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Lower class people suffered more (but perceived fewer risk disadvantages) during the COVID-19 pandemic

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Does COVID-19 affect people of all classes equally? In the current research, we focus on the social issue of risk inequality during the early stages of the COVID-19 pandemic. Using a nationwide survey conducted in China (N = 1,137), we predicted and found that compared to higher-class individuals, lower-class participants reported a stronger decline in self-rated health as well as economic well-being due to the COVID-19 outbreak. At the same time, we examined participants' beliefs regarding the distribution of risks. The results demonstrated that although lower-class individuals were facing higher risks, they expressed lesser belief in such a risk inequality than their higher-class counterparts. This tendency was partly mediated by their stronger endorsement of system-justifying beliefs. The findings provide novel evidence of the misperception of risk inequality among the disadvantaged in the context of COVID-19. Implications for science and policy are discussed.

Keywords: COVID-19, misperception, risk inequality, social class, system-justifying beliefs.

Toward the end of 2019, the novel coronavirus (COVID-19) was identified in Wuhan, Hubei province, and rapidly spread throughout China. Since then, people across the globe have been plagued by the outbreak of COVID-19. The virus poses multiple risks that not only affect individuals physically (e.g., illness, hospitalization) and psychologically (e.g., public panic) (Li, Wang, et al., 2020; Zhang & Ma, 2020) but also financially (e.g., redundancy, financial insecurity) (McKibbin & Fernando, 2021). Undoubtedly, these consequences are experienced by all individuals but they may not be distributed equally among all citizens. For example, older people with some serious health issues run more risks in terms of well-being, health, as well as survival (Lloyd-Sherlock et al., 2020; Perrin et al., 2009).

In the current research, we focused on the asymmetrical distribution of adverse risks between the lower and higher classes (Bolin & Kurtz, 2018; Van Bavel et al., 2020). The primary goal of the present research is to test the hypothesis that individuals from lower social classes experience higher risks to health and economic well-being due to COVID-19 than individuals from higher social classes. A secondary goal was to examine people's beliefs about how the risks of COVID-19 would be distributed among people from lower and higher social classes. We regarded such beliefs as interesting in themselves, but even more interesting in light of the results of the present study in terms of the actual distribution of risks due to COVID-19 for people from lower and higher social classes.

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Social class and risk inequality during the COVID-19 pandemic

Previous research on the negative impact of disaster events has revealed an unequal distribution of risk for people from lower and higher social classes (Bolin & Kurtz, 2018). For example, natural hazards tend to have stronger negative consequences for people from lower social classes than those from higher social classes (Banerjee, 2017; Fothergill & Peek, 2004). Additionally, some tentative evidence suggests that infectious diseases cause more damage to people from lower (vs. higher) social classes (Vaughan & Tinker, 2009). For example, during the 1918 influenza pandemic (Bengtsson et al., 2018) and the 2009 H1N1 pandemic (Lowcock et al., 2012; Placzek & Madoff, 2014), lower-class individuals reported greater proportions of hospitalizations and deaths than individuals belonging to the higher class. This inequality was partly because the susceptible individuals have a limited ability for health communication (e.g., information seeking and processing) (Lee et al., 2020; Savoia et al., 2012). Furthermore, they also experience greater psychological challenges (e.g., anxiety and panic; Perrin et al., 2009) as a result of elevated

sensitivity to life threats and less social and emotional support (Grossmann & Varnum, 2011).

Besides physical and psychological damage, risks related to decline in economic well-being are also worthy of attention. Economic well-being refers to the extent to which individuals or families possess economic adequacy, security, and stability (Walson & Fitzsimmons, 1993). It represents the capacity of individuals or families to meet basic needs in life and feel a sense of security and satisfaction with their financial situation (Evans, 2019). COVID-19 is not only a global health emergency but is also a factor facilitating the current global economic downturn (McKibbin & Fernando, 2021). Thus, lower-class individuals would face more financial losses and life difficulties because they have limited resources and ability to cope with or adjust to the economic downturn. For instance, previous studies found that this class of individuals was most likely to encounter economic loss, lower employment rates, and reduced economic well-being as a result of the global economic downturn, similar to the aftermath of the home isolation or quarantine recommendations during and after the H1N1 pandemic (Hutchins et al., 2009). Some recent initial evidence during the COVID-19 pandemic also suggests that this pandemic led to greater unemployment and economic hardship, which might exacerbate pre-existing social inequalities (Che et al., 2020; Qian & Fan, 2020). Given the above evidence, we predict that lower (vs. higher) class individuals would endure more risks affecting health as well as economic well-being as a result of the COVID-19 pandemic (Hypothesis 1).

Social class and perceived risk inequality: System justification as a potential explanation

How do people who vary in social class perceive risk inequality? One might argue that people from lower (vs. higher) classes tend to perceive higher levels of risk inequality (Kuo et al., 2020). After all, they themselves face these unfortunate consequences, and may regard it as unfair if they perceive, rightfully or not, that those from higher social classes are in a superior position to protect themselves from various negative consequences. However, we suggest an alternative argument that lower (vs. higher) class individuals would be more likely to be blind to risk inequality.

A line of research on the misperception of inequality among the disadvantaged supports this argument. This research focused on public perceptions of economic, gender, and racial inequalities and found that people, in particular those of lower status, tend to underestimate the current level of these inequalities around them. For example, lower (vs. higher) class individuals are more likely to underestimate class-based health disparities (Lillie-Blanton et al., 2000; Shankardass et al., 2012) and show less criticism of the rich-poor gap (Martin, 2009; see also Cheung, 2016). They also tend to be relatively less favourable toward changing the unequal status-quo (Yogeeswaran et al., 2018). Crucially, after Hurricane Katrina in 2005, lower-class individuals were found to justify and accept the unequal arrangement in which they received less compensation for their losses and for rebuilding funds than higher-class individuals (Napier et al., 2006). Based on this relevant evidence, we might predict that lower (vs. higher) classes may be blind to and perceive less risk inequality in the context of the COVID-19 pandemic (Hypothesis 2).

Why are lower classes blind to their disadvantages, although they face higher risks during the pandemic? One possible mechanism might be the role of system-justifying beliefs (Kay & Brandt, 2016; see also Hing et al., 2019). Although controversial, a quarter-century of research on system justification theory argues that people tend to justify and legitimize the existing status-quo (Jost, 2019; Jost et al., 2004, 2015); even lower-class people possess system-justifying beliefs and support the status quo to a surprisingly high degree (Jost et al., 2003, 2012; Osborne et al., 2019; but see Caricati & Lorenzi-Cioldi, 2012; Brandt, 2013; Brandt et al., 2020). We propose that such beliefs among lower-class individuals might be more salient in life-threatening situations, such as in the context of a pandemic.

As mentioned above, lower-class individuals face considerably more risks related to both health and economic well-being during the pandemic when compared to people from higher social classes (Che et al., 2020; Qian & Fan, 2020; Wang et al., 2020). This elevated risk would threaten their epistemic and existential needs by posing more uncertainties and by weakening their sense of control (Jost et al., 2017). As a possible efficient way to cope with threats, lower (vs. higher) class individuals are more likely to endorse system justification as a compensatory control mechanism for imposing structure on the world (Kay et al., 2008; Kay & Friesen, 2011; Shepherd & Kay, 2012; Ullrich & Cohrs, 2007). Indeed, previous research found that the need to manage uncertainty would foster feelings of dependence on the government, which would increase system justification and government trust (Shepherd & Kay, 2012; Yam et al., 2020). Consequently, according to the palliative function of system justification on inequality perception (García-Sánchez et al., 2019; Haack & Sieweke, 2018; Hing et al., 2019; Rodriguez-Bailon et al., 2017), the increased endorsement of system-justifying beliefs among lower-class people during the pandemic may blind them to the notion of risk inequality. Given the

initial evidence, we suggest that lower-class individuals might more likely be blind to risk inequality than those from higher classes, partly because of their endorsement of system-justifying beliefs (Hypothesis 3).

Current research

We report the findings of a nationwide survey in China, which addresses a long-standing and neglected social issue concerning class-based risk inequality following natural hazards (in the present context): the COVID-19 pandemic. The goals were twofold: (a) to test the unequal distribution of risks related to health and economic well-being between lower and higher classes; and (b) to examine the effect of social class on perceived risk inequality, as well as the mediating role of system-justifying beliefs.

Method

Participants

Participants of the current study were part of a large research project aimed at investigating individuals' social attitudes (see Supplemental Material in the Supporting Information for details). This project was a nationwide survey conducted in China on March 24–25, 2020, after the COVID-19 outbreak was under control in most provinces.[1] A total of 1,137 adult participants (599 male; aged from 18 to 58 years, M_{age} = 30.91, SD_{age} = 6.68, one participant did not report his age) from 30 provinces were recruited through an online survey. None of the participants were infected by COVID-19, and 20.84% of them were located in Hubei province (i.e., the centre of the COVID-19 pandemic with the highest number of infected patients in China as of March 2020) (Ainslie et al., 2020). Sample size represents the maximum number of participants that could be recruited during the predetermined period of data collection, and all data analyses were conducted after data collection had concluded.

Materials

Subjective decline in health. The Chinese version of the 12-item General Health Questionnaire (GHQ-12; Pan & Goldberg, 1990; Cronbach's α = .89) was used to measure participants' self-rated health. Participants were asked to indicate the frequency with which they experienced feelings associated with disorders during the previous weeks (e.g., "Lost much sleep"). Each item was rated on a 7-point Likert scale ranging from 1 (*none of the time*) to 7 (*all of the time*), and six items were reverse scored. The index was calculated as an average of all items, with higher scores representing a greater subjective decline in health. The GHQ-12 has been extensively used in different settings and cultures (Montazeri et al., 2003) and has been significantly correlated with actual health (Bazazan et al., 2019).

Subjective decline in economic well-being. We used a questionnaire with seven items to measure subjective decline in economic well-being during the pandemic (Cronbach's α = .84). Participants were asked to indicate the extent to which they were bothered by the COVID-19 pandemic regarding the following potential issues: reduced general quality of life; financial loss; decline in income; stress of unemployment or inability to find a job; facing more uncertainties; unable to work at home due to limited resources; and difficulties concerning resumption. Each item was rated on a 7-point Likert scale ranging from 1 (*very slightly or not at all*) to 7 (*extremely*). The index was calculated as an average of all items, with higher scores representing greater subjective decline in economic well-being.

Objective decline in economic well-being. To comprehensively investigate individuals' reduced economic well-being, we also queried the change in their level of income as an objective measure of decline in their economic well-being. Participants were asked to answer two questions about their average monthly income in the previous year (i.e., before the pandemic) and during the COVID-19 pandemic, respectively. The index of decline in income was expressed as a percentage, which represents the level of decline in average monthly income during the pandemic as opposed to before the pandemic.

Perceived risk inequality. For the purpose of the current study, participants' perceived risk inequality was measured with regards to two aspects: health and economic well-being. For the aspect of *perceived risk inequality of health*, participants answered two questions asking them to estimate the risk differences between lower and higher classes for (a) COVID-19 infection, and (b) the possibility of a cure (reverse scored). For the aspect of *perceived risk inequality of economic well-being*, participants again answered two questions asking them to estimate the risk differences regarding a decline in economic well-being (defined as "financial loss, decline in income, worry regarding unemployment, unable to find a job, and reduced quality of life") between members of lower and higher classes, defined as (a) a high-income versus a low-income person, and (b) a wealthy versus a poor person. For each of these four questions, participants were instructed to take the risk level for a higher-class individual as 10 and estimate the relative risk of a lower-class individual on a scale

ranging from 0 to 20, with the difference indicating the gap in risk seen between higher and lower classes. The average of the two questions for each aspect, health and economic well-being, was used as the respective index of perceived risk inequality, with higher scores representing a greater gap in subjectively felt risk (see also Kraus et al., 2017). It should be noted that both the range (0–20) and the baseline (10) of these risk indexes during the pandemic are fictitious numbers, with no authoritative basis for these particular values found in our review of past literature.

System-justifying belief. We used two items to measure participants' system-justifying beliefs ($r = .69$, $p < .001$; Cronbach's $\alpha = .81$; see also Owuamalam et al., 2017).[2] These were selected and modified from the general system justification scale established by Kay and Jost (2003). Participants indicated their levels of agreement (1 = *strongly disagree*, 7 = *strongly agree*) with the following statements: "During the COVID-19 outbreak, I found society to be fair," and "During the COVID-19 outbreak, China's political system operated as it should."

Social class. Following previous research (Piff et al., 2010), we assessed social class by asking participants to rate their highest level of education and their average monthly income in the previous year. Education was assessed using six categories: (a) primary school, (b) middle school graduate, (c) high school graduate or equivalent education completed, (d) junior college graduate, (e) college graduate, or (e) postgraduate degree. Average monthly income was assessed using nine categories: (a) < ¥1,000; (b) ¥1,000–¥2,000; (c) ¥2,000–¥3,000; (d) ¥3,000–¥5,000; (e) ¥5,000–¥8,000; (f) ¥8,000–¥12,000; (g) ¥12,000–¥15,000; (h) ¥15,000–¥20,000; and (i) > ¥20,000. Participants had a median educational attainment of college graduation and median average monthly income ranging between ¥5,000 and ¥8,000 (see the Supplemental Material for distributions of the scores). Educational attainment and average monthly income were correlated ($r = .38$, $p < .001$), thus we standardized and averaged them to form an overall measure of social class (see also Kraus et al., 2009; Tan & Kraus, 2015).

Demographics. Participants were also asked to provide demographic information about gender, age, and province.

Ethical statement

The study was conducted according to the guidelines of APA ethical standards and approved by the Ethics Committee of Nanjing Normal University (protocol code NJNU-2019-SYLL-021). Informed consent was obtained from all participants involved in the study, with guarantees of anonymity and confidentiality.

Results

Class-based risk inequality

Descriptive statistics and correlations for all variables in this study are presented in Table 1. Ten participants did not report their average monthly income in the previous year (i.e., before the pandemic) and during the COVID-19 pandemic, and thus had missing data for a decline in income.

Did lower-class individuals endure more risks affecting health and economic well-being during the pandemic than higher-class individuals? To test our first hypothesis, we conducted linear regression analyses with social class as an independent variable, and subjective decline in health, subjective decline in economic well-being, as well as objective decline in economic well-being as the dependent variables. Age and gender were considered as covariates owing to their influence on individuals' psychological health, as well as economic well-being, during public health emergencies (Ding et al., 2021; Perrin et al., 2009). We also included the province (coded as 0 = *Hubei province*, 1 = *other provinces*) as a covariate given the variation in severity of the pandemic across China (Ainslie et al., 2020), which would also impact individuals' risk for damage. Records with missing values for any of these variables were deleted listwise.

The results supported our hypothesis and revealed that after controlling for age, gender, and province, social class was negatively related to subjective decline in health ($B = -0.18$, 95% CI [−0.25, −0.11], $SE = 0.04$, $t = -4.87$, $p < .001$, $\Delta R^2 = .02$), subjective decline in economic well-being ($B = -0.22$, 95% CI [−0.30, −0.13], $SE = 0.04$, $t = -4.97$, $p < .001$, $\Delta R^2 = .02$), as well as objective decline in economic well-being ($B = -0.08$, 95% CI [−0.10, −0.05], $SE = 0.01$, $t = -6.08$, $p < .001$, $\Delta R^2 = .03$) (see Table 2). These results show that lower (vs. higher) class individuals reported greater subjective decline in health, and were more prone to economic and life-oriented risks during the COVID-19 pandemic. Thus, our hypothesis that lower (vs. higher) class individuals would endure more risks affecting health as well as economic well-being was confirmed.

Perceived risk inequality

As shown in Table 1, participants reported a much lower level of perceived risk inequality of health ($M = 0.98$, $SD = 2.79$) than perceived risk inequality of economic well-being ($M = 4.64$, $SD = 4.11$). A paired sample *t*-

Table 1
Descriptive Statistics and Correlations About All Variables Under This Study

		N	Min	Max	Mean	*SD*	1	2	3	4	5	6	7	8	9
1	Subjective decline in health	1,137	1.00	6.83	3.07	1.05	—								
2	Subjective decline in economic well-being	1,137	1.29	7.00	4.54	1.26	.42**	—							
3	Objective decline in economic well-being	1,127	−1.00	1.57	0.28	0.35	.25**	.39**	—						
4	Perceived risk inequality of health	1,137	−10.00	10.00	0.98	2.79	.15**	.09**	.02	—					
5	Perceived risk inequality of quality of life	1,137	−8.00	10.00	4.64	4.11	.25**	.22**	.12**	.29**	—				
6	System-justifying belief	1,137	1.00	7.00	6.04	1.08	−.35**	−.15**	−.07*	−.23**	−.22**	—			
7	Social class	1,137	−2.63	2.25	0.00	0.83	−.12**	−.12**	−.16**	.10**	.15**	−.14**	—		
8	Province	1,137	0.00	1.00	—	—	−.21**	−.17**	−.15**	−.13**	−.27**	.15**	−.08**	—	
9	Age	1,137	18.00	58.00	30.91	6.68	−.15**	−.10**	−.07*	−.04	−.07*	.15**	−.04	−.01	—
10	Gender	1,137	0.00	1.00	—	—	−0.02	−.10**	−.01	−.02	.02	.07*	−.11**	.07*	.01

Note. Gender (0 = *male*, 1 = *female*), Province (0 = *Hubei province*, 1 = *other provinces*).
*$p < .05$, **$p < .01$.

test analysis revealed a statistically significant difference between these two variables ($t = -29.02$, $p < .001$, $d = -0.86$), suggesting that individuals were more optimistic about risk inequality of health than of economic well-being.

Next, we examined how people from different social ranks perceived risk inequality. To test our second hypothesis, we regressed the perceived risk inequality of health and economic well-being against social class. In this and all subsequent analyses in this research, we controlled for province in predicting perceived risk inequality of health, and we controlled for age and province in predicting perceived risk inequality of economic well-being, because they were significantly associated with the corresponding dependent variables (see Table 1). As shown in Table 3, the results revealed that after controlling for these covariates, social class was positively and significantly related to perceived risk inequality of health ($B = 0.31$, 95% CI [0.12, 0.51], $SE = 0.10$, $t = 3.16$, $p = .002$, $\Delta R^2 = .01$) and perceived risk inequality of economic well-being ($B = 0.62$, 95% CI [0.34, 0.89], $SE = 0.14$, $t = 4.37$, $p < .001$, $\Delta R^2 = .02$), suggesting that lower-class (vs. higher-class) participants perceived less inequality of risk distribution.

Mediation analysis

As shown in Table 1, the correlation analysis denoted that perceived risk inequality of health and economic well-being were positively related to social class, and system-justifying belief was negatively related to the perceived risk inequality of health and economic well-being, and social class.

To test the mediating role of system-justifying belief (Hypothesis 3), we conducted a mediation path analysis using the PROCESS procedure (Model 4; Hayes, 2018). Bootstrapping was set to 5,000 resamples. As shown in Figures 1 and 2, after controlling for covariates, the indirect effect of social class through system-justifying beliefs on the perceived risk inequality of health ($B = 0.09$, 95% CI [0.05, 0.14], $SE = 0.03$) and perceived risk inequality of economic well-being ($B = 0.10$, 95% CI [0.05, 0.17], $SE = 0.03$) were significant, yielding 95% CIs that did not contain 0. Furthermore, the direct effect of social class on the perceived risk inequality of health ($B = 0.22$, 95% CI [0.03, 0.41], $SE = 0.10$, $t = 2.28$, $p = .023$) and perceived risk inequality of economic well-being ($B = 0.51$, 95% CI [0.24, 0.79], $SE = 0.14$, $t = 3.67$, $p < .001$) in the models was significant as well.

Additionally, the indirect effect of social class through system-justifying beliefs on perceived risk inequality of health ($B = 0.11$, 95% CI [0.06, 0.16], $SE = 0.03$) and perceived risk inequality of economic well-being

Table 2
Results of Regression Analysis Predicting Subjective Decline in Health, Subjective and Objective Decline in Economic Well-Being

	Dependent variables														
	Subjective decline in health					Subjective decline in economic well-being					Objective decline in economic well-being				
	B	95% CI	*SE*	*t*	*p*	*B*	95% CI	*SE*	*t*	*p*	*B*	95% CI	*SE*	*t*	*p*
Independent variable															
Social class	−0.18	[−0.25, −0.11]	0.04	−4.87	<.001	−0.22	[−0.30–0.13]	0.04	−4.97	<.001	−0.08	[−0.10, −0.05]	0.01	−6.08	<.001
Covariates															
Age	−0.02	[−0.03, −0.02]	0.004	−5.31	<.001	−0.02	[−0.03–0.01]	0.01	−3.65	<.001	−0.004	[−0.01, −0.001]	0.002	−2.81	.005
Gender	−0.04	[−0.16, 0.08]	0.06	−.68	.495	−0.25	[−0.39–0.11]	0.07	−3.42	.001	−0.01	[−0.05, 0.03]	0.02	−0.57	.569
Province	−0.57	[−0.71–0.43]	0.07	−7.75	<.001	−0.54	[−0.71–0.37]	0.09	−6.07	<.001	−0.14	[−0.19, −0.09]	0.03	−5.64	<.001
R^2	.09					.07					.06				
F	26.31					20.13					17.73				
p	<.001					<.001					<.001				

Note. Gender (0 = *male*, 1 = *female*), Province (0 = *Hubei province*, 1 = other provinces).

Table 3
Results of Regression Analysis Predicting Perceived Risk Inequality of Health and Economic Well-Being

	Dependent variables									
	Perceived risk inequality of health					Perceived risk inequality of economic well-being				
	B	95% CI	*SE*	*t*	*p*	*B*	95% CI	*SE*	*t*	*p*
Independent variable										
Social class	0.31	[0.12, 0.51]	0.10	3.16	.002	0.62	[0.34, 0.89]	0.14	4.37	<.001
Covariates[a]										
Age	—	—	—	—	—	−0.04	[−0.07, −0.01]	0.02	−2.25	.025
Province	−0.81	[−1.21, −0.41]	0.20	−4.00	<.001	−2.62	[−3.18, −2.05]	0.29	−9.11	<.001
R^2			.02			.09				
F			14.09			38.16				
p			<.001			<.001				

Note. Province (0 = *Hubei province*, 1 = *other provinces*).
[a]Province was included as a covariate in predicting perceived risk inequality of health, and age and province were included as covariates in predicting perceived risk inequality of economic well-being, because they were significantly associated with the corresponding dependent variables.

(*B* = 0.09, 95% CI [0.03, 0.15], *SE* = 0.03) was still robustly observed when controlling for subjective decline in health, and subjective and objective decline in economic well-being. Moreover, the direct effect of social class on the perceived risk inequality of health (*B* = 0.29, 95% CI [0.09, 0.48], *SE* = 0.10, *t* = 2.82, *p* = .005) and perceived risk inequality of economic well-being (*B* = 0.74, 95% CI [0.47, 1.02], *SE* = 0.14, *t* = 5.26, *p* < .001) in these models was robustly found as well. Thus, lower-class persons perceived less risk inequality than higher-class individuals, and this difference seemed to be partly due to their stronger endorsement of system-justifying beliefs.

Discussion

The present research provides strong evidence for the prediction that risks to health and economic well-being due to the outbreak of COVID-19 are greater to individuals from lower (vs. higher) social classes. Compared to higher-class individuals, individuals from lower-classes reported more damage related to self-rated health as well as economic well-being due to the COVID-19 outbreak. But surprisingly, we also provided a novel finding: Although lower-class individuals were facing greater risks, these individuals (rather than those of higher social classes) did not strongly believe in risk inequality. This tendency was mediated by their stronger endorsement of system-justifying beliefs.

A large body of evidence on disasters has documented the association between social class and the risk of economic and social decline (e.g., Banerjee, 2017; Bolin & Kurtz, 2018). In line with these studies, we found that lower-class individuals were unequally affected with more intense damage to health than their higher-class counterparts. This result was consistent with recent findings suggesting that COVID-19 infection, morbidity, and mortality posed particularly high threats to the economically disadvantaged (Wang et al., 2020). Moreover, we also found that lower-class individuals reported comparatively more damage to economic well-being and a greater level of decline in income than their higher-class counterparts. In response to the COVID-19 pandemic, residents in China and other societies were encouraged to stay at home and shut businesses (Peng et al., 2020), which resulted in a major economic downturn around the world (McKibbin & Fernando, 2021). Hence, it is not surprising that the economically disadvantaged, who have limited resources and ability to cope with and recover from disaster-induced damage, would face harsher situations related to reduced quality of life, economic loss, and unemployment (Che et al., 2020; Hutchins et al., 2009; Qian & Fan, 2020).

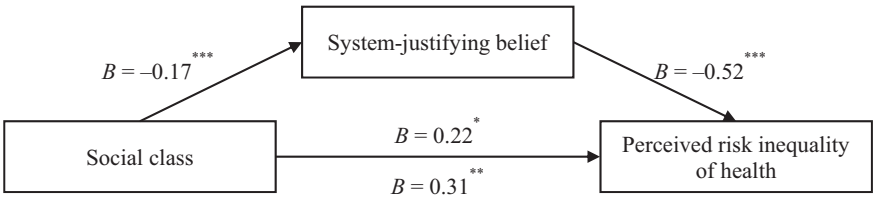

Figure 1 The mediating role of system-justifying belief on the relationship between social class and perceived risk inequality of health, controlling for province. *$p < .05$, **$p < .01$, ***$p < .001$.

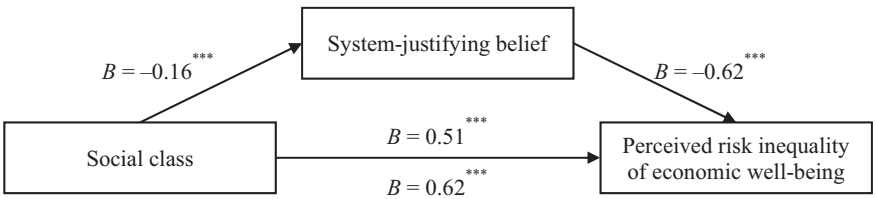

Figure 2 The mediating role of system-justifying belief on the relationship between social class and perceived risk inequality of economic well-being, controlling for age and province.***$p < .001$.

How do lower and higher social classes perceive class-based risk inequality? One argument suggests that those disadvantaged by inequality would perceive a higher level of inequality (Kuo et al., 2020). However, we found that even though the COVID-19 pandemic was unfavourable to the disadvantaged, lower-class individuals optimistically estimated and perceived less risk inequality of both health and economic well-being than their higher-class counterparts. Interestingly, previous research also found that lower (vs. higher) classes may place themselves in higher positions than they actually occupy (Cruces et al., 2013). Such a misperception of reality further supports an unwillingness to change the unequal status-quo, prompting instead opposition to resource redistribution that is aimed at reducing inequality (Yogeeswaran et al., 2018). Above all, our findings provide novel evidence of a discrepancy between reality and perception. Such a discrepancy suggests that all individuals, even the disadvantaged, may be blind to risk inequality around them (Hing et al., 2019; Shankardass et al., 2012). This is all the more striking as the discrepancies remain during COVID-19, a time that is considered stressful and detrimental to health and economic well-being.

These findings may be to some degree regarded as surprising and counterintuitive. After all, why does one who is more strongly affected by a pandemic than others, even in terms of survival-related risks (e.g., health), fail to recognize this strong manifestation of risk inequality? There are indeed many situations in which the disadvantaged feel a sense of relative deprivation, which may trigger strong forms of individual and collective action such as protest (e.g., Pettigrew, 2016; Smith et al., 2012). However, our findings suggest this is not the case. Instead, even when underprivileged, individuals in some conditions have a tendency to justify current social systems (Jost, 2017). Indeed, the present findings are consistent with previous studies demonstrating that even those who are underprivileged internalize inequality and endorse system justification to a surprisingly high degree (Jost, 2017, 2019; Osborne et al., 2019). Such tendencies can be strong even if they lead to a further decline in one's own health and economic well-being. As such, the present findings provide a strong illustration of system justification during the early stages of COVID-19 in China.

Notably, the relationship between social class and system justification has been debated with inconsistent results (e.g., Brandt, 2013; Brandt et al., 2020; Caricati & Lorenzi-Cioldi, 2012). Our research did not aim to solve this debate; however, it might provide some new insights. First, our results were obtained by measuring objective aspects of social class, and found that objective class is negatively related to system justification. One might suggest that the inconsistent results on class and system justification could result from the way social class is measured (Van der Toorn et al., 2015; see also Buchel et al., 2021; Li, Yang, et al., 2020). Second, our research was conducted during the COVID-19 pandemic, which makes the need to manage uncertainty more salient, and as a result, would increase system justification. Indeed, even though our research was conducted once the pandemic was under control in China, participants reported a much higher level of system-justifying beliefs ($M = 6.04 \pm 1.08$) than Li, Yang, et al.'s, (2020) research conducted in China before the pandemic

($Ms \leq 4.50 \pm 1.10$). We suggest that the negative association between objective social class and system justification might be more salient in life-threatening situations, such as in the context of a pandemic, given that lower-class individuals face considerably more risks and threats. Furthermore, beyond our aims for the current study, perceived risk inequality may alternatively help to explain the link between objective social class and system-justifying beliefs. The disadvantaged individuals might perceive less risk inequality given their limited access to information (e.g., news sources, social media), thereby considering the current system as more just, than the advantaged. Notably, the effect of inequality on system-justifying beliefs remains ambiguous (Buchel et al., 2021; Jost et al., 2004), and future research can be conducted in this direction to clarify the alternative explanation described above.

In addition, we also found that people in general reported much lower levels of perceived risk inequality of health (i.e., COVID-19 infection and cure) than of economic well-being. Despite the evidence that the economically disadvantaged suffered more with regard to both health and economic well-being, participants tended to view the risk to health as more equal between rich and poor than the risk to economic well-being. The optimistic estimation of health risk inequality may be seen as due to individuals' equal opportunity of treatment (e.g., free testing and health check-ups, free treatment for patients infected by COVID-19) offered by the government (Peng et al., 2020). Moreover, compared with risk factors of economic well-being, risk factors of health during the COVID-19 pandemic were much more uncontrollable for most of us, which would also help people to view COVID-19 as an equal disease between rich and poor.

The findings have important implications. First, the asymmetrical distribution of risk reported in the current research suggests that lower-class individuals deserve special attention during and after a public health disaster. Furthermore, policymakers should provide more equal opportunities to access health care services and post-disaster recovery resources for the disadvantaged (Zhao et al., 2020). Second, our findings shed light on the pressing issue of social inequality (Wilkinson & Pickett, 2017). Particularly, this study is noteworthy because disaster damage results in the disadvantaged becoming even poorer, thus aggravating the inherent inequality within the social structure (Tierney, 2007). Finally, although system justification may help people cope with threat and uncertainty under the pandemic (Yam et al., 2020), we also found that system justification can make people blind to risk inequality, which might hinder social change that would lead to establishing equality in the first place (Jost et al., 2019). Thus, in light of the "double-edged sword" effect of system justification, future research on practical interventions is needed to take advantage of its psychological value, and to overcome its negative social consequences.

Finally, limitations and avenues for future research should be outlined. Significantly, besides the explanation of system justification, the Chinese cultural belief about adversity (e.g., the belief that hardship increases stature) among the disadvantaged is also worth considering in the future (Shek et al., 2003). This belief would help increase one's life satisfaction when facing disaster (Huang et al., 2014), which may make lower-class individuals blind to risk inequality as well. Second, as a common practice in prior research, the measure of system justification employed in the current research has been widely used to reflect individuals' preference and support for the social status quo (Jost, 2019). However, there is no denying that this measure may fail to capture the motivational construct as originally described by system justification theory. Given the implicit nature of system justification (Jost et al., 2004), future research may employ implicit methods to measure this belief (Liviatan & Jost, 2014). Lastly, the majority of the participants in our research attained a relative higher educational background (i.e., junior college graduation or higher). A reason for this sampling outcome may be our use of online survey methodology requiring a certain level of network resources and intelligence, which may have limited people with lower education backgrounds from participating. Future research would benefit from examining the generalizability of our findings to more educationally diverse populations.

Concluding remarks

Decades of research in the social and behavioural sciences has revealed that people are very sensitive to violations of equality. These may lead not only to attempts to restore equality, but also to feelings of distress and hostility toward those responsible for the inequality. However, the present research, with the participation of over 1,000 Chinese citizens, has painted a different picture. Even though individuals from lower social classes face a stronger threat from COVID-19 when compared to individuals of higher social classes, it is also true that their beliefs about risk inequality are very different: Individuals from lower social classes believe that inequality is less pronounced than do those from higher social classes. This raises numerous questions. What aspects make individuals from lower social classes blind to risk inequality, especially when they face concrete consequences of this inequality in the future? Why do they tend to justify the system that violates equality, and that poses relatively greater risks to them? One conclusion becomes increasingly clear:

People in different parts of the world do not always see inequality, and therefore do not always recognize the need to restore equality, even if they suffer from it themselves.

Conflict of Interest

The authors declare they have no conflicts of interest.

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Author Contributions

Yue Zhang: Conceptualization; data curation; formal analysis; investigation; methodology; writing – original draft; writing – review and editing. **Yi Ding:** Conceptualization; methodology; writing – review and editing. **Xiaona Xie:** Formal analysis; investigation; writing – review and editing. **Yongyu Guo:** Conceptualization; funding acquisition; project administration; writing – review and editing. **Paul A. M. van Lange:** Conceptualization; writing – review and editing.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Research Materials Statement

The description of research materials from this study is available in the Supplementary online material.

Pre-Registration Statement

The study was not pre-registered.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website.

End notes

[1] There have been no new confirmed cases caused by local transmission in mainland China for five consecutive days up till 23 March 2020, for the first time since the outbreak began (Ainslie et al., 2020), which indicates that the COVID-19 was under control in most provinces in China.

[2] Since one reverse scoring item showed a very poor item-total correlation and diminished the internal consistency of the scale, we removed it and raised the coefficient alpha of the measure from .58 to .81. Thus, the final questionnaire had two items.

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