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I deserve better outcomes: Self-esteem relates to stronger reactions to unfairness

Yi Ding^{a,1}, Junhui Wu^{b,c,1}, Tingting Ji^{a,*}^a School of Psychology, Nanjing Normal University, 122 Ninghai Road, Nanjing, Jiangsu Province 210097, PR China^b CAS Key Laboratory of Behavioral Science, Institute of Psychology, Chinese Academy of Sciences, Beijing 100101, PR China^c Department of Psychology, University of Chinese Academy of Sciences, Beijing 100049, PR China

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ABSTRACT

People are averse to being treated unfairly, and are even willing to pay a personal cost to reject unfair offers. Despite this general tendency, there might be individual differences in responses to unfairness. Across two studies, we measured participants' self-reported self-esteem and examined how people varying in self-esteem respond to unfairness in a repeated one-shot ultimatum game (Study 1, $N = 160$) and a one-shot ultimatum game (Study 2, $N = 302$). Findings revealed that participants with higher self-esteem were more likely to reject unfair offers, and that this effect was mediated by increased levels of feelings of deservingness. However, participants' self-esteem did not significantly predict their perceptions of fairness, anger, or unhappiness after receiving the unfair offers. These findings highlight the differences caused by self-esteem in acting against, but not perceiving, unfairness.

1. Introduction

Anyone who has ever been treated unfairly, such as being unfairly refused a promotion or underpaid relative to their co-workers, should feel hurt and angry (e.g., Pillutla & Murnighan, 1996; Richman & Leary, 2009). At the same time, people might differ in the degree to which they react to others' unfair treatment, such that some people may take actions against unfairness whereas others may not. In the present research, we aim to examine how people differ in their personal responses to unfair treatment; in particular, we focus on how individuals with different levels of self-esteem (i.e., one's overall feelings of self-worth, see Rosenberg, 1965) respond when they are "provoked" by specific incidents of unfairness—unfair offers in an ultimatum game (UG; Güth et al., 1982). In this game, two players (i.e., a proposer and a responder) decide how to divide an amount of money. The proposer can suggest an offer and the responder then decides whether to accept or reject it. If the offer is accepted, each player receives the proposed amount; otherwise both receive nothing. Here we focus on *whether* and *how* self-esteem is associated with individuals' (i.e., the responder) response to unfair offers that are unfavorable for them.

A large body of evidence shows that people with lower self-esteem tend to be more sensitive to social threat and rejection (e.g.,

Dandaneau & Baldwin, 2004; Donnellan et al., 2005), which may suggest that they would be less tolerant of being treated unfairly than those with higher self-esteem. Indeed, individuals with low (versus high) self-esteem tend to experience more emotional stress toward negative outcomes (Brown & Marshall, 2001; Dutton & Brown, 1997), encounter more interpersonal problems in social interactions (Paz et al., 2017), and have stronger reactions (e.g., more negative emotions and stronger cortisol response) to social rejection (Ford & Collins, 2010). Moreover, researchers have found that low self-esteem is related to anger, aggression, and hostile reactions (e.g., Donnellan et al., 2005; Teng et al., 2015), which are crucial determinants of rejection of unfair offers in the ultimatum game (e.g., Pillutla & Murnighan, 1996; Sanfey et al., 2003). For example, robust evidence indicates that rejections of unfair offers increase when people are induced to feel more anger or disgust emotions, and decrease after these negative emotions are expressed (Andrade & Ariely, 2009; Bonini et al., 2011; Srivastava et al., 2009). Thus, people with lower self-esteem may be more likely to reject unfair offers if these offers elicit increased negative emotions (e.g., anger).

However, another line of research supports an alternative hypothesis: people with higher self-esteem would be less tolerant of unfair offers. High self-esteem may be associated with a positive view of self (Campbell et al., 2002), which may lead to a sense of deservingness (Wood

* Corresponding author.

E-mail address: tingtingjimolly@gmail.com (T. Ji).

¹ These authors contributed equally to this work.

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et al., 2009). For instance, people with higher self-esteem tend to report greater levels of confidence (Campbell, 1990), optimism (Wengler & Rosén, 1995), and self-worth (Crocker & Wolfe, 2001). They also rate their personal traits as above average (Campbell et al., 2002), perceive themselves to be more socially approved and valued by others (Anthony et al., 2007; MacDonald et al., 2003), and are more confident in their ability and competence (Lane et al., 2004; Wojciszke & Struzynska-Kujalowicz, 2007). Importantly, there indeed exists some direct evidence showing that people with higher self-esteem tend to believe that they deserve better outcomes, and this tendency motivates them to be more likely to express and repair their negative moods (Wood et al., 2009) and less likely to engage in self-handicapping behaviors (Callan et al., 2014).

The heightened sense of deservingness among high self-esteem people may shape how they respond to unfairness that is unfavorable for them. Previous research using the ultimatum game suggests that feelings of deservingness play an important role in individuals' response to unfair offers, such that those with higher levels of deservingness are more likely to reject unfair offers in an ultimatum game, because they may feel more deserving of fair offers (Ding et al., 2017; Dunn et al., 2010). Thus, the tendencies to feel more deserving of better and fair outcomes may cause high self-esteem individuals to react negatively to unfairness.

Based on the two lines of reasoning above, we propose two opposing hypotheses: (a) people with lower self-esteem are more likely to reject unfair offers, and this tendency is explained by their increased negative emotions (*Hypothesis 1*); (b) people with higher self-esteem are more likely to reject unfair offers, and this tendency is explained by their increased feelings of deservingness (*Hypothesis 2*). We conducted two studies to test these two opposing hypotheses. In Study 1, we used a repeated one-shot ultimatum game to examine whether self-esteem would negatively or positively predict rejection of unfair offers, but not rejection of fair offers. In Study 2, we further tested the potential mechanisms (i.e., negative emotions or feelings of deservingness) underlying the association between self-esteem and rejection of unfair offers in a one-shot ultimatum game. Across two studies, we measured participants' self-esteem with the Rosenberg self-esteem scale (Rosenberg, 1965). All measures, conditions, and data exclusions were reported in our studies. All hypotheses were determined prior to data collection.

2. Study 1

In Study 1, participants completed a self-report measure of self-esteem, and then decided whether to accept or reject a number of unfair or fair offers in a repeated one-shot ultimatum game. This study provided an initial test of whether self-esteem was negatively or positively associated with greater rejection of unfair offers (*Hypothesis 1 vs. 2*).

2.1. Method

2.1.1. Participants

One hundred and sixty Chinese undergraduate students (97 women, $M_{\text{age}} = 20.38$ years, $SD = 1.35$) voluntarily participated in this study. The sample size was determined by the number of available participants at the time of the study. A post-hoc power analysis using the observed power function in SPSS Version 22.0 showed that the achieved statistical power was 0.97 for the interaction between self-esteem and unfairness level.

2.1.2. Procedure and measures

Ten participants in each session came to the laboratory to play a "money allocation" game (i.e., a repeated one-shot ultimatum game). Upon arrival, they were seated in separate cubicles numbered from 1 to 10, and were informed that they would be paid a baseline fee of 10 Chinese Yuan (CNY; about 1.4 US dollars at the time of the study) and an

additional bonus depending on their decision in one randomly selected round of the game. In fact, all participants received an additional bonus of 5 CNY, leading to a total of 15 CNY for their participation.

2.1.2.1. Self-esteem. Participants first completed the 10-item Rosenberg self-esteem scale ($\alpha = 0.87$; e.g., "On the whole, I am satisfied with myself"; Rosenberg, 1965; see also Dai et al., 2010) on a 4-point scale (1 = *strongly disagree*, 4 = *strongly agree*). We calculated the total score to represent participants' level of self-esteem, with higher scores indicating higher levels of self-esteem.

2.1.2.2. A repeated one-shot ultimatum game. Afterward, participants played a repeated one-shot ultimatum game in which they would divide 10 CNY with other participants. They learned that their role in the game was determined by whether their cubicle number was odd or even, and they would interact anonymously with five potential partners from the cubicles with the opposite number attribute (i.e., even or odd) across 20 rounds. In each round, participants were randomly matched with one of these potential partners via an internet system, and they did not know whom their partner was and how many times they would interact with the same partner across 20 rounds. In fact, all participants acted as the responder, and decided whether to accept or reject their partner's decision on how to split 10 CNY across 20 rounds.

The 20-round ultimatum game consisted of four rounds for each of five fairness levels (i.e., 5/5, 4/6, 3/7, 2/8, and 1/9; the numbers before and after the slash represent the responder's outcome and the proposer's outcome, respectively) and were presented to participants in a random order. For each round, there was first a 1000 ms fixation, followed by the word "Pairing" for 1000–3000 ms, during which the system randomly matched participants with a game partner. After successful matching, the word "Paired" was presented for 1000 ms. Participants were then presented with "Please wait for an offer" for 3000–5000 ms, followed by the pre-defined offer from the proposer that was showed for 1000 ms. Afterward, participants were presented with two options (1 = accept, 2 = reject) and pressed the button of 1 or 2 to make their decision. After their decision, their final outcome in that round was presented on the screen for 1000 ms.

2.1.2.3. Demographic and control variables. After their decisions, participants reported their age, and gender. Given that trait anxiety and depression are related to both self-esteem and rejection of unfair offers (Harlé et al., 2010; Sowislo & Orth, 2013; Wu et al., 2013), participants also completed the 20-item Trait form of Spielberger State-Trait Anxiety Inventory ($\alpha = 0.81$; e.g., "I worry too much over something that really doesn't matter"; Spielberger et al., 1970) and the 21-item Beck Depression Inventory ($\alpha = 0.74$; e.g., "I feel sad"; Beck et al., 1996) as control variables. Finally, participants were debriefed and paid.

2.2. Results and discussion

The average rejection rates across the four rounds in each fairness level were shown in Table 1. We conducted a repeated measures analysis of covariance on rejection rates, with fairness level (i.e., 1/9, 2/8, 3/7, 4/6 vs. 5/5) as a within-participant variable and self-esteem as a covariate. This analysis revealed significant main effects of self-esteem, $F(1, 158) = 20.43$, $p < .001$, $\eta_p^2 = 0.12$, and fairness level, $F(2.73, 431.32) = 6.71$, $p < .001$, $\eta_p^2 = 0.04$. Specifically, higher rejection rates were associated with higher levels of self-esteem and lower levels of fairness (see Table 1). More importantly, the Self-esteem \times Fairness Level interaction was significant, $F(2.73, 431.32) = 7.17$, $p < .001$, $\eta_p^2 = 0.04$. Further analyses indicated that higher self-esteem was associated with greater rejection of the 1/9, 2/8, 3/7, and 4/6 unfair offers ($ps < .05$), but not of the 5/5 fair offers ($p > .73$; see Table 1).

Importantly, we found similar results when participants' trait anxiety, trait depression, age, and gender were included as covariates. This

Table 1
Zero-order correlations among the key variables in Study 1.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Self-esteem	31.36	4.30	–					
2. Rejection (1/9)	91%	23%	0.25**	–				
3. Rejection (2/8)	63%	37%	0.29***	0.46***	–			
4. Rejection (3/7)	26%	32%	0.27***	0.23**	0.53***	–		
5. Rejection (4/6)	4%	12%	0.18*	0.11	0.33***	0.49***	–	
6. Rejection (5/5)	1%	6%	0.03	0.09	0.22**	0.37***	0.70***	–

Note. *N* = 160. Rejection (1/9; 2/8; 3/7; 4/6; 5/5) represents the rejection rate for offers that vary in the fairness level in the UG.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

suggests that the effect of self-esteem on response to unfair offers was independent of trait anxiety, trait depression, or some demographic variables. Overall, these findings supported Hypothesis 2 and suggested that higher self-esteem independently predicted more rejection of unfair offers.

3. Study 2

Using a university student sample, Study 1 provided some initial evidence for Hypothesis 2 that participants with higher self-esteem were more likely to reject unfair offers. To replicate and extend this finding in a more demographically diverse sample, Study 2 sought to recruit adult participants online, and examined whether this effect was explained by feelings of deservingness that we proposed earlier. Study 2 also measured how fair, angry, unhappy, and disappointed participants felt when they faced the unfair offer (i.e., 2/8 offer) in a one-shot ultimatum game.

3.1. Method

3.1.1. Participants

Three hundred and two Chinese participants (168 women; $M_{\text{age}} = 34.41$ years, $SD = 8.75$) were recruited from Sojump (<https://www.wjx.cn/>), an online participant recruitment platform in China. They voluntarily participated in this study. For this study, we intended to collect a larger sample (i.e., at least 300 participants) because we used a single measure (i.e., one-shot ultimatum game) rather than repeated measures (i.e., repeated one-shot ultimatum game) in the design.

3.1.2. Procedure and measures

Participants were first asked to complete the same demographic questions and the Rosenberg self-esteem scale ($\alpha = 0.78$) as in Study 1. Afterward, they played a money allocation game (i.e., a one-shot ultimatum game) during which they interacted with another participant to divide 10 CNY between them and could earn real money. Participants learned that “another participant” acted as a proposer and had already made an offer in the beginning of this study. In fact, all participants were asked to decide whether to accept or reject the offer of “2 CNY for you, 8 CNY for another participant” (i.e., 2/8 offer). We chose the 2/8 offer because it has been found to elicit approximately 50% rejection rates (Camerer, 2003; see also Ding et al., 2017).

After their decision, participants rated their motivations (i.e., deservingness and negative emotions) to accept or reject the offer on a 7-point Likert scale (1 = not at all, 7 = very strongly). We measured participants' feelings of deservingness using two items (i.e., “Receiving the money that I deserve” [reverse-coded], “Not receiving the money that I deserve”). The scores of two items were highly correlated, $r(302) = 0.62$, $p < .001$, so we averaged them to yield a composite score of feelings of deservingness. We also asked participants to rate how fair, angry, unhappy, and disappointed they felt when they were presented with the offer proposed by “another participant” in the game on 7-point Likert scales (1 = not at all, 7 = very strongly). Finally, participants were

debriefed and paid with a baseline fee of 5 CNY and an additional bonus based on their decision.

3.2. Results and discussion

3.2.1. Self-esteem and rejection decision

We conducted a binary logistic regression with rejection decision (0 = accept, 1 = reject) as the outcome variable and self-esteem as the predictor. This analysis revealed that self-esteem positively predicted rejection of the unfair offers, $b = 0.11$, Wald $\chi^2(1) = 9.51$, $p = .002$, odds ratio = 1.12, 95% CI [1.04, 1.20]. This effect remained significant after controlling for participants' age and gender, $b = 0.12$, Wald $\chi^2(1) = 10.77$, $p = .001$, odds ratio = 1.13, 95% CI [1.05, 1.21].

3.2.2. Deservingness, fairness, and negative emotions

Table 2 reports the means, standard deviations, and correlations between deservingness, fairness, and negative emotions. Higher self-esteem was strongly related to more feelings of deservingness and disappointment when receiving the 2/8 offer. However, there were no significant correlations between self-esteem and feelings of fairness, anger, or unhappiness (see Table 2).

3.2.3. Mediation analysis

To test whether the observed higher rejection rate of unfair offers among participants with higher self-esteem could be explained by their increased feelings of deservingness, we conducted a mediation analysis using the bootstrapping method based on 5000 bootstrap samples (Preacher & Hayes, 2008). This analysis showed that the total effect of self-esteem on rejection decision of the 2/8 offer (total effect = 0.11, $p = .002$) became nonsignificant when feelings of deservingness was included in the model (direct effect = 0.04, $p = .33$). Moreover, the indirect effect of self-esteem on rejection decision through deservingness was significant, $b = 0.12$, 95% CI [0.07, 0.18]. This indirect effect was still significant when we included participants' ratings of fairness, anger, unhappiness, and disappointment as covariates in this model, $b = 0.10$, 95% CI [0.05, 0.16]. These findings suggest that higher self-esteem make people feel more deserving of better outcomes and thus be more likely to reject unfair offers.

4. General discussion

Being treated in unfair or unjust ways are among the most powerful determinants of anger and subsequent punishment behaviors (e.g., Fehr & Gächter, 2002; Pillutla & Murnighan, 1996). Yet, people may differ in their perceptions and reactions to unfairness. In this research, we examined whether people with different levels of self-esteem respond differently to unfairness in an ultimatum game. We found that higher levels of self-esteem independently predicted more rejection of unfair offers (Study 1), and this effect was mainly explained by increased feelings of deservingness (Study 2). However, individuals' levels of self-esteem did not significantly predict their perceptions of fairness, anger, and unhappiness in response to unfair offers. Our findings highlight the

Table 2
Zero-order correlations among the key variables in Study 2.

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Rejection decision	44%	50%	–						
2. Self-esteem	30.96	3.37	–	–					
3. Deservingness	5.30	1.26	–	0.28***	–				
4. Fairness	2.60	1.08	–	–0.08	–0.12*	–			
5. Anger	3.25	1.55	–	0.10	0.32***	–0.22***	–		
6. Unhappiness	5.11	1.65	–	0.02	0.15**	–0.16**	0.47***	–	
7. Disappointment	4.12	1.48	–	0.12*	0.31***	–0.20***	0.66***	0.49***	–

Note. $N = 302$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

important consequences of individual differences in self-esteem for how people react (but not perceive) to unfairness that is unfavorable for them.

Our findings are consistent with previous evidence that people who have a positive view of themselves tend to feel greater self-worth and thus strongly expect to be treated fairly and respond negatively when they are exploited by others in social interactions (e.g., Dunn et al., 2010). Moreover, we also found that the individual differences caused by self-esteem in responding to unfair offers in an ultimatum game were only observed at the behavioral level, but not at a cognitive-emotional level. This is interesting, because evidence indicates that cognitive-emotional responses to unfair offers, such as feelings of unfairness and anger, can be significant and robust predictors of behavioral rejections of unfair proposers (Pillutla & Murnighan, 1996; Sanfey et al., 2003). One may raise a possibility that rejection of unfairness was not only determined by how individuals feel about such unfairness (e.g., “this offer is unfair” and “I feel angry about this offer”), but also determined by whether they are respected by others and receive what they expect for themselves in social interactions (e.g., “this offer violates my self-worth”).

However, we should note that when presented with unfair offers, participants with higher self-esteem did report greater disappointment. Disappointment often refers to one's general feelings that relate to unexpected unfavorable outcomes (Zeelenberg et al., 1998). People with high self-esteem strongly expect to receive fair outcomes and treatments that favor their positive self-images, but when receiving unfair offers in an ultimatum game, they experience a higher degree of expectation violation and greater disappointment. When we tested the potential mediation of disappointment in the association between self-esteem and rejection of unfair offers, we found a significant indirect effect of disappointment, $b = 0.06$, 95% CI [0.003, 0.117]. Yet, this indirect effect disappeared when we also included feelings of deservingness as a covariate in the model, $b = 0.02$, 95% CI [–0.035, 0.072]. Thus, it is plausible that the effect of self-esteem on rejection of unfair offers was mainly explained by feelings of deservingness. Of course, our findings may also be consistent with the “violation of self-worth” argument, given that self-esteem could increase one's sense of deservingness and expectation of favorable outcomes, which may make people more likely to experience disappointment.

One may argue that our findings on the association between self-esteem and rejection of unfairness offers may be due to participants' level of narcissism, given that high self-esteem and narcissism are somewhat related (Raskin et al., 1991) and that both are likely to be associated with aggression and punishment (Bushman & Baumeister, 1998; Rasmussen, 2016). However, previous evidence also suggests that narcissism and self-esteem are distinct constructs with low correlations (see Brown & Zeigler-Hill, 2004; Brummelman et al., 2016; Campbell et al., 2002). In particular, high self-esteem is characterized by self worth and value, whereas narcissism is more associated with feelings of superiority over others and self-focus orientations, which might result in exploitative and self-interested behaviors in social interactions.

Consistent with this proposition, a recent study examined how narcissists respond to unfair offers in an ultimatum game and found that individuals high in narcissism tend to maximize their personal gains by accepting unfair offers, instead of rejecting unfair offers (Fatfouta et al., 2018). Thus, although we did not measure and control for participants' narcissism, our findings are unlikely to be explained by participants' level of narcissism. Nevertheless, future research can measure self-esteem and narcissism simultaneously to test each of their unique roles in predicting individuals' response to unfairness.

Some limitations in the present research are noteworthy and should be addressed in future research. First, we investigated reactions to unfairness only using an ultimatum game that strongly relates to distributive (outcome) unfairness. Future research would benefit from examining whether our findings can generalize to situations involving interpersonal or procedural unfairness. Second, we measured participants' feelings of deservingness and negative emotions (i.e., anger, unhappiness, and disappointment) after participants made their decision as the responder in an ultimatum game. It was possible that participants tended to justify their decision by reporting certain emotions rather than that actually experienced these feelings and emotions. Although this procedure is common practice in prior research (e.g., Bonini et al., 2011; Karagonlar & Kuhlman, 2013; Srivastava et al., 2009), future research may examine the robustness of the present findings in more controlled settings (e.g., by randomizing the order of decision and self-report measures of emotions). Third, we did not include any questions to probe for participants' suspicion, although we attempted to make the experiment (i.e., ultimatum game) as realistic as possible (e.g., participants' decisions affected both their own and their partner's payoffs). Yet, evidence shows that participants do behave as if their partner is real when interacting with “ostensible” partners online (Summerville & Chartier, 2013). Nevertheless, future work can improve the experimental procedure by including a suspicion check question.

To conclude, the present findings reveal that people varying in self-esteem differ in their reactions to unfair treatment by others. Specifically, when treated unfairly by others, people with higher self-esteem are more likely to reject unfair offers, even though this rejection involves some personal cost. This tendency to reject unfair offers that are unfavorable to oneself may serve as an important way to express and protect individuals' self-worth, particularly the self-worth of individuals with higher self-esteem. Hence, our findings suggest the important role of self-esteem in shaping and explaining individuals' reactions to self-relevant unfair treatment.

CRediT authorship contribution statement

Yi Ding: Conceptualization, Methodology, Data curation, Writing – original draft. **Junhui Wu:** Conceptualization, Writing – review & editing. **Tingting Ji:** Conceptualization, Methodology, Writing – review & editing.

Declaration of competing interest

The authors declare no conflict of interest.

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