral acts versus immoral acts could affect how the observer assigns praise or blame to the agents. Specifically, given the stronger affective reaction people experience when encountering negative information, we argue that people will use a more affect-based decision mode when comparing the moral responsibility of two agents who have committed immoral acts, leading to greater scope insensitivity. On the other hand, this use of affect-based decision mode will attenuate when people encounter positive information, that is, when they compare the moral responsibility of two agents who have committed moral acts. Thus, they will be more discerning when evaluating agents who have acted morally. In summary, driven by a more affect-based (vs. reason-based) decision mode, people will find two agents who committed aggregated immoral acts which are similar in nature but different in quantity to be closer in moral responsibility than two agents who committed aggregated moral acts with a similar difference in quantity.

1.4. Present research

We test our predictions in four studies, In Study 1, we examine if there is an asymmetry in the praiseworthiness/blameworthiness of two moral versus two immoral agents based on their aggregated behaviors. Study 2 further tests if the asymmetric perception of the morality of the acts affects perceivers' judgment of the agents' moral character, a more stable trait than one's moral responsibility. Study 3 tests whether this asymmetry can be explained by different dominant decision-making modes people have when assigning moral responsibility for moral versus immoral acts. Lastly, Study 4 tests the idea that the asymmetry might attenuate when observers place higher versus lower importance in the domain of the moral/immoral act.

1.5. Transparency and openness

All methods, analyses and hypotheses for all studies were preregistered. Preregistered information is available at https://aspredicted.org/ZTR_3YS (Study 1), https://aspredicted.org/4PQ_KMH (Study 2), https://osf.io/g9a2m (Study 3), and https://aspredicted.org/VSL_M3H (Study 4). All experimental stimuli, data, and analyses are also available at https://osf.io/4e5bc/?view_only=e6be00b845c947d5b69915a1a1041cbd. Information and justifications for our sample sizes for all studies can be found in the Supplementary Material.

2. Study 1

In Study 1, we tested if the valence of two moral acts affects people's perception of how similar the two acts are despite the two acts having the same magnitude difference. Specifically, we predicted that magnitude differences in positive moral acts (i.e., prosocial behaviors) have a bigger effect on one's perceived moral responsibility than negative moral acts.

2.1. Method

Participants. We recruited 213 US participants from Amazon Mechanical Turk (M_{age} = 40.88, 97 females, 113 males, 3 did not report their gender). As pre-registered, we excluded three participants who did not pass our attention check question, leaving us with a total of 210 participants (M_{age} = 40.98, 97 females, 111 males, 2 did not report their gender).

Procedures. We randomly assigned participants to either the *positive* or *negative moral behavior* conditions. We presented all participants with three scenarios. Each scenario described two different agents. In the *positive* (*negative*) *moral behavior* condition, Agent A had committed more counts of a positive (negative) moral behavior than Agent B. Participants in the *positive moral behavior* condition read scenarios about volunteering at a charity, donating food to a food bank, and donating money to a charity. Participants in the *negative moral behavior* condition read scenarios about vandalizing public property, stealing food from a grocery store, and stealing money from companies. For instance, in one of the *positive moral behavior* scenarios, participants read about two agents who regularly donate food to a food bank with Agent B donating 520 cans of food and Agent A donating 410 cans in the past year. In the corresponding *negative moral behavior* scenario, participants read about two agents who regularly steal food from the local grocery store with Agent B stealing 520 cans and Agent A stealing 410 cans in the past year. Thus, the magnitude difference between Agents A and B's actions was the same for both the *positive* and *negative moral behavior* scenarios.

After presenting each scenario, we asked participants in the *positive* (*negative*) *moral behavior* condition how much more praiseworthy (blameworthy) Agent B was than Agent A on a seven-point Likert scale (1 = Equally praiseworthy/blameworthy; 7 = Much more praiseworthy/blameworthy). To test if participants were paying attention during the survey, we asked: "If you are paying attention, in the space below please type purple. What is the color of the sky?" Participants whose response is the word "purple", regardless of any misspelling, were included in our analysis.

2.2. Results and discussion

We computed a composite score of evaluation difference by averaging across the three scenarios (Cronbach's α = 0.87). As predicted, participants in the *positive moral behavior* condition perceived greater difference between Agents A and B in terms of the praiseworthiness of the actions (M = 3.33, SD = 1.63) than participants in the *negative moral behavior* condition evaluated the blameworthiness of the actions (M = 2.65, SD = 1.73), $t(208)$ = 2.94, p = .0036, Cohen's d = 0.41). Supplementary materials provide scenario-level analyses.

The results provide support for our prediction, such that participants indicated that two moral acts were more different in perceived responsibility than immoral acts, despite the two acts having the same magnitude difference. In other words, the impact of a magnitude difference in positive moral behaviors is greater on one's perceived moral responsibilities than the impact of an equivalent magnitude difference in negative moral behaviors.

3. Study 2

In Study 1, we found that a magnitude difference in positive moral behaviors had a bigger effect on how observers perceived the moral responsibility the agents had than the same magnitude difference in negative moral behaviors. However, we do not know if such an effect is only situational (i.e., only affecting one's moral responsibility for that

particular behavior) or fundamental (i.e., also affecting the perceived moral character of the agent). Prior work has shown that there are cases where observers view the act and the actors differently (Uhlmann et al., 2015). In addition, judgments of moral character have been shown to predict a range of downstream consequences, including trust behavior and interaction intentions (Anderson et al., 2020; Critcher et al., 2020; Goodwin et al., 2014). In Study 2, we tested if a magnitude difference in positive moral behaviors, compared to an equivalent magnitude difference in negative moral behaviors, also has a greater effect on how one evaluates the moral character of the agent.

3.1. Method

Participants. We recruited 202 participants from Amazon Mechanical Turk (M_{age} = 39.99, 88 females, 108 males, three others, three unreported). As pre-registered, we excluded three participants who failed our attention check in our data analyses, leaving us with 199 valid participants (M_{age} = 39.92, 87 females, 106 males, three others, three unreported).

Procedures. As in Study 1, we randomly assigned participants to either the *positive* or the *negative moral behavior* conditions. Participants read a scenario about two agents, 'Kris' and 'Jackie' who either committed prosocial acts (*positive moral behavior* condition) or immoral acts (*negative moral behavior* condition). In the *positive moral behavior* condition, we described both agents as regularly donating money to their local charity. Specifically, participants read that 'Jackie' donated $350 to the charity in the past year and 'Kris' donated $250. In the *negative moral behavior* condition, we described both agents as regularly stealing money from their companies even though they could afford not to. 'Jackie' stole $350 from the company in the past year and 'Kris' stole $250. Thus, the magnitude difference between Jackie's and Kris' behaviors (i.e., $100) was the same in both the *positive* and *negative moral behavior* condition. As in Study 1, we asked participants to evaluate how much more praiseworthy (blameworthy) 'Jackie' was compared to 'Kris'. We also tested if the asymmetric effect of moral valence extends to person evaluation by asking participants to indicate how morally good (bad) of a person 'Jackie' was compared to 'Kris' on a seven-point Likert scale (1 = Equally good/bad people; 7 = A much better/worse person).[1] We also included the same attention check question as in Study 1 to test if participants were paying attention during the survey.

3.2. Results and discussion

Replicating Study 1, participants in the *positive moral behavior* condition perceived 'Jackie' to be more praiseworthy (M = 2.94, SD = 1.84) compared to how much more blameworthy 'Jackie' was perceived to be by participants in the *negative moral behavior* condition (M = 1.88, SD = 1.54), $t(197) = 4.42$, $p < .001$, Cohen's $d = 0.63$). More importantly, we observed a difference in the effect of positive and negative moral behaviors on the perceived moral character of the agents. Despite equivalent magnitude difference between the two agents' moral behaviors, participants in the *positive moral behavior* condition perceived a greater difference between the two agents (i.e., Jackie being morally better than Kris; M = 2.46, SD = 1.78) than participants in the *negative moral behavior* condition (i.e., Jackie being morally worse than Kris; M = 1.73, SD = 1.48), $t(197) = 3.16$, $p = .0019$, Cohen's $d = 0.45$). Together, these results extend the findings from Study 1, suggesting that magnitude differences between moral behaviors (vs. immoral behaviors) lead to attributions of both greater praise and of greater moral character.

[1] With an exploratory aim to see how people might view an agent differently if they committed an immoral act after doing regular prosocial acts, we added a scenario about both 'Jackie' and 'Kris' stealing an equal amount of goods. For more details about this additional scenario, please see our Supplementary Materials.

4. Study 3

Thus far, we have observed that a magnitude difference in positive moral behaviors has a greater effect on the agent's perceived moral responsibility and moral character than an equivalent magnitude difference in negative moral behaviors. However, the mechanism that is driving this difference remains unclear. As discussed above, we propose a possible mechanism — the decision mode which observers use when evaluating positive and negative moral behaviors. That is, negative information such as immoral acts elicit stronger emotional reactions than positive information such as moral acts (Rozin and Royzman, 2001; Vaish et al., 2008). As such, the type of decision mode that individuals use when evaluating immoral acts can be different than what they use when evaluating moral acts. We theorized that when deciding how much moral responsibility to assign to agents who performed immoral acts, people tend to use more affect-based (vs. reason-based) decision modes. On the other hand, when deciding how much moral responsibility to assign to agents who performed moral acts, people tend to use a more reason-based decision mode (i.e., depending more on rationality and deliberation). Prior research has shown that affect-based decision mode leads people to be more scope insensitive (Hsee and Rottenstreich, 2004). Therefore, using an affect-based, instead of reason-based, approach to process information about immoral acts, in turn, implies that the difference between two immoral acts becomes more 'blurred', or less distinguishable. This might lead people to judge two immoral acts to be more similar to each other than two moral acts, despite the acts having the same magnitude difference.

4.1. Method

Participants. We recruited 605 US participants from Amazon MTurk. (M_{age} = 40.90, 211 females, 264 males, 5 others, 125 unreported[2]). As pre-registered, we excluded three participants who failed our attention check from our data analyses, leaving us with 602 valid participants (M_{age} = 40.97, 210 females, 262 males, 5 others, 125 unreported).

Procedures. We randomly assigned participants to either the *positive* or *negative moral behavior* conditions. All participants read a scenario about two individuals, Kris and Jackie. In the *positive moral behavior* condition, Jackie spent 200 h cleaning walls with illegal graffiti (a moral act) in the past year and Kris spent 100 h, while in the *negative moral behavior* condition, Jackie spent 200 h vandalizing walls with illegal graffiti (an immoral act) in a year and Kris spent 100 h doing so. As in Study 2, after reading the scenario, participants were asked how much more praiseworthy (blameworthy) 'Jackie's' action was compared to 'Kris' and how morally good (bad) of a person 'Jackie' was compared to 'Kris'. We also included another measure of participants' judgment of the agents' actions by asking how morally good (bad) 'Jackie's' action was compared to 'Kris' on a seven-point Likert scale (1 = Equally morally good/bad; 7 = Much more morally good/bad). As exploratory measures, participants were asked to evaluate how much impact 'Jackie's' action had on others as compared to 'Kris's' action on a seven-point Likert scale (1 = Equally impactful; 7 = Much more impactful) and how positive (negative) they personally feel about 'Jackie's' action as compared to 'Kris's' (i.e., the emotional impact of the agents' actions on the participants) on a seven-point Likert scale (1 = Equally positive/negative; 7 = Much more positive/negative).

Lastly, as a measure of the mediator, we asked participants to indicate the approach, whether rationality or emotionality, they used when answering the questions about Jackie's moral character and responsibility. Specifically, we asked, "how would you characterize your approach to answering the previous questions". Participants then responded on a seven-point bipolar scale to four items: cool-headed/hot-

[2] Due to a clerical error, demographics data was not collected from 20.66 % of the participants who completed the survey.

headed, rational/emotional, thoughtful/impulsive, and cognitive/affective; higher values refer to greater use of the affective approach (Cronbach's α = 0.92; O'Connor et al., 2002).

4.2. Results and discussion

Replicating our main finding, we found that participants in the *positive moral behavior* condition perceived 'Jackie's' action to be more praiseworthy (M = 3.71, SD = 1.90) compared to how much more blameworthy 'Jackie's' action was perceived to be by participants in the *negative moral behavior* condition (M = 2.77, SD = 2.04, $t(600)$ = 5.84, p < .001, Cohen's d = 0.48). Participants' moral evaluation of the agents' actions followed an asymmetric pattern as well: participants in the *positive moral behavior* condition perceived 'Jackie's' action to be more morally good (M = 2.89, SD = 1.99) than how much more morally bad (M = 2.43, SD = 1.84) participants in the *negative moral behavior* condition considered 'Jackie's' action to be ($t(600)$ = 2.95, p = .0033, Cohen's d = 0.24). Further, consistent with our finding from the previous study, participants in the *positive moral behavior* condition perceived a greater difference in the agents' moral character between the two agents (i.e., 'Jackie' being a morally better person than 'Kris; M = 2.80, SD = 1.97) than participants in the *negative moral behavior* condition (i.e., 'Jackie' being a morally worse person than 'Kris; M = 2.42, SD = 1.86), $t(600)$ = 2.42, p = .016, Cohen's d = 0.20).

Not only did we observe asymmetric effects in participants' moral evaluations, but we also observed asymmetric effects in the perceived impact of the agents' actions. The perceived difference in the impact caused by 'Jackie's' action on others as compared to that by 'Kris's' action in the *positive moral behavior* condition is greater (M = 4.00, SD = 1.91) than the perceived difference in the impact between the two agents' actions in the *negative moral behavior* condition (M = 3.24, SD = 2.06), ($t(600)$ = 4.67, p < .001, Cohen's d = 0.38). Furthermore, the asymmetric effect applies to the emotional impact of the agents' actions on the participants: Participants in the *positive moral behavior* condition felt much more positive about 'Jackie's' actions (M = 3.35, SD = 2.01) than how much more negative participants in the *negative moral behavior* condition felt about 'Jackie's' action (M = 2.58, SD = 1.93, $t(600)$ = 4.78, p < .001, Cohen's d = 0.39).

Consistent with our theorizing about the mediator, we found that participants in the *negative moral behavior* condition was more likely to use an affect-based decision mode (M = 2.38, SD = 1.60) compared with participants in the *positive moral behavior* condition (M = 1.87, SD = 1.11, $t(600)$ = 4.61, p < .001, Cohen's d = 0.38). To test for the proposed underlying process, we ran a mediation model using PROCESS model 4 with 10,000 bootstrapping iterations (Hayes, 2013), adding decision mode as a mediator to the model where the valence of the moral behavior was the predictor variable and the moral responsibility (i.e. how praiseworthy or blameworthy the target was) was the outcome variable. As shown in Fig. 1, we found a significant indirect effect (B = −0.22, Bootstrapped SE = 0.057, Bootstrapped 95 % CI[−0.34, −0.12]), such that compared with participants in the *positive moral behavior* condition, those in the *negative moral behavior* condition were more likely to use an affect-based decision mode which, in turn, was related to them finding a lower difference in moral responsibility between 'Jackie' and 'Kris'.

These results provide support to our theory that a more affect-based decision mode that is used by observers when evaluating immoral (vs. moral) behavior can lead them to judge two agents' moral responsibility as more similar to each other. However, we acknowledge the limitations that such correlational tests of underlying mechanism have (Fiedler et al., 2018). We discuss these issues further in the 'Limitations and future directions section.'

5. Study 4

Not all moral acts are considered equal in everyone's eyes. For example, what is considered as morally right might not be preferred by an individual if the morally right act is not what the individual desires (Melnikoff and Bailey, 2018). In addition, people simply differ in what "counts" as being a moral value or priority (Curry et al., 2019; Graham et al., 2009; Schein and Gray, 2015). We proposed that this seeming diversity of morality would also apply to our findings. Specifically, we should see the asymmetric effect of the valence of moral acts on people's judgment of moral responsibility to be weaker when the relevant moral values are not of personal importance to the perceivers themselves, and to be greater when the moral values are of personal importance. We made this prediction as an extension of the mechanism we observed in Study 3—affect-based versus reason-based decision modes. To the extent that someone values a particular moral context (e.g., animal welfare), they should be especially likely to experience intense emotions in response to violations of that value (Baumeister et al., 2001; Graham et al., 2009), and thus experience greater scope insensitivity when evaluating negative behaviors. On the other hand, if the perceiver does not have strong moral opinions about the core issue, they should experience much less intense emotions, and hence display less scope insensitivity when encountering moral violation of that issue. To test our hypothesis, we designed Study 4 to focus on a particular moral context (animal welfare), and asked individuals how important animal welfare was to them.

5.1. Method

Participants. We recruited 605 US participants from Amazon MTurk. (M_{age} = 41.13, 290 females, 306 males, four others, and five unreported).

Procedures. We randomly assigned participants to either the *positive* or *negative moral behavior* conditions. All participants read about two cosmetic companies, Beauty Labs and Clean & Fresh Corp. Specifically, they read about how both companies either engage in animal testing in the *negative moral behavior* condition (immoral acts; i.e., testing their products on animals before selling them), or animal rescuing in the *positive moral behavior* condition (moral acts; i.e., saving animals from harmful conditions and rehoming them). In the *positive moral behavior* condition, participants were informed that in the past year, Beauty Labs

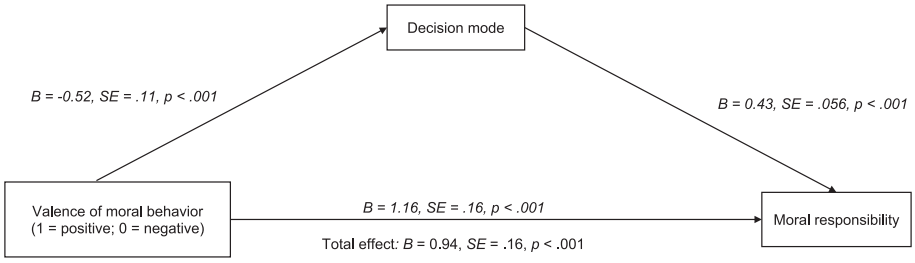

Fig. 1. Mediation model.

rescued 400 animals while Clean & Fresh Corp rescued 700 animals. In the *negative moral behavior* condition, participants were informed that in the past year, Beauty Labs was responsible for killing 400 animals while Clean & Fresh Corp was responsible for killing 700 animals. Participants in the *positive moral behavior* condition were then asked how much more praiseworthy Clean & Fresh Corp was as compared to Beauty Labs, while participants in the *negative moral behavior* condition were asked how much more blameworthy Clean & Fresh Corp was.

After answering the question pertaining to the scenario, all participants responded to a 10-item version of the Animal Attitude Scale (Herzog et al., 2015). The Animal Attitude Scale measures people's feelings and attitudes toward the welfare of animals. An example item is "The use of animals such as rabbits for testing the safety of cosmetics and household products is unnecessary and should be stopped." (Herzog et al., 2015; See experimental materials in OSF folder for this study). Participants respond to these items on a 7-point Likert scale (1 = Strongly disagree; 7 = Strongly agree). Their responses to the 10 Animal Attitude Scale items were averaged to form a composite score (Cronbach's α = 0.85, $M = 4.86$, $SD = 1.18$).

5.2. Results and discussion

Our main finding was replicated: participants in the *positive moral behavior* condition perceived the company which had performed more moral acts, i.e., 'Clean and Fresh Corp', to be more praiseworthy ($M = 3.49$, $SD = 2.02$) compared to how much more blameworthy the company was perceived to be by participants in the *negative moral behavior* condition ($M = 3.00$, $SD = 2.07$), $t(603) = 2.95$, $p = .0033$, Cohen's $d = 0.24$).

As pre-registered, we mean-centered the conditions and participants' composite animal attitude score. We then ran a linear regression with perceived moral responsibility as the dependent variable, and the conditions, the participants' animal attitude score and their interaction term as the independent variables. Consistent with our prediction, there was a statistically significant effect of condition ($B = 0.50$, Robust $SE = 0.17$, 95 % CI[0.17, 0.82], $t = 3.01$, $p = .003$). The effect of participants' animal attitude was non-significant ($B = 0.067$, Robust $SE = 0.067$, 95 % CI[−0.066, 0.20], $t = 0.99$, $p = .324$). However, there was a marginally significant interaction between conditions and participants' animal attitude ($B = 0.25$, Robust $SE = 0.14$, 95 % CI[−0.012, 0.52], $t = 1.87$, $p = .061$).

To probe the interaction effect further, we conducted spotlight analyses at one SD below and above the mean of the participants' animal attitude scores (see Fig. 2). Participants who scored high (+1SD) on the animal attitude score showed a significant asymmetry effect of moral valence on the perceived moral responsibility of the agent ($B = 0.80$, $p = .0007$). This asymmetry effect attenuated for participants with low (-1SD) animal attitude scores ($B = 0.20$, $p = .398$). These results suggest that the asymmetry effect between moral and immoral behaviors on the agent's moral responsibility is context-dependent: When the perceiver is concerned about the core issue with regards to the moral or immoral behaviors (in this case, animal welfare), they seem to perceived greater differences in moral responsibility of those who performed more moral acts than those performed fewer moral acts, as compared to when the acts are immoral. When the perceiver is not concerned about the core issue, the asymmetry effect seems to attenuate.

Although we have used spotlight analyses to understand the interaction effect, we do acknowledge that the interaction effect that we have found is marginal and hence the results of our spotlight analyses should be considered with caution.

6. General discussion

It might seem intuitive that the magnitude of moral or immoral acts should correspond to the amount of praise or blame meted out to the actors. Such assumption is, after all, based on norm of fairness and proportionality (Arneson, 2008). However, across four studies, we found that people are more sensitive in how much they assign moral responsibility when evaluating two agents who performed moral acts with different magnitude, than when the two agents performed immoral acts. Specifically, we found that people perceive greater differences in praise between two agents who have performed aggregated moral acts of the

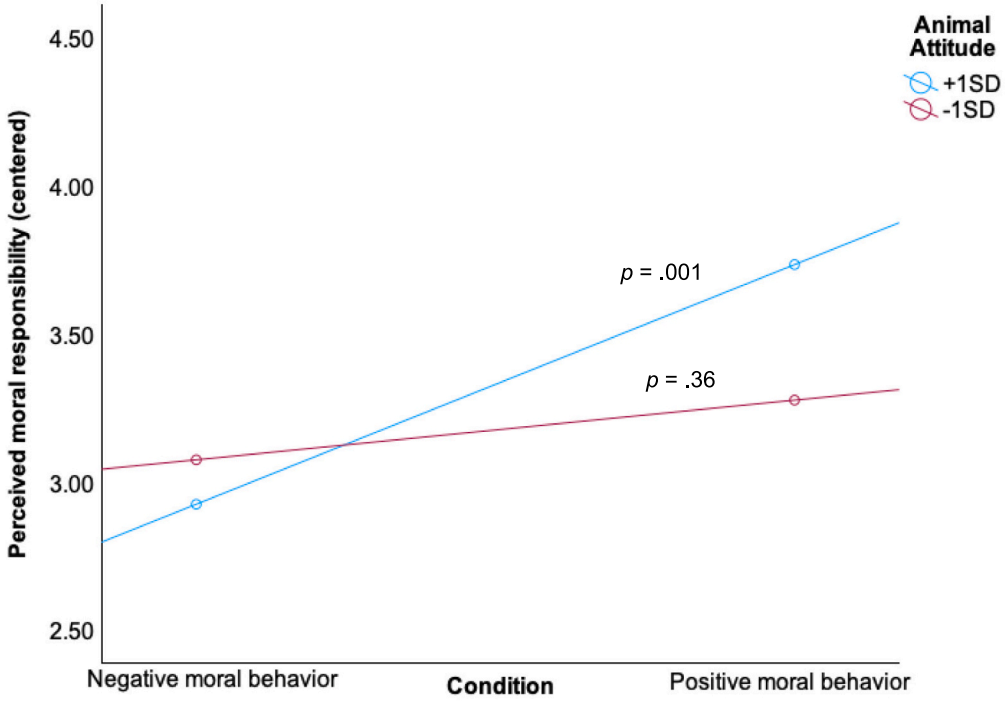

Fig. 2. Effect of moral valence on perceived moral responsibility at +1SD and -1SD of animal attitude scale.

same nature but different magnitude, than the differences in blame assigned when the two agents committed aggregated immoral acts. We also found that this asymmetric effect extends to people's evaluation of the agent's moral character (Studies 2 and 3).

One possible reason why such an asymmetric effect of moral valence occurs could be because of people's dominant decision mode when making moral evaluations. We found some evidence that supports this; when people evaluated agents committing immoral acts, they were more likely to use affect-based decision mode when making moral evaluations. However, people were more likely to use reason-based decision mode when making moral evaluations of moral acts (Study 3). The asymmetric effect of moral valence on moral evaluation is, at the same time, bounded by people's opinions about the relevant moral issue. When people do not care much for the relevant moral issue, the asymmetric effect of moral valence attenuates (Study 4).

Our work speaks to literature examining comparative social processes, specifically those involving the comparison of social agents with similar patterns but different aggregated magnitudes of behavior. In real world settings, the process of person perception often operates in a comparative manner (Barenboim, 1981). For example, when managers make hiring decisions, they often face more than one candidate at a time. Deciding who to hire often involves comparing the candidates and their characteristics or behaviors. Or consider the context of romantic relationships—especially online dating—whereby individuals may consider multiple options before deciding on a long-term partner. Research reflects this comparative aspect of person perception by asking participants to evaluate multiple candidates simultaneously and deciding on one (Marlowe et al., 1996). Our work thus speaks to this more realistic process of social cognition and moral judgment. Past work has frequently looked at evaluations of individual agents engaging in isolated behaviors, including research on moral judgment (e.g., Carnes et al., 2022). Yet, moral perception studies that directly compared moral and immoral actions have been much rarer by comparison (Bostyn and Roets, 2016; De Freitas and Johnson, 2018; Guglielmo and Malle, 2019; Wiltermuth et al., 2010). In the present work, our approach has been to mimic the "real world" perhaps more cleanly, where observers evaluate collected patterns of behavior (i.e., how someone acted over time) and multiple agents (i.e., similar to many everyday versions like workplace hiring as described previously).

By testing moral judgment in a comparative nature, what we found in our research can have significant practical implications in the real world. When judging immoral behaviors, if people are indeed more scope insensitive (i.e., less likely to distinguish the amount of blame the agents deserved even when one of them committed significantly fewer counts of immoral acts), then people might be more inclined to assign disproportionately harsher punishment for comparatively fewer or less impactful offenses. For instance, two fraudsters, one of whom defrauded people of more money, could receive similar lengths of prison sentences (Financial Conduct Authority, 2023). At the same time, if fewer counts of immoral acts are judged similarly to higher counts of the same immoral acts, people might be equally reluctant to forgive anyone who committed immoral acts, even those who have committed them in an act of foolishness. Imagine a young offender who committed a few thefts out of peer pressure and immaturity. Such an offender might be judged similarly as a career criminal who has committed repeated thefts throughout their life. Such negative judgment could lead to stigmatization which could have dire effects on ex-offenders' rehabilitation (Quinn-Hogan, 2021), even if the ex-offenders had committed those criminal acts out of impulsivity or immaturity.

Now consider the context of positive moral behaviors. According to our findings, people are particularly scope-sensitive to magnitude differences in positive moral acts. In a world that is already dominated by billionaires (Oxfam, 2020), could such scope-sensitivity in the judgment of moral responsibility works even more in favor of the rich and powerful? Those with monetary resources could use their wealth in philanthropy to improve the public's opinions of them, making themselves seem more prosocial than others. Examples of rich people and powerful businesses using philanthropy to influence their public image are common in contemporary society. Prominent oil companies donate millions of dollars annually to charities and extensively advertise their prosocial acts, perhaps to counteract concerns about pollution (Lewton, 2022). Having higher scope-sensitivity when evaluating positive moral behaviors means that people might assign more praiseworthiness to such a large company as compared to another oil company which might have made lower public donations to charities (but could be causing less harm to the environment). With an understanding of what we have found in our research, the general public, as well as the policymakers, could caution themselves from being affected by similar "ethics washing" behaviors.

Our work also sheds light on the processes of ascribing moral responsibility. Although the use of the dual-process model in our understanding of how people make moral judgments is not new, existing research has predominantly used the dual-process model to predict the type of moral judgments, specifically utilitarian or deontological, made in moral dilemmas (Greene, 2007, 2009, 2023; Kvaran et al., 2013; Moore et al., 2011a). What we proposed on the application of the dual-process model in moral judgment is new — the valence content of the moral scenarios might predict the type of decision mode used by the perceivers when making moral evaluations. Our finding implies that not only can people's dominant decision mode affect their moral judgment, the content of the moral issue could also affect people's judgments by affecting the type of decision mode the perceivers are likely to use.

6.1. Limitations and future directions

While our research provides some insights into how moral valence could affect people's sensitivity to magnitude differences of the moral/immoral act, additional research should be done to extend our findings. An interesting avenue for future research is the contrast that our finding has with prior research showing people are more sensitive to negative or immoral acts than positive or moral acts (Gneezy and Epley, 2014; Klein and Epley, 2014). For instance, Klein and Epley (2014) found that participants evaluated someone who donated $10 more positively than someone who did not donate anything, but no more positively than someone who donated $20. Likewise, breaking promises is evaluated more harshly than keeping promises, but exceeding promises are not differentiated from keeping promises, suggesting observers' insensitivity to magnitude of positive acts (Gneezy and Epley, 2014). However, other research suggests that observers are indeed sensitive to magnitude changes in positive acts (Basu, 2021; Kawamura and Kusumi, 2020), although these studies did not include negative acts.

One aspect that sets us apart from this prior work is that our studies required participants to compare between two distinct agents who committed the same kind of moral/immoral acts, but of different aggregated magnitude. In other words, our stimuli inherently have a comparative nature. In contrast, the previous research referenced above used non-comparative stimuli as participants were only asked to judge an agent and their moral/immoral act in isolation, with no other reference point (Gneezy and Epley, 2014; Klein and Epley, 2014). Nonetheless, we also argue that the mere comparative nature of the stimuli is just one reason for our seemingly contrasting results from prior research. Specifically, in one past study, participants were asked to repeatedly judge the same agent performing increasingly moral or immoral acts (Klein and Epley, 2014; Study 4b). Participants in both conditions showed a linear pattern such that they were sensitive to varying magnitude of both moral and immoral acts. However, in that study, participants were evaluating the same agent performing multiple acts, whereas participants in our studies evaluated two distinct agents. Future research should take a more structured, systematic investigation into these seemingly disparate findings. It is possible that factors such as the evaluation mode (e.g., single vs multiple agents) or the number of acts (e.g., single acts vs. multiple acts) can systematically affect observers'

evaluations.

Another avenue for future research is in how exactly to operationalize the consequences of a moral/immoral act. In our research, we focused on two agents who committed aggregated acts that differed in final magnitude. However, it is not uncommon to compare agents who do not differ in the number of times they committed an act, but do differ in the *severity* of an individual act. For example, a judge determining the sentence for a defendant convicted of assault, might choose to compare how severe the outcome of their assault was compared to that of a previous defendant also convicted of assault (e.g., life-changing injuries vs. temporary injuries). While we observe that people judged an agent who committed several counts of immoral acts similar to another who committed the same immoral acts but with fewer counts, people might think differently when the comparison is based on the relative severity of the act. Although we would expect to observe some scope insensitivity when people are comparing between two agents who committed immoral acts of different severity, it is unclear if we might see differences when the agents committed immoral acts of different severity than when the agents committed immoral acts of different magnitude. Future research could investigate if there is also scope insensitivity when people are comparing between two agents who have committed immoral acts with different levels of severity.

One limitation of our research involves our proposed mechanism behind the asymmetric effect of moral valence. We found some supporting evidence that the different decision modes people use when processing information about moral versus immoral acts could be a reason why they exhibit an asymmetric effect. However, as the evidence we have currently is correlational, it should be interpreted with caution and may not necessarily indicate causality (Fiedler et al., 2018; Rohrer et al., 2022). While a more robust method for demonstrating the mechanism might be an experimental manipulation of decision mode, this might be challenging with the current interventions and manipulations available in the literature. This is because if differences in processing styles indeed underlie the phenomenon, then it would also imply that processing information about immoral (vs. moral) actions could immediately trigger the dominant affective (vs. deliberative) processing style. Therefore, it might be very challenging for any kind of prompts or interventions that try to induce a different processing style to successfully counteract the dominant processing style. Future research could aim to study our proposed mechanism of different dominant processing styles by designing a more directed prompt or intervention that could counteract a dominant processing style induced by the valence of the information being processed.

In the present research, we examined a possible boundary condition based on how much people value the core issue of the moral/immoral actions. However, a limitation of our study was that we only examined one particular issue (i.e., how much participants care about animal welfare). Thus, the results of Study 4 could be idiosyncratic to this particular issue of animal welfare. Future research can examine a wider range of issues, perhaps those informed by theories regarding different moral values (e.g., Curry et al., 2019; Graham et al., 2009; Rai and Fiske, 2011), and study how the asymmetric effect of moral valence varies based on individuals' importance placed on each issue.

Finally, a drawback from our research is that we used relatively small numbers (less than 1000) for the magnitude of moral/immoral acts committed by the agents. Past research has found that people are less sensitive to information about a group of people as the number of that group increases (Dickert et al., 2012, 2015; Slovic, 2007). Although that area of research focuses on people's responses to others who need help, their findings suggest that people might be overall less sensitive to "big numbers" and hence, magnitude changes when the numbers involved are big. In a similar vein, it is suggested that people might perceive greater difference between two numbers when the numbers are small than when the numbers are big (Kwong and Wong, 2006). This is because people tend to judge based on the relative change (e.g., percentage of change) which is larger when the numbers are small than when they are big, rather than the absolute change (Hsee et al., 2009). For example, $3 is 50 % more than $2, but $300 is only around 0.3 % more than $299, even though both comparisons have an absolute difference of $1. It is therefore possible that if the numbers of moral/immoral acts performed by the agents whom perceivers are evaluating are extremely big, perceivers might be scope insensitive regardless of the valence of the acts (i.e., whether the acts are moral or immoral). At the same time, it is also possible that the asymmetric effect of moral valence on people's moral judgment might be stronger than people's inherent insensitivity to changes in large numbers. Future research could attempt to tease apart the strength of these two different effects.

Open practices

All preregistered information is available at the links given for each study. All study materials, data, analyses and output are also available at https://osf.io/4e5bc/?view_only=e6be00b845c947d5b69915a1a1041cbd.

CRediT authorship contribution statement

Lishi Tan: Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization, Writing – review & editing, Writing – original draft. **Rajen A. Anderson:** Methodology, Investigation, Formal analysis, Conceptualization, Writing – review & editing, Writing – original draft. **Shankha Basu:** Methodology, Investigation, Conceptualization, Writing – review & editing, Writing – original draft.

Declaration of competing interest

None.

Data availability

We have shared the link to our OSF page, which includes the data files.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.cognition.2024.106040.

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