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Perceptions of having less in the U.S. but having more in China are associated with stronger inequality aversion

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ABSTRACT
Decades of research predominantly conducted in Western societies reveals that people, especially the less wealthy, are averse to high levels of inequality. However, empirical comparative studies on perceived wealth and inequality aversion across nations are rare. Here, we examine how responses to unequal monetary allocations among those with high or low subjective wealth might differ in the U.S. and China. Four studies reveal that in the U.S. people who perceive themselves as less (versus more) wealthy are more likely to reject unequal allocations—the less wealthy are sensitive to some restoration of equality. Conversely, in China, the wealthy rather than the less wealthy are more prone to reject unequal allocations. We also find some evidence that differences in feelings of deservingness help explain the observed opposing effects of subjective wealth and inequality aversion. Thus, it is plausible that the well-established tendencies of equality restoration observed in Western societies may not necessarily generalize to non-Western societies, especially those societies where differences in income and wealth are more strongly respected, valued, and protected.

Although wealth inequality is common in many countries around the world, research shows that individuals have strong preferences for equality and are averse to large disparities in wealth (Fehr & Schmidt, 1999; Norton & Ariely, 2011; Van Lange, 1999). Wealth inequality yields differences in individuals’ social class and socioeconomic status (SES), as well as in their subjective perceptions of own wealth, which may shape different thoughts, feelings, and behaviors within and between groups (see Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012). In particular, people who perceive themselves as less wealthy are often inclined to reduce the wealth gap, and may react more strongly to inequality (Brandt, 2013; Greitemeyer & Sagoglou, 2016; Tricomi, Rangel, Camerer, & O'Doherty, 2010; cf. Jost, Banaji, & Nosek, 2004). However, extant research on wealth and equality restoration is mainly restricted to Western societies, and whether the relation between wealth and equality restoration varies across societies remains unclear. In this research, we examine how wealth affects individuals’ responses to unequal resource allocation in the U.S. and China, two nations with similarly high levels of wealth inequality but with substantially different cultural values (Hofstede, 1980; Piketty, Yang, & Zucman, 2019; Xie & Zhou, 2014). Here, we focus on wealth—a key aspect of social class or socioeconomic status (SES)—rather than the broader construct of social class or SES, because the latter reflects one’s standing in the socioeconomic hierarchy in terms of their income and wealth, education, and occupational prestige (Kraus et al., 2012; Piff, Kraus, Côté, Cheng, & Keltner, 2010), and the different facets of social class or SES can have distinct effects on people’s thoughts, feelings, and behaviors (e.g., Dubois, Rucker, & Galinsky, 2015; Tan, Kraus, Carpenter, & Adler, 2020).

Clearly, inequality aversion is an overarching phenomenon that subsumes decades of research (Deutsch, 1975; Fehr & Fischbacher, 2003; Fehr & Schmidt, 1999; Henrich et al., 2001). Research that either observed real-life experiences of inequality or experimentally

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manipulated it in economic games converges to the conclusion that people are inequality-averse and prefer an equal distribution of resources (Fehr & Fischbacher, 2004; Norton & Ariely, 2011; Van Lange, 1999). Such preferences have been observed in many cultures (Henrich et al., 2005; Henrich et al., 2006), and even among young children in elementary schools (Blake et al., 2015; Fehr, Bernhard, & Rockenbach, 2008; Guinote, Cotzia, Sandhu, & Siwa, 2015).

Despite this general preference, extant evidence suggests that compared to those with high wealth or SES, people with low wealth or SES tend to be more sensitive to inequality (Brandt, 2013; Dawes, Fowler, Johnson, McElreath, & Smirnov, 2007; Guinote et al., 2015; Tricomi et al., 2010). For example, by manipulating (subjective) wealth differences using a lucky drawn game, Tricomi et al. (2010) found that although people with lower and higher subjective wealth both prefer less inequality in outcomes, this tendency is particularly strong among people with lower subjective wealth. Moreover, people who perceive themselves as less wealthy tend to perceive disadvantageous inequality as more unacceptable. For example, relative to their counterparts with higher subjective SES, individuals with lower subjective SES are more prone to attribute their disadvantages to external rather than internal causes (Kluemel & Smith, 1986; Kraus, Piß, & Keltner, 2009), and tend to feel more deprived and express more anger and aggression in response to their disadvantages (Greitemeyer & Sagiglou, 2016; Park et al., 2013). Notably, this effect even occurs above and beyond one’s objective wealth or SES, suggesting that subjective indicators of wealth or SES (i.e., perceptions of one’s own standing in the socioeconomic hierarchy relative to others) may be a more prominent factor that shapes individuals’ thoughts and behaviors (see also Brown-Iannuzzi et al., 2015; Kraus et al., 2009; Smith, Pettigrew, Pippin, & Bialosiewicz, 2012).

Yet, most of these findings on the stronger inequality-aversion preference among the less wealthy have been found in Western contexts, particularly in the U.S. and Western Europe. If wealth affects individuals’ responses to inequality, does this effect occur in Asian societies, such as China? According to Hofstede’s cultural model, the U.S. and China are substantially different in the cultural dimensions of individualism-collectivism (individualism index: 91 for U.S. and 20 for China; Hofstede et al., 2010) and power distance values (power distance index: 40 for U.S. and 80 for China; Hofstede et al., 2010), which are commonly associated with inequality (Hofstede, 1980; Hofstede et al., 2010; Oyserman, 2006; Schwartz, 1999; Singelis, Triandis, Bhawuk, & Gelfand, 1995). Individualism–collectivism refers to the degree to which people consider themselves as a part of a group or as an independent self (Hofstede et al., 2010). People with individualistic values tend to see themselves as independent of others and generally behave according to their preferences, whereas people with collectivistic values see themselves as interdependent with others and usually behave according to social norms (Hofstede et al., 2010; Markus & Kitayama, 1991). Power distance values refer to the degree to which individuals accept the unequal distribution of power, status, and dominance in society and organizations (Clugston, Howell, & Dorfman, 2000; Hofstede et al., 2010; Kirkman, Chen, Farh, Chen, & Lowe, 2009). In East Asian societies where power distance is high, there is a greater respect for those in superior ranks, and those in superior positions are likely to behave in a more dominant way, whereas in Western societies where power distance is low, subordinates are encouraged to participate in decisions relevant to their work (Triandis, 1989; Triandis, Khaltunova, & Yoon, 2010; Miyamoto, 2017; Schwartz, 1999; Tyler, Lind, & Hsu, 2000). Notably, many countries that score high on power distance values also tend to be more collectivistic and less individualistic, such as the U.S. (individualistic and low power distance) and China (collectivistic and high power distance; Hofstede et al., 2010).

In this research, we argue that the substantial differences between East Asian and Western societies in individualism-collectivism and power distance values as noted earlier have implications for how people varying in wealth may respond to (disadvantageous) inequality in different societies. Specifically, in Western societies (e.g., the U.S.) with high individualism and low power distance, the less wealthy may be less likely to accept inequality, feel that they deserve more, and thus may be less tolerant of disadvantageous inequality (e.g., Miyamoto, 2017; Park et al., 2013). By contrast, in Asian societies like China (collectivism and high power distance), people who perceive themselves as more wealthy are likely to feel that they deserve the relative advantage (e.g., the rich deserve more and the poor deserve less, see Ding, Wu, Ji, Chen, & Van Lange, 2017), and such feelings may motivate them to maintain their relative advantage and be less tolerant of unfavorable outcomes from others. Supporting this argument, cross-cultural evidence shows that higher-SES (versus lower-SES) East Asians tend to express more anger to display their authority (Park et al., 2013), punish others more often in economic games to protect their own superior ranks (Kuwabara, Yu, Lee, & Galinsky, 2016), and show more autocratic attitudes in groups (Naoi & Schooler, 1985), but these patterns were reversed in Western cultures, such as the U.S. (Kuwabara et al., 2016; Naoi & Schooler, 1985; Park et al., 2013).

Taken together, we propose that the cultural differences in acceptance of inequality predict how people varying in wealth respond to disadvantageous allocations of resources. The general hypothesis is that in the Western societies the less wealthy are less tolerant of disadvantageous unequal allocations of resources, whereas in Asian societies the wealthier are less tolerant of such allocations. Based on previous research that has documented the dominant cultural values in different nations, respondents in the China should exhibit higher levels of collectivism and power distance values than respondents in the U.S. (see Brockner et al., 2001; Hofstede et al., 2010; van Prooijen & Song, 2021; Wu, Steffel, & Shavitt, 2021), and thus we tested our hypotheses using samples collected from the U.S. and China. We mainly focused on subjective, instead of objective, wealth because it has been shown to more strongly predict thoughts, feelings, and behaviors (Brown-Iannuzzi et al., 2015; Greitemeyer & Sagiglou, 2016; Smith et al., 2012).

1. The present research

We conducted four studies among U.S. and Chinese samples to test our hypothesis. All the materials were developed in Chinese, and were translated into English and back translated. All measures, manipulations, and exclusions were reported in our studies. Across four studies, we measured participants’ subjective wealth (Study 1), manipulated their subjective wealth by providing different feedback about wealth (Study 2), or varying their temporary experience of wealth in a lucky draw game (Studies 3 and 4). While the first three studies mainly addressed how subjective wealth affected individuals’ responses to unequal resource allocation in the two countries, Study 4 further tested the potential mechanisms (i.e., feelings of deservingness) underlying this effect in both countries, and whether the source of wealth (i.e., luck vs. effort) and the partner’s wealth (high vs. low) moderated this effect (see Almás, Cappelen, Sørensen, & Tungodden, 2010; Gee, Migueis, & Parra, 2017; Van Doesum, Tybur, & Van Lange, 2017).

To measure participants’ responses to disadvantageous unequal resource allocation, we observed their decision to accept or reject an unequal offer from their interaction partner in a commonly-used ultimatum game (UG; see Guth, Schmittberger, & Schwarze, 1982; Studies 1 and 3). If they accepted the offer, both received the proposed amount; otherwise both received nothing. To rule out the alternative explanation that rejection is simply less affordable for the less wealthy in the ultimatum game, we created a variant of this game where if the responder rejects, they would receive the proposed amount, but the proposer received nothing (i.e., the cost-free rejection game; Studies 2, 3 and 4).

2. Study 1

Study 1 sought to provide an initial test of whether U.S. participants who perceive themselves as less wealthy are more likely to reject an
unequal offer, whereas in China those with higher subjective wealth are less tolerant of such an unequal offer. Participants from the U.S. and China were asked to report their perceptions of wealth, and then decided whether to accept or reject an unequal offer in a one-shot ultimatum game.

2.1. Method

Participants. A priori power analysis revealed a required sample size of at least 162 participants per country to achieve 80% power to detect a small-to-medium effect (an odds ratio of 2.7, Chen, Cohen, & Chen, 2016; see also Bernhard, Martin, & Warnken, 2020). We recruited 225 U.S. participants (78 females; \( M_{\text{age}} = 31.00 \) years, \( SD = 9.58 \)) and 222 Chinese participants (131 females; \( M_{\text{age}} = 31.98 \) years, \( SD = 8.18 \)) from Amazon Mechanical Turk (MTurk) and Sojump (see https://www.wjx.cn/), respectively. They completed the study for a baseline payment of US$0.3 (U.S. participants) or CNV3 (i.e., roughly US $0.45 during the time of study; Chinese participants). Similar with MTurk, Sojump is an online participant recruitment platform in China with demographically diverse samples from different regions of China (see Ding et al., 2017; Yuan, Wu, & Kou, 2018).

Procedure. Participants first rated their perceptions of their own wealth compared to others on a 101-point scale (0 = the lowest wealth, 100 = the highest wealth). Then they indicated their position on a modified version of the 10-rung MacArthur Ladder (0 = lowest, 10 = highest) representing the place that people occupy in society. They were instructed that “at the top of the ladder are the people who have the highest wealth (including all wages, salaries, housing, cars, jewelry, and other valuable properties), and at the bottom of the ladder are the people who have the lowest wealth”. These two measures were highly correlated (\( r = 0.74 \) and 0.81 in the U.S. and China, \( p < 0.001 \)), so we standardized and averaged them to yield a composite score of subjective wealth in each country.

To measure objective wealth, we assessed participants’ family income (i.e., yearly household income) with different scales in the U.S. (1 = less than $10,000, 40 = $20,000 to or more; in $5000 increments) and China (1 = less than CN¥ 10,000, 51 = CN¥ 500,000 or more; in CN¥ 10,000 increments), and then standardized the scores in each country to make them more comparable. Participants also reported their age, gender, ethnicity, and education level (1 = high school education or less, 2 = at least some post-secondary school, 3 = technical degree, 4 = bachelor’s degree, 5 = master’s degree or higher).

Finally, participants played a one-shot ultimatum game, during which they earned monetary units (MUs) that would be converted into money (1 MU = US$0.1 or CN¥1; CN¥ = US$0.15 at the time of the studies). In this game, they interacted with another participant (“Other”) to decide how to divide 10 MUs between them. They learned that this “Other” acted as a proposer and had made an offer earlier in this study. The rules of the UG were: If they accepted the offer, both received the proposed amount; If they rejected the offer, both received nothing. In fact, all participants had to decide whether to accept or reject an offer of “2 MUs for you, 8 MUs for Other” (i.e., a 2/8 offer). We chose this offer because it has been shown to elicit roughly 50% rejection rates (see Camerer, 2003). Participants were debriefed and paid after their decision. Including the baseline payment, the total payment for all U.S. participants (\( M = 0.43 \), range: US$0.3–US$0.5) and Chinese participants (\( M = CN¥4.28 \), range: CN¥3–CN¥5) in this study were US$97.3 and CN¥950, respectively.

2.2. Results and discussion

We conducted a binary logistic regression on rejection decisions (0 = accept, 1 = reject) with country (0 = China, 1 = U.S.), subjective wealth, and their interaction as predictors (see Table S1 in the Supplementary Material). This analysis revealed a significant interaction between country and subjective wealth, \( b = -1.11 \), Wald \( \chi^2(1) = 24.73, p < .001 \), odds ratio = 0.33, 95% CI [0.21, 0.51]. Specifically, subjective wealth negatively predicted rejection of the unequal offer in the U.S., \( b = -0.63 \), Wald \( \chi^2(1) = 15.53, p < .001 \), odds ratio = 0.53, 95% CI [0.39, 0.73], but positively predicted rejection of this offer in China, \( b = 0.48 \), Wald \( \chi^2(1) = 9.48, p = .002 \), odds ratio = 1.62, 95% CI [1.19, 2.19]. Neither country nor subjective wealth were significant independent predictors (\( p > 0.55 \)). We obtained the same patterns of results when we also included family income and interactions with family income in the model while controlling for age, gender, ethnicity, and education level. Neither family income nor the interactions with family income were significant predictors of rejection decision (\( p > 0.30 \); see Supplementary Material). Overall, these findings provided preliminary evidence that people with lower subjective wealth in the U.S. but those with higher subjective wealth in China were more likely to reject an unequal offer of 2/8 in a one-shot ultimatum game.

3. Study 2

To replicate and extend the findings in Study 1, Study 2 manipulated subjective wealth by providing participants with different feedback (i.e., they had more or less than many others) after they answered some wealth-related questions. We also varied the equality levels of the offers (i.e., responder/proposer: 2/8 vs. 5/5) to test whether subjective wealth only affected rejection decisions of unequal, but not equal, offers. Notably, rejecting an unequal offer in the ultimatum game is costly for both parties. Thus, the findings on the effect of wealth on rejection decisions in the UG in Study 1 cannot rule out an alternative explanation that rejection is simply less affordable for the less wealthy. To address this issue, we created a variant of ultimatum game where if the responder rejects, they would receive the proposed amount but the proposer would receive nothing (i.e., the cost-free rejection game, CFRG). Thus, rejection in the CFRG is costless, making the wealthy and the less wealthy’s decisions more comparable.

3.1. Method

Participants and design. As in Study 1, the minimum required sample size for this study was 162 participants per country. To increase statistical power, and to provide a statistically stringent test of our hypotheses, we aimed to recruit at least 100 participants for each between-group condition. We recruited 402 U.S. participants (197 females; \( M_{\text{age}} = 36.42 \) years, \( SD = 11.57 \) and 419 Chinese participants (248 females; \( M_{\text{age}} = 30.89 \) years, \( SD = 8.12 \)) from MTurk and Sojump, respectively. They completed the study for a baseline payment of US$0.3 (U.S. participants) or CNV3 (Chinese participants). The study was a 2 (country: U. S. vs. China) × 2 (subjective wealth: high vs. low) × 2 (equality level: 2/8 vs. 5/5) between-participants design. Participants from each country were randomly assigned to one of four conditions (i.e., subjective wealth × equality level).

Procedure. Participants first completed a battery of questions about their wealth and financial behavior, including items about their personal and family income, housing, cars, other valuable properties (e.g., jewelry, stocks, and bonds), as well as loans and ZIP code. Afterward, they were randomly assigned to high or low subjective wealth condition. We recruited 402 U.S. participants (197 females; \( M_{\text{age}} = 36.42 \) years, \( SD = 11.57 \) and 419 Chinese participants (248 females; \( M_{\text{age}} = 30.89 \) years, \( SD = 8.12 \)) from MTurk and Sojump, respectively. They completed the study for a baseline payment of US$0.3 (U.S. participants) or CNV3 (Chinese participants). The study was a 2 (country: U. S. vs. China) × 2 (subjective wealth: high vs. low) × 2 (equality level: 2/8 vs. 5/5) between-participants design. Participants from each country were randomly assigned to one of four conditions (i.e., subjective wealth × equality level).

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Next, participants played a one-shot cost-free rejection game (CFRG) as a responder. They learned that the monetary units (MUs) they earned in this game would be converted into money (1 MU = US$0.1 or CN¥1) and paid to them. The CFRG was similar to the UG except that responders would also receive the proposed amount even if they reject the offer, and only they knew about this, but proposers learned that both players would receive nothing if rejected. Participants were randomly assigned to decide whether to accept or reject an unequal offer of “2 MUs for you, 8 MUs for Other” (i.e., a 2/8 offer) or an equal offer of “5 MUs for you, 5 MUs for Other” (i.e., a 5/5 offer). They were debriefed and paid after they made their decision. Including the baseline payment, the total payment for all U.S. participants (M = US$0.65, range: US$0.5–US$0.8) and Chinese participants (M = CN¥6.52, range: CN¥5–CN¥8) in this study were US$261.6 and CN¥2731, respectively.

3.2. Results and discussion

Manipulation checks. The subjective wealth was manipulated successfully in both countries: participants in the high and low subjective wealth conditions in the two countries showed significant differences in perceived wealth (U.S.: M = 47.26 and 37.66, p < .001, d = 0.46; China: M = 49.95 and 39.60, p < .001, d = 0.53) and ratings on the modified MacArthur Ladder (U.S.: M = 5.03 and 4.33, p < .001, d = 0.39; China: M = 5.08 and 4.24, p < .001, d = 0.51).

Subjective wealth and rejection decision. Participants’ decisions to accept or reject the 2/8 or 5/5 offer across all conditions are summarized in Fig. 1. We conducted a binary logistic regression on rejection decision with country, subjective wealth, equality level, and all the two-way and three-way interactions with equality level as predictors (see Table S2 in the Supplementary Material). Equality level significantly predicted rejection decision, b = 3.99, Wald \( \chi^2(1) = 165.24, p < .001 \), odds ratio = 54.02, 95% CI [29.40, 99.24], suggesting that participants rejected the 2/8 offer more often than the 5/5 offer.

More importantly, we found a significant Country × Subjective Wealth × Equality Level interaction, b = 1.52, Wald \( \chi^2(1) = 13.27, p < .001 \), odds ratio = 0.22, 95% CI [0.10, 0.50]. Analyzing each country separately, we found that subjective wealth negatively predicted rejection of the 2/8 offer in the U.S., b = −0.76, Wald \( \chi^2(1) = 6.58, p = .01 \), odds ratio = 0.47, 95% CI [0.26, 0.84], but positively predicted rejection of this offer in China, b = 0.76, Wald \( \chi^2(1) = 6.69, p = .01 \), odds ratio = 2.14, 95% CI [1.20, 3.80]. However, subjective wealth did not significantly predict the rejection rate of 5/5 offer in either country (p > 0.16). These findings suggest that lower subjective wealth in the U.S. but higher subjective wealth in China triggers more rejections of unequal offers, but not equal offers. We obtained the same significant effects when we also included family income and interactions with family income in the model while controlling for age, gender, ethnicity, and education level. Neither family income nor the interactions with family income were significant predictors of rejection decision (ps > 0.29; see Supplementary Material).

4. Study 3

Study 3 sought to further extend Studies 1 and 2 by using a manipulation of subjective wealth that was completely independent of the actual wealth in society. We did so by using a lucky draw game in which participants could win a bonus with varying outcomes (Tricomi et al., 2010). This game varied temporary feelings of wealth independent of power, status, social class, or the histories that they bring with them. Equality levels of the offers were implemented in both an ultimatum game (UG) and a cost-free rejection game (CFRG) using strategy method: participants indicated whether to accept or reject each of nine possible offers (i.e., responder/proposer: 1/9, 2/8, 3/7, 4/6, 5/5, 6/4, 7/3, 8/2, and 9/1) from the proposer (e.g., Henrich et al., 2006; Yamagishi et al., 2009).

4.1. Method

Participants and design. As in Study 2, we aimed to recruit at least 100 participants per between-group condition. A total of 602 U.S. participants (338 females; M\(_{age}\) = 35.30 years, SD = 11.40) from MTurk and 603 Chinese participants (313 females; M\(_{age}\) = 34.55 years, SD = 8.18) from Sojump completed the study for a baseline payment of US$0.3 (U. S. participants) or CN¥3 (Chinese participants). The study was a 2 (country: U.S. vs. China) × 3 (wealth: high vs. moderate vs. low) × 2 (game type: UG vs. CFRG) × 9 (equality level: 1/9, 2/8, 3/7, 4/6, 5/5, 6/4, 7/3, 8/2, 9/1) mixed design. Only equality level was a within-participant variable. Participants from both countries were randomly assigned to one of six conditions (i.e., wealth × game type).

Procedure. Participants learned that they would play two unrelated games (i.e., a lucky draw game and a money allocation game), during which they earned monetary units (MUs) that would be converted into money (1 MU = US$0.1 or CN¥1) and paid to them.

Participants first played a lucky draw game in which they learned that by drawing a lottery, they had an equal chance to receive one of 11 options of bonus ranging from 0 to 10 MUs. We actually randomly assigned them to a high-wealth (Win 10 MUs), moderate-wealth (Win 5 MUs), or low-wealth condition (No Win, see Fig. 2). As a manipulation check, they rated their perceptions of their income in this game (0 = the lowest income, 100 = the highest income) and their wealth at that moment (0 = extremely poor, 100 = extremely rich) relative to others on 101-point scales.

![Fig. 1. Rejection rates of the 2/8 and 5/5 offers among U.S. participants (left) and Chinese participants (right) in Study 2. Error bars represent 95% confidence intervals.](image-url)
Next, participants played a money allocation game (i.e., UG or CFRG) as a responder. In this game, they interacted with another participant (i.e., the proposer) to decide how to split 10 MUs. They indicated whether to accept or reject each of nine possible offers (i.e., responder/proposer: 1/9, 2/8, 3/7, 4/6, 5/5, 6/4, 7/3, 8/2, and 9/1; strategy method) from the proposer. The rules of the UG and CFRG were the same as in Studies 1 and 2. All participants actually received 5 MUs in the money allocation game. After their decisions, participants reported their age, gender, ethnicity, education level, and family income. Finally, they were debriefed and paid. Including the baseline payment, the total payment for all U.S. participants ($M = US$1.32, range: US $0.8–US$1.8) and Chinese participants ($M = CN¥13.02, range: CN ¥8–CN¥18) were US$792.1 and CN¥7854, respectively.

4.2. Results and discussion

Manipulation checks. The subjective wealth was manipulated successfully in both countries: participants in the high-, moderate-, and low-wealth conditions in the U.S. and China showed significant differences...
in perceived income (U.S.: $M_s = 80.57, 50.05, and 13.30, p < .001, $\eta_p^2 = 0.63$; China: $M_s = 78.66, 46.64, and 7.22, p < .001, $\eta_p^2 = 0.66$) and perceived wealth (U.S.: $M_s = 56.32, 39.10, and 21.75, p < .001, $\eta_p^2 = 0.27$; China: $M_s = 64.32, 47.96, and 20.56, p < .001, $\eta_p^2 = 0.39$).

Manipulated wealth and rejection decision. Participants’ decisions to accept or reject nine possible offers (i.e., responder/proposer: 1/9, 2/8, 3/7, and 4/6) and thus rejected these offers less often in the latter two groups did not differ in their rejection rates of these offers ($p > 0.05$, see Table 1). The Game Type × Equality Level interaction was significant, $\chi^2(8) = 55.78, p < .001$ (see Supplementary Material). Planned contrasts revealed that low-wealth U.S. participants rejected extremely disadvantageous unequal offers (i.e., 1/9 and 2/8) more often than high- and moderate-wealth U.S. participants ($p < 0.01$), but the latter two groups did not differ in their rejection rates of these offers ($p > 0.05$, see Table 1). The Game Type × Equality Level interaction was significant, $\chi^2(8) = 145.15, p < .001$, suggesting that U.S. participants were sensitive to the costs in rejecting disadvantageous unequal offers (i.e., 1/9, 2/8, 3/7, and 4/6), and thus rejected these offers less often in the UG than in the CFRG ($p < 0.001$).

Chinese sample: Do low-wealth individuals reject unequal offers more often? Among Chinese participants, the Wealth × Equality Level interaction was significant, $\chi^2(16) = 38.28, p = .001$ (see Supplementary Material). Planned contrasts revealed that low-wealth U.S. participants rejected extremely disadvantageous unequal offers (i.e., 1/9 and 2/8) more often than high- and moderate-wealth U.S. participants ($p < 0.01$), but the latter two groups did not differ in their rejection rates of these offers ($p > 0.05$, see Table 1). The Game Type × Equality Level interaction was significant, $\chi^2(8) = 66.48, p < .001$, significant, $\chi^2(16) = 73.19, p < .001$. Thus, the effect of wealth on rejection decision varied in these two countries. We further conducted two separate GLMMs to test this effect among U.S. and Chinese participants.

U.S. sample: Do low-wealth individuals reject unequal offers more often? Among U.S. participants, the Wealth × Equality Level interaction was significant, $\chi^2(16) = 38.28, p = .001$ (see Supplementary Material). Planned contrasts revealed that low-wealth U.S. participants rejected extremely disadvantageous unequal offers (i.e., 1/9 and 2/8) more often than high- and moderate-wealth U.S. participants ($p < 0.01$), but the latter two groups did not differ in their rejection rates of these offers ($p > 0.05$, see Table 1). The Game Type × Equality Level interaction was significant, $\chi^2(8) = 145.15, p < .001$, significant, $\chi^2(16) = 73.19, p < .001$. Thus, the effect of wealth on rejection decision varied in these two countries. We further conducted two separate GLMMs to test this effect among U.S. and Chinese participants.

Table 1

<table>
<thead>
<tr>
<th>Equality level</th>
<th>High wealth</th>
<th>Moderate wealth</th>
<th>Low wealth</th>
<th>High wealth</th>
<th>Moderate wealth</th>
<th>Low wealth</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/9</td>
<td>0.58 a</td>
<td>0.63 a</td>
<td>0.76 b</td>
<td>0.79 a</td>
<td>0.62 b</td>
<td>0.61 b</td>
</tr>
<tr>
<td>2/8</td>
<td>0.57 a</td>
<td>0.61 a</td>
<td>0.74 a</td>
<td>0.74 a</td>
<td>0.57 b</td>
<td>0.58 b</td>
</tr>
<tr>
<td>3/7</td>
<td>0.55 a</td>
<td>0.55 a</td>
<td>0.61 a</td>
<td>0.63 a</td>
<td>0.47 b</td>
<td>0.45 b</td>
</tr>
<tr>
<td>4/6</td>
<td>0.36 a</td>
<td>0.37 a</td>
<td>0.41 a</td>
<td>0.33 a</td>
<td>0.32 a</td>
<td>0.31 a</td>
</tr>
<tr>
<td>5/5</td>
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<td>0.08 a</td>
<td>0.03 a</td>
<td>0.03 a</td>
<td>0.07 a</td>
<td>0.06 a</td>
</tr>
<tr>
<td>6/4</td>
<td>0.06 a</td>
<td>0.08 a</td>
<td>0.04 a</td>
<td>0.02 a</td>
<td>0.07 a</td>
<td>0.07 a</td>
</tr>
<tr>
<td>7/3</td>
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<td>0.09 a</td>
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<td>0.09 a</td>
<td>0.09 b</td>
<td>0.10 a</td>
<td>0.11 a</td>
<td>0.11 a</td>
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<tr>
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<td>0.09 a</td>
<td>0.09 a</td>
<td>0.12 a</td>
<td>0.13 a</td>
<td>0.13 a</td>
</tr>
</tbody>
</table>

Note. Means with different superscripts per row in each country are statistically different ($p < .05$ with Bonferroni corrections using ‘lmeasures’ package in R, see Bates, Maechler, Bolker, & Walker, 2015).
effect of subjective wealth on rejection decision. To test this explanation, we asked participants to rate the extent to which their decision was motivated by their feelings of deservingness (i.e., “Not receiving the money that I deserve”). We also measured their motivations to promote or harm their partner's welfare (i.e., “Increasing/decreasing the money of the other person”). Finally, participants reported their age, gender, ethnicity, education level, and family income, and were debriefed and paid. Including the baseline payment, the total payment for all U.S. participants (M = US$1.03, range: US$0.5–US$1.5) and Chinese participants (M = CN¥10.03, range: CN¥5–CN¥15) in this study were US $839.5 and CN¥8215, respectively.

5.2. Results and discussion

Manipulation checks. The subjective wealth was manipulated successfully in both countries: participants in the high- and low-wealth conditions in the U.S. and China showed significant differences in perceived income (U.S.: Ms = 79.18 and 8.03, p < .001, d = 3.02; China: Ms = 76.45 and 9.20, p < .001, d = 3.64), perceived wealth (U.S.: Ms = 52.68 and 18.38, p < .001, d = 1.31; China: Ms = 59.21 and 18.40, p < .001, d = 1.74), and subjective feelings of their income in their country (U.S.: Ms = 4.98 and 4.25, p < .001, d = 0.42; China: Ms = 5.40 and 4.39, p < .001, d = 0.70).

Manipulated wealth and rejection decision. Participants’ decisions to accept or reject the 2/8 offer across all conditions are summarized in Fig. 4. We conducted a binary logistic regression on rejection decision with country, own wealth, partner’s wealth, source of wealth, and all interaction terms as predictors (see Table S4 in the Supplementary Material).

Do participants in the U.S. and China differ in their responses to an unequal offer? The Country × Own Wealth interaction was significant, b = −0.82, Wald χ²(1) = 16.43, p < .001, odds ratio = 0.44, 95% CI [0.30, 0.65]. Consistent with our previous studies, low-wealth U.S. participants rejected the 2/8 offer more often, b = −0.30, Wald χ²(1) = 4.26, p = .04, odds ratio = 0.75, 95% CI [0.56, 0.99], whereas high-wealth Chinese participants rejected this unequal offer more often, b = 0.53, Wald χ²(1) = 13.91, p < .001, odds ratio = 1.70, 95% CI [1.29, 2.24]. Interestingly, as Fig. 4 shows, the effect of own wealth among U.S. participants was moderated by source of wealth (p = .03), such that low-wealth U.S. participants rejected the unequal offer more often than high-wealth ones only when wealth was based on luck (p = .003), rather than effort (p = .84). However, the effect of own wealth among Chinese participants was not moderated by source of wealth (p = .13).

Do high-wealth individuals reject an unequal offer more often when wealth is based on effort rather than luck? The main effect of source of wealth was significant, b = 0.36, Wald χ²(1) = 12.90, p < .001, odds ratio = 1.44, 95% CI [1.18, 1.75]. This effect was qualified by a significant Source of Wealth × Own Wealth interaction, b = 0.53, Wald χ²(1) = 6.88, p = .01, odds ratio = 1.71, 95% CI [1.15, 2.54]. Specifically, high-wealth participants rejected the 2/8 offer more often when wealth was based on effort than when wealth was based on luck, b = 0.64, Wald χ²(1) = 20.09, p < .001, odds ratio = 1.89, 95% CI [1.43, 2.50], whereas low-wealth participants showed no difference in the two conditions, b = 0.07, Wald χ²(1) = 0.23, p = .63, odds ratio = 1.07, 95% CI [0.81, 1.42].

How do high-wealth participants respond to an unequal offer from a low-wealth partner? The Country × Own Wealth × Partner’s Wealth interaction was significant, b = −0.81, Wald χ²(1) = 3.93, p = .048, odds

Fig. 4. Participants' rejection rate of the 2/8 offer in Study 4. Rejection rate among U.S. and Chinese participants when wealth was based on (A) luck and (B) effort. Error bars represent 95% confidence intervals.
ratio = 0.45, 95% CI [0.20, 0.99]). Further analysis revealed a significant Own Wealth × Partner’s Wealth interaction among Chinese participants: high-wealth Chinese participants rejected the 2/8 offer less often from a low-wealth (vs. high-wealth) partner, b = 0.64, Wald χ²(1) = 9.62, p = .002, odds ratio = 1.89, 95% CI [1.27, 2.83]. However, high- and low-wealth U.S. participants’ rejection decisions did not vary with their partner’s wealth, b = −0.06, Wald χ²(1) = 0.04, p = .85, odds ratio = 0.95, 95% CI [0.54, 1.66].

Who deserves more? A 2 (country) × 2 (own wealth) × 2 (partner’s wealth) × 2 (source of wealth) ANOVA on feelings of deservingness revealed a significant Country × Own Wealth interaction, F(1, 1638) = 19.21, p < .001, η² = 0.01, and a significant Country × Own Wealth × Source of Wealth interaction, F(1, 1638) = 4.23, p = .04, η² = 0.01. When wealth was based on luck, low-wealth U.S. participants (M = 3.45) were more likely to feel that they did not receive what they deserve than high-wealth U.S. participants (M = 2.91, p < .001); however, when wealth was based on effort, high- and low-wealth U.S. participants did not differ in feelings of deservingness (Ms = 3.19 and 3.17, p = .94). In contrast, high-wealth Chinese participants (Ms = 3.64 and 3.78) felt that they deserve more than low-wealth ones (Ms = 3.06 and 3.35, ps < 0.03) regardless of whether their wealth was based on luck or effort.

To test whether deservingness mediates the wealth effect in each sample, we conducted two mediated moderation analyses with source of wealth as the moderator using bootstrapping method with 5000 bootstrap samples (Preacher & Hayes, 2008). Among U.S. participants, the indirect effect of wealth on rejection decision through deservingness was significant for luck-based wealth, b = −0.31, 95% CI [−0.53, −0.12], but not significant for effort-based wealth, b = −0.01, 95% CI [−0.22, 0.22]. However, the indirect effect through deservingness was significant among Chinese participants regardless of the source of wealth (luck: b = 0.37, 95% CI [0.17, 0.59]; effort: b = 0.28, 95% CI [0.08, 0.50]). These findings suggested that in the U.S. when wealth was based on luck rather than effort, low-wealth U.S. participants might feel that they did not receive what they deserve, and thus were more likely to reject unequal offers. Yet in China, regardless of the source of wealth, high-wealth Chinese participants would be less tolerant of unequal offers because these offers were not up to the levels they deserve. Notably, high-wealth Chinese participants were less likely to reject unequal offers from a low-wealth (vs. high-wealth) partner, although partner’s wealth did not affect their feelings of deservingness. Since the Chinese culture emphasizes the interdependence between self and others, as well as social obligations (Hofstede & Bond, 1988; Miyamoto, 2017), high-wealth Chinese might feel responsible to promote a low-wealth partner’s welfare (i.e., “Increasing the money of the other person”). To test this potential explanation, we conducted a mediation analysis using bootstrapping method with 5000 bootstrap samples (Preacher & Hayes, 2008). Among high-wealth Chinese participants, the indirect effect of partner’s wealth on rejection decision was significant through the motivation to increase their partner’s interest, b = 0.88, 95% CI [0.38, 1.40].

Additional binary logistic regressions including only family income or family income and its interactions with other variables revealed that neither family income nor the interactions with family income were significant for effort-based wealth, and the interactions with family income and its interactions with other variables revealed that neither family income nor the interactions with family income were significant predictors of rejection decision (ps > 0.14; see Supplementary Material).

6. General discussion

This research examined how (subjective) wealth affects rejection responses to inequality in the U.S. and China. Four studies among U.S. and Chinese samples revealed three key findings. First, consistent with inequality aversion, in the U.S. people who perceive themselves as less (versus more) wealthy are more likely to reject unequal offers. Yet, we consistently find the opposite effects in China: the wealthy are more likely to reject unequal offers than the less wealthy. A random-effects mini meta-analysis (Goh, Hall, & Rosenthal, 2016) across four studies confirmed reliable opposing associations of subjective wealth (high versus low-wealth) with rejection of the 2/8 offer in the U.S. (N = 1651), Z = −5.66, r = −0.14, 95% CI [−0.19, −0.09], and China (N = 1651), Z = 6.51, r = 0.16, 95% CI [0.11, 0.21]. Second, when wealth was obtained through effort but not luck, there was no significant effect of subjective wealth among U.S. participants (but still a significant effect among Chinese participants). Third, we found that feelings of deservingness helped explain the opposite effects of subjective wealth on responses to unequal offers in these two countries. Notably, subjective wealth invariably predicted rejection of unequal offers in both countries above and beyond the effect of objective wealth.

These findings underline the importance of studying samples beyond WEIRD (Western, Educated, Industrialized, Rich, and Democratic; see Henrich, Heine, & Norenzayan, 2010) to address issues on wealth, wealth inequality, and inequality aversion. Extant literature in Western contexts shows that people tend to pursue equality, and the less wealthy are strongly inclined to restore equality especially when inequality is based on luck rather than effort (e.g., Almás et al., 2010). Our findings suggest that this conclusion does not immediately hold for samples from non-Western societies, such as China, which has received less attention in past research on wealth and inequality aversion. We find that people with more relative wealth in China do not seem to contribute to restoring equality, at least when they have no explicit information about their interaction partner’s lack of wealth. It is possible that other non-Western societies with high collectivism and and power distance, such as India (individualism and power distance index: 48 and 77) with strong roots in a caste system ( Cotterill, Sidanius, Bhardwaj, & Kumar, 2014), also differ from Western societies in the link between wealth and equality restoration.

We want to briefly discuss some other new findings. First, U.S. (but not Chinese) participants with less relative wealth due to bad luck (vs. more relative wealth due to good luck) feel that they deserve more. This suggests that they may be more motivated to change their unfortunate disadvantages. However, when wealth is obtained through effort, there is an increase in deservingness among the wealthy, but a decrease in deservingness among the less wealthy. This is interesting, because evidence shows that attributions to individual effort and skill are often used to justify wealth inequality in the U.S., especially among the wealthy ( Kluegel & Smith, 1986; Kraus et al., 2009). One intriguing issue is how people in the U.S. and China might differ in their construal of “deservingness”. It is plausible that people in individualistic societies with low power distance emphasize individual effort, whereas people in collectivist societies with high power distance also emphasize group effort and show respect for different roles and positions within a group.

Second, we found that in China, higher perceived wealth, even when merely based on luck, can make people feel more deserving of such advantages and thus are more likely to reject unequal offers. While we interpreted this in terms of collectivism and high power distance, a complementary explanation may be derived from the rapid economic growth and extensive societal changes in China over the past four decades. Such a rapid modernization process has made Chinese people, especially the “new-rich” more individualistic and narcissistic (Cai, Kwan, & Sedikides, 2012). This raises the possibility that rich people in a rapidly changing society may find it relatively easy to justify their relative wealth, even when such wealth is primarily based on luck. It may be especially important for the wealthy to preserve wealth differences that are recently obtained, compared to the “established” wealth differences that have existed for a long time.

Third, our findings also revealed that when explicit information about others’ wealth is available, the wealthy in China are motivated to promote their low-wealth partner’s welfare, and thus are less likely to reject unequal offers from others with less wealth. One possible explanation may be that the Chinese culture also emphasizes social obligations of the wealthy to care about the poor so as to enhance social harmony (Miyamoto, 2017). Such obligations are in line with Confucian teaching (“to care for the poor if rich”, see Hofstede & Bond, 1988) that...
were an inherent part of Chinese traditional culture. Indeed, recent evidence shows that in East Asian cultures such as China and Japan where Confucian teaching is dominant, higher SES is positively associated with both self-orientation and other-orientation (Miyamoto et al., 2018). It is plausible that the Confucian teaching for the wealthy to care for the poor may be activated when one explicitly knows that another person is less wealthy and needs resources (e.g., when the CFRG proposer has low wealth).

Before closing, we should outline some limitations and avenues for future research. First, we based our predictions on the differences of the U.S. and China in the cultural dimensions of collectivism and power distance values. However, we did not measure these cultural dimensions among our U.S. and Chinese samples. Although converging evidence shows that the U.S. and China vary substantially in their collectivism and power distance (see Brockner et al., 2001; Hofstede, Hofstede and Minkov, 2010; van Prooijen & Song, 2021; Wu et al., 2021), we should acknowledge that the cultural variation we observed may be not necessarily generalize beyond convenience samples examined in the two countries. Moreover, evidence suggests that within-culture variations in acceptance of inequalities and other-orientation is likely to persist within each of the countries (Grossmann & Na, 2014; Yamawaki, 2012). For example, in U.S. society high-wealth Democrats (but not Republicans) tended to reduce economic inequality (Kraus & Callaghan, 2014). Thus, it is necessary for future work to directly measure participants’ collectivism and power distance values, and provide a nuanced examination of between- and within-culture differences in how wealth affects responses to inequality in larger and more representative samples from the U.S. and China.

Second, our research compared the U.S. and China, both of which are facing high levels of wealth inequality (e.g., Piketty et al., 2019; Xie & Zhou, 2014). Future work could replicate our findings in other societies with lower inequality, such as Scandinavian countries. This is particularly important as some (but controversial) evidence suggests that wealth inequality might moderate the effect of social class on generosity in economic games (Côté, House, & Willer, 2015; but see Schmulek, Korsdorfer, & Egloff, 2019).

Third, we acknowledge that the inequality in economic games (i.e., UG and CFRG) and the inequality people face in everyday life are different in many aspects. Moreover, various specific motivations may help to explain rejection decisions in these games, although we attempted to measure some of these motivations (e.g., deservingness). For example, the rejection of an unequal offer in the UG and CFRG might due to the lower payoff rather than the (disadvantageous) inequality of the offer. In other words, it may be that low-wealth U.S. participants but high-wealth Chinese participants are more sensitive to receiving less money in general, even those that not necessarily reflect inequality. However, in Study 3 we found that low-wealth (vs. high-wealth) U.S. participants were also more likely to reject one of the advantageous offers (i.e., 8/2; see Table 1), which may suggest that at least low-wealth U.S. participants are not simply more sensitive to the lower payoff in general. Nevertheless, future research can examine this alternative explanation for the wealth effects in response to inequality in more naturalistic settings.

7. Concluding remarks

Growing wealth inequality is a global issue that has become more prominent in recent years. Yet, societies differ in what is considered fair and deserving and under what conditions this wealth disparity should be reduced. In many Western societies, the guiding norm for those less well-off would be to restore equality when wealth differences are based on luck (versus effort). Across four studies, we find that people who perceive themselves as less wealthy in the U.S. and those with higher subjective wealth in China are less tolerant of unequal resource allocations initiated by others. Our findings also suggest that the wealthy in the U.S. are prone to justify their wealth by emphasizing effort, whereas the wealthy in China tend to feel entitled and are less likely to consider the precise cause of their fortune in their perceptions of deservingness. These findings challenge the universality of equality restoration across Western and non-Western societies. At least in China equality may originate from a basic belief that existing differences in income, wealth, and perhaps status and power, should be respected, valued, and protected. From a practical perspective, our findings may help explain the different response to the rise in income and wealth inequality among citizens in the United States and China: U.S. people who perceive themselves to be less wealthy, especially when they believe that they did not receive what they deserve, may react more strongly to inequality (e.g., the Occupy Wall Street movement); in contrast, the wealthy Chinese are more sensitive to inequality because they feel they deserve more, but such tendency is reversed when they are informed of others’ low-wealth situations. Such response differences in the United States and China suggest that even if the goals of equality are the same, the paths to be taken to achieve them seem far from the same.

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Appendix A. Supplementary data

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References
