

# Empathic Concern and Altruistic Allocation Under Loss Framing

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Many studies do not simultaneously manipulate empathic concern and social evaluation, making it difficult to disentangle the determinants of altruistic behavior. This study examined whether loss framing elicits altruistic allocation beyond the effects of social evaluation. The empathy-altruism hypothesis was compared with the empathy-specific evaluation hypothesis using a dictator game with a 2 × 2 design that manipulated recipients' loss framing and social evaluation. Recipients were described as having experienced a loss due to bad luck or no loss, and allocations were made under conditions of high or low social evaluation. The analysis was conducted using data from 100 Japanese undergraduates who participated in a laboratory experiment. The results showed that allocations were higher in the loss-framed condition than in the no-loss condition only under high social evaluation, with no difference observed under low social evaluation. These findings support the empathy-specific evaluation hypothesis, suggesting that altruistic responses to loss framing depend on reputational incentives rather than unconditional altruism.

## Keywords

empathic concern, altruistic allocation, loss framing, social evaluation, reputation, dictator game

## Introduction

Altruistic behavior is elicited by several proximate factors, most notably social evaluation and empathic concern, defined as an other-oriented affective response to others' suffering (Batson, 2010). Both reputational incentives and empathic appeals have been widely used to promote altruistic behavior in real-world settings (Bateson et al., 2006; Lesner & Rasmussen, 2014), yet their specific functions and limitations remain incompletely understood. Importantly, when reputational incentives are introduced in contexts where individuals already experience empathic concern, altruistic behavior may paradoxically decrease due to crowding-out effects (Bénabou & Tirole, 2006; Graf et al., 2023). This pattern suggests that reputational and

empathic mechanisms do not simply add to one another but may interact in more complex ways, underscoring the need to disentangle their respective contributions to altruistic behavior.

Numerous studies suggest that empathic concern is associated with increased altruistic behavior (FeldmanHall et al., 2015; Harbaugh et al., 2007; Hein et al., 2010; Tankersley et al., 2007; Waytz et al., 2012). However, because most of these studies do not independently manipulate reputational incentives, the observed altruistic behavior in empathy-eliciting contexts may also reflect social evaluation. According to the empathy-specific evaluation hypothesis (Archer et al., 1981), individuals learn that failing to help in empathy-eliciting situations risks social criticism and therefore may behave altruistically in order to avoid negative evaluation rather than as a direct consequence of empathic concern itself.

Fultz et al. (1986) directly addressed this issue by manipulating empathic concern through perspective-taking instructions and social evaluation through anonymity. According to the empathy-altruism hypothesis (Batson, 2010), individuals engage in altruistic behavior by perceiving others' suffering and experiencing empathic concern. This hypothesis predicts that empathic concern should increase altruistic behavior regardless of anonymity, whereas the empathy-specific evaluation hypothesis predicts that this effect should disappear under anonymous conditions. Fultz et al. (1986) reported only a main effect of empathic concern and therefore concluded in favor of the empathy-altruism hypothesis.

However, the conclusions drawn by Fultz et al. (1986) warrant further scrutiny. First, the small sample sizes in their experiments, with 22 participants in Experiment 1 and 32 participants in Experiment 2, limited the statistical power to detect interaction effects. Second, the effectiveness of perspective-taking instructions as a manipulation of empathic concern has been questioned. McCauley et al. (2024) failed to replicate the findings of Fultz et al. (1986). In addition, a meta-analysis showed that perspective-taking does not reliably increase empathic concern compared with a neutral condition that does not include perspective-taking instructions (McAuliffe et al., 2020). Taken together, these findings raise concerns about whether previous studies have successfully isolated empathic concern from reputational considerations. These limitations highlight the need for alternative and more robust methods of eliciting empathic concern.

A core assumption of the empathy-altruism hypothesis is that empathic concern is elicited by salient recipient suffering (Batson, 2010), such as experiencing a monetary loss or another form of disadvantage. Previous studies using economic games have operationalized recipient disadvantage in several ways, including monetary losses due to bad luck (Barclay & Benard, 2020; Brañas-Garza, 2007; Goto, 2018; Yamamoto & Hashimoto, 2025) and losses caused by others' actions (Dhaliwal

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et al., 2021; Keysar et al., 2008; Leliveld et al., 2012; Liu et al., 2017; Van Doorn et al., 2018). In addition, instructional manipulations that emphasize the recipient's dependence on the dictator have been shown to increase altruistic allocations (Brañas-Garza, 2007). However, these studies did not simultaneously manipulate social evaluation, making it difficult to disentangle the respective contributions of empathic concern and reputational considerations to altruistic behavior.

### The present study

The present study addresses this gap by employing a  $2 \times 2$  design that independently manipulates recipients' loss framing, based on monetary loss due to bad luck, and social evaluation, operationalized as anonymous versus non-anonymous conditions, in a dictator game. The loss framing was designed to elicit empathic concern by highlighting recipients' misfortune rather than to manipulate individual risk preferences.

Based on the empathy-altruism hypothesis, Hypothesis 1 predicts a main effect of loss framing on altruistic allocation, such that allocations will be higher in the loss-framed condition than in the no-loss condition under both anonymous and non-anonymous settings. In contrast, based on the empathy-specific evaluation hypothesis, Hypothesis 2 predicts an interaction between loss framing and social evaluation, such that loss framing will increase altruistic allocation only under non-anonymous conditions and not under anonymous conditions.

This design allows examination of whether altruistic allocation following loss framing persists under anonymity or is restricted to contexts involving social evaluation.

## Methods

### Participants & design

Because this study employed a novel manipulation of empathic concern and examined its interaction with social evaluation, no clear benchmark effect size was available. Accordingly, an a priori power analysis was conducted using G\*Power 3.1.9.3 (Faul et al., 2007), assuming a medium effect size ( $f = 0.25$ ; Cohen, 1988),  $\alpha = .05$ , and power = .80. This analysis indicated a required total sample size of 128 (32 per group), as specified in the preregistration. Due to budget constraints and participant availability, 107 Japanese undergraduates took part in the study. After excluding seven cases with missing data, the final sample comprised 100 participants (25 men, 75 women; mean age = 20.18 years,  $SD = 1.14$ ). All participants provided informed consent prior to participation. The experiment employed a  $2$  (Loss Framing: loss vs. no-loss)  $\times 2$  (Social Evaluation: high vs. low) between-participants design.

### Manipulation of loss framing

Loss framing was manipulated by informing participants, acting as dictators, about the outcome of a lottery affecting their paired recipient. In the loss condition, participants were told that the recipient initially received a ¥500 show-up fee but lost ¥400 as a result of the lottery. In the no-loss condition, participants were told that the recipient retained the full ¥500. This manipulation was intended

to elicit empathic concern by highlighting the recipient's misfortune. Although the dictator drew the lottery, the dictator's own show-up fee was not reduced. Further details are provided in Appendix 1: <https://osf.io/zkjm/overview>

### Manipulation of social evaluation

Social evaluation was manipulated by varying whether the dictator's allocation decision would be disclosed to the recipient. In the high social evaluation condition, participants were informed that the recipient would receive information about the allocation amount as well as the dictator's randomly assigned private room number. In the low social evaluation condition, participants were told that the recipient had received a different experimental explanation and therefore would not know the dictator's identity or that a dictator game was being played. This manipulation was intended to alter participants' subjective perception of social evaluation.

### Procedure

Participants were randomly assigned to private rooms and completed the experiment individually. At the beginning of the session, participants were informed that they would receive a ¥500 show-up fee. Written instructions described the anonymity procedures, the pairing process, and the dictator game. All participants were assigned the role of dictator and were told that they would allocate ¥500, separate from the ¥500 show-up fee, between themselves and a paired recipient who had no decision-making power. Pairing was described as being based on room numbers, although the recipients were fictitious.

Participants then received instructions corresponding to their assigned social evaluation condition and completed a brief comprehension check. Next, the loss manipulation was implemented, and participants were informed whether their paired recipient had experienced a monetary loss. Participants subsequently indicated how much of the ¥500 endowment they wished to allocate to the recipient in the dictator game, with allocation amounts specified in one-yen increments. Responses were collected using sealed envelopes to ensure anonymity.

In a post-experimental questionnaire, participants were asked what they considered when deciding the allocation amount. Empathic concern was assessed using three items adapted from Fultz et al. (1986), such as deciding out of respect, compassion, and kindness toward the recipient. Reputational consideration was assessed using three items developed for this study based on the concept of reputation, such as deciding to appear favorable to others, being mindful of others' perceptions, and being perceived by others as a kind person. All items were rated on a 7-point scale. Participants also reported their sex and age. After completing the experiment, participants were fully debriefed and compensated with Amazon gift cards.

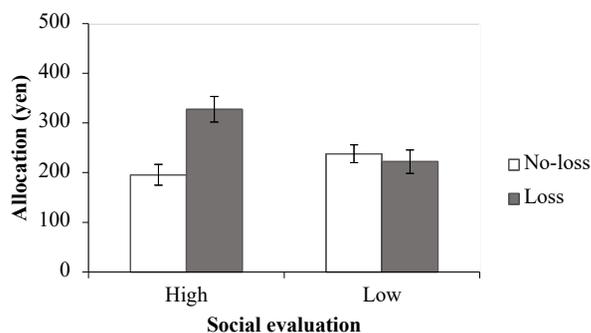
## Results

As a manipulation check for loss framing, empathic concern was analyzed using an analysis of covariance with sex included as a covariate. The results indicated that empathic concern did not differ significantly between the loss condition ( $M = 3.66$ ) and the no-loss condition ( $M =$

3.77),  $F(1, 97) = 0.19, p = .67$ , partial  $\eta^2 = .00$ . The main effect of sex was also not significant, indicating no reliable difference in empathic concern between men ( $M = 3.44$ ) and women ( $M = 3.99$ ),  $F(1, 97) = 3.84, p = .05$ , partial  $\eta^2 = .04$ . As a manipulation check for social evaluation, reputational consideration was analyzed using an analysis of covariance with sex as a covariate. Reputational consideration did not differ significantly between the low social evaluation condition ( $M = 4.14$ ) and the high social evaluation condition ( $M = 4.13$ ),  $F(1, 97) = 0.00, p = .96$ , partial  $\eta^2 = .00$ . In contrast, the main effect of sex was significant, indicating that women ( $M = 4.52$ ) reported higher reputational consideration than men ( $M = 3.75$ ),  $F(1, 97) = 4.37, p = .04$ , partial  $\eta^2 = .04$ .

To test the hypotheses, the amount allocated in the dictator game was analyzed using an analysis of covariance with sex included as a covariate. The main effect of social evaluation was not significant,  $F(1, 95) = 2.53, p = .12$ , partial  $\eta^2 = .03$ , whereas the main effect of loss was significant,  $F(1, 95) = 5.68, p = .02$ , partial  $\eta^2 = .06$ . Participants allocated more money in the loss condition ( $M = 264.00$ ) than in the no-loss condition ( $M = 210.24$ ). In addition, the interaction between loss framing and social evaluation was significant,  $F(1, 95) = 10.61, p = .00$ , partial  $\eta^2 = .10$ . Simple comparisons using Bonferroni correction are presented in Figure 1. Under the high social evaluation condition, allocations were higher in the loss condition ( $M = 318.35$ ) than in the no-loss condition ( $M = 191.77, p = .00$ ). In contrast, under the low social evaluation condition, allocations did not differ between the loss condition ( $M = 209.65$ ) and the no-loss condition ( $M = 228.71, p = .63$ ). The main effect of sex was not significant,  $F(1, 95) = 1.85, p = .18$ , partial  $\eta^2 = .02$ .

**Figure 1**  
Average allocations in each condition



Note: The error bars represent standard errors.

In addition, a supplementary descriptive analysis focused on hyper-fair allocations, defined as allocations greater than ¥250. Table 1 presents the proportions of such allocations across conditions. Among the 100 participants, 23 engaged in hyper-fair allocation. In the high social evaluation condition, 14 of 25 participants in the loss condition and 0 of 23 in the no-loss condition allocated more than ¥250. In the low social evaluation condition, 7 of 27 participants in the loss condition and 2 of 25 participants in the no-loss condition allocated more

than ¥250. In a supplementary Firth penalized logistic regression predicting hyper-fair allocation greater than ¥250, the Loss  $\times$  Social Evaluation interaction was not statistically significant ( $p = .10$ ), although the estimated effect was in the same direction as in the analysis of continuous allocations.

**Table 1**  
Percentages of hyper-fair in each condition

		Loss	
		No-loss	Loss
Social Evaluation	Low	8.0% (2/25)	25.9% (7/27)
	High	0.0% (0/23)	56.0% (14/25)

Note: The number of participants in each condition was as follows. In the high social evaluation condition, 23 participants were assigned to the no-loss condition and 25 to the loss condition. In the low social evaluation condition, 25 participants were assigned to the no-loss condition and 27 to the loss condition. The percentages in Table 1 represent the proportion of participants who allocated more than ¥250 (referred to as “hyper-fair”), based on the sample size in each condition. In total, 23 of the 100 participants engaged in hyper-fair allocations.

**Discussion**

This study examined whether altruistic allocation elicited by loss framing persists under anonymity. The results supported the empathy-specific evaluation hypothesis (Archer et al., 1981) rather than the empathy-altruism hypothesis (Batson, 2010). These findings suggest that empathic cues alone may be insufficient to promote altruistic behavior in the absence of social evaluation.

Manipulation checks revealed no differences in self-reported empathic concern across loss conditions and no differences in reputational consideration across social evaluation conditions. However, given that behavioral differences nevertheless emerged, one possibility is that these psychological states were not adequately captured by self-report measures rather than not elicited at all. This interpretation is consistent with prior work (Dang et al., 2020), which suggests that self-report measures may be insensitive to subtle underlying psychological states that can still guide behavior.

One possible reason the empathy-altruism hypothesis was not supported is that recipients were not placed in highly tragic situations. Prior tests of the hypothesis have involved emotionally intense helping contexts, such as substituting for another person receiving electric shocks (Batson, 2010). In contrast, monetary loss due to bad luck, as implemented in the present study, may evoke weaker empathic responses. Losses caused by others’ actions (Dhaliwal et al., 2021; Keysar et al., 2008; Leliveld et al., 2012; Liu et al., 2017; Van Doorn et al., 2018), rather than by bad luck, may be perceived as more severe or unjust and therefore elicit stronger empathic reactions.

Descriptive analyses further showed that a notable proportion of participants (23 out of 100) made hyper-fair allocations, defined as allocations exceeding ¥250, which are higher than amounts typically observed in dictator games (Camerer, 2003; Engel, 2011). This pattern may reflect attempts to equalize total outcomes by considering

both the show-up fee and the allocation decision. Failure to achieve such outcome equality may increase the risk of negative social evaluation for participants. It should be noted, however, that the number of participants who chose hyper-fair allocations in the present study was limited, which precluded formal statistical testing. Nevertheless, future research may reveal that empathic concern and social evaluation exert distinct influences on whether individuals prioritize equality in dictator game allocations or equality in total outcomes. Demonstrating such a distinction would raise a novel and theoretically important question for research on altruistic behavior. Supplementary analyses of hyper-fair allocations did not yield statistically significant interaction effects, although the observed pattern was directionally consistent with the primary findings.

A key contribution of this study is the use of a dictator game to examine the empathy-altruism hypothesis under tightly controlled conditions, thereby reducing confounds that are common in naturalistic helping situations. Moreover, by jointly manipulating loss framing and social evaluation, this study offers a novel framework for disentangling the determinants of altruistic behavior. In particular, the findings indicate that inducing recipients' misfortune through monetary loss due to bad luck is insufficient to increase altruistic allocation under anonymous conditions.

Consistent with the empathy-specific evaluation hypothesis (Archer et al., 1981), empathic concern and social evaluation may function as intertwined determinants of altruistic behavior. From an evolutionary perspective, this interdependence suggests that empathic responses may have evolved primarily as context-sensitive cues that guide behavior in situations where reputational consequences are salient, rather than as unconditional drivers of altruism. If this is the case, principles proposed as ultimate explanations of altruism in evolutionary psychology, such as indirect reciprocity and reputation-based cooperation, may also inform real-world intervention strategies when considered through the lens of proximate mechanisms. Future studies that replicate these findings using alternative manipulations of empathic concern would help clarify the generality of this interpretation.

Several limitations should be acknowledged. First, participants were informed that they could have incurred losses, which may have elicited positive affect due to perceived good fortune and, in turn, inflated generosity. Future studies should manipulate loss exclusively for recipients to rule out this alternative explanation. Second, the sample was gender imbalanced, which warrants replication using more balanced sampling. Third, the sample size was guided by an a priori power analysis; however, due to constraints on budget and participant availability, the analysis was based on the assumption of a medium effect size. Consequently, this study may not have had sufficient power to detect smaller effect sizes.

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### Author contribution

**Keisuke Yamamoto:** Conceptualization, Methodology, Data curation, Funding acquisition, Investigation, Visualization, Project administration, Writing – original draft (lead), Writing – review and editing (equal).

**Hirofumi Hashimoto:** Funding acquisition, Writing – original draft (supporting), Writing – review and editing (equal).

### Ethical statement

The study was approved by the Ethics Committee of Osaka Metropolitan University (approval code: 4-1). All procedures involving human participants were conducted in accordance with institutional and national ethical standards.

### Data accessibility & program code

Appendix 1 (the procedure of loss-framing manipulation), Appendix 2 (the histogram of allocation amounts in the dictator game), and the dataset are available at the following link: <https://osf.io/zkjmjv/overview>

### References

- Archer, R. L., Diaz-Loving, R., Gollwitzer, P. M., Davis, M. H., & Foushee, H. C. (1981). The role of dispositional empathy and social evaluation in the empathic mediation of helping. *Journal of Personality and Social Psychology*, 40(4), 786–796. <https://doi.org/10.1037/0022-3514.40.4.786>
- Barclay, P., & Benard, S. (2020). The effects of social vs. asocial threats on group cooperation and manipulation of perceived threats. *Evolutionary Human Sciences*, 2, Article e54. <https://doi.org/10.1017/ehs.2020.48>
- Bateson, M., Nettle, D., & Roberts, G. (2006). Cues of being watched enhance cooperation in a real-world setting. *Biology Letters*, 2(3), 412–414. <https://doi.org/10.1098/rsbl.2006.0509>
- Batson, C. D. (2010). *Altruism in humans*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195341065.001.0001>
- Bénabou, R., & Tirole, J. (2006). Incentives and prosocial behavior. *American Economic Review*, 96(5), 1652–1678. <https://doi.org/10.1257/aer.96.5.1652>
- Brañas-Garza, P. (2007). Promoting helping behavior with framing in dictator games. *Journal of Economic Psychology*, 28(4), 477–486. <https://doi.org/10.1016/j.joep.2006.10.001>
- Camerer, C. (2003). *Behavioral game theory: Experiments in strategic interaction*. Princeton University Press.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge. <https://doi.org/10.4324/9780203771587>
- Dang, J., King, K. M., & Inzlicht, M. (2020). Why are self-report and behavioral measures weakly correlated? *Trends in Cognitive Sciences*, 24(4), 267–269. <https://doi.org/10.1016/j.tics.2020.01.007>
- Dhaliwal, N. A., Patil, I., & Cushman, F. (2021). Reputational and cooperative benefits of third-party compensation. *Organizational Behavior and Human Decision Processes*, 164, 27–51. <https://doi.org/10.1016/j.obhdp.2021.01.003>

- Engel, C. (2011). Dictator games: A meta study. *Experimental Economics*, *14*(4), 583–610. <https://doi.org/10.1007/s10683-011-9283-7>
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. <https://doi.org/10.3758/BF03193146>
- FeldmanHall, O., Dalgleish, T., Evans, D., & Mobbs, D. (2015). Empathic concern drives costly altruism. *Neuroimage*, *105*, 347–356. <https://doi.org/10.1016/j.neuroimage.2014.10.043>
- Fultz, J., Batson, C. D., Fortenbach, V. A., McCarthy, P. M., & Varney, L. L. (1986). Social evaluation and the empathy-altruism hypothesis. *Journal of Personality and Social Psychology*, *50*(4), 761–769. <https://doi.org/10.1037//0022-3514.50.4.761>
- Goto, A. (2018). Sonshitsu wa rita kōdō o sokushin suru ka: Katasutorofu gēmu ni yoru jikkenteki apurōchi [Does loss promote altruistic behavior?: An experimental approach using catastrophe games]. *Behavioral Economics*, *11*(Special\_issue), S35–S38. <https://doi.org/10.11167/jbef.11.S35>
- Graf, C., Suanet, B., Wiekking, P., & Merz, E.-M. (2023). Social norms offer explanation for inconsistent effects of incentives on prosocial behavior. *Journal of Economic Behavior & Organization*, *211*, 429–441. <https://doi.org/10.1016/j.jebo.2023.05.003>
- Harbaugh, W. T., Mayr, U., & Burghart, D. R. (2007). Neural responses to taxation and voluntary giving reveal motives for charitable donations. *Science*, *316*(5831), 1622–1625. <https://doi.org/10.1126/science.1140738>
- Hein, G., Silani, G., Preuschoff, K., Batson, C. D., & Singer, T. (2010). Neural responses to ingroup and outgroup members' suffering predict individual differences in costly helping. *Neuron*, *68*(1), 149–160. <https://doi.org/10.1016/j.neuron.2010.09.003>
- Keysar, B., Converse, B. A., Wang, J., & Epley, N. (2008). Reciprocity is not give and take: Asymmetric reciprocity to positive and negative acts. *Psychological Science*, *19*(12), 1280–1286. <https://doi.org/10.1111/j.1467-9280.2008.02223.x>
- Leliveld, M. C., van Dijk, E., & van Beest, I. (2012). Punishing and compensating others at your own expense: The role of empathic concern on reactions to distributive injustice. *European Journal of Social Psychology*, *42*(2), 135–140. <https://doi.org/10.1002/ejsp.872>
- Lesner, T. H., & Rasmussen, O. D. (2014). The identifiable victim effect in charitable giving: Evidence from a natural field experiment. *Applied Economics*, *46*(36), 4409–4430. <https://doi.org/10.1080/00036846.2014.962226>
- Liu, Y., Li, L., Zheng, L., & Guo, X. (2017). Punish the perpetrator or compensate the victim? Gain vs. loss context modulate third-party altruistic behaviors. *Frontiers in Psychology*, *8*, Article 2066. <https://doi.org/10.3389/fpsyg.2017.02066>
- McCauley, T. G., McAuliffe, W. H., & McCullough, M. E. (2024). Does empathy promote helping by activating altruistic motivation or concern about social evaluation? A direct replication of Fultz et al. (1986). *Emotion*, *24*(8), 1868–1884. <https://doi.org/10.1037/emo0001339>
- Tankersley, D., Stowe, C. J., & Huettel, S. A. (2007). Altruism is associated with an increased neural response to agency. *Nature Neuroscience*, *10*(2), 150–151. <https://doi.org/10.1038/nrn1833>
- Van Doorn, J., Zeelenberg, M., & Breugelmans, S. M. (2018). An exploration of third parties' preference for compensation over punishment: Six experimental demonstrations. *Theory and Decision*, *85*, 333–351. <https://doi.org/10.1007/s11238-018-9665-9>
- Waytz, A., Zaki, J., & Mitchell, J. P. (2012). Response of dorsomedial prefrontal cortex predicts altruistic behavior. *The Journal of Neuroscience*, *32*(22), 7646–7650. <https://doi.org/10.1523/JNEUROSCI.6193-11.2012>
- Yamamoto, K., & Hashimoto, H. (2025). Seemingly altruistic behavior and strategic ignorance in a dictator game with potential loss. *Frontiers in Psychology*, *15*, Article 1473500. <https://doi.org/10.3389/fpsyg.2024.1473500>