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Relative deprivation and social anxiety among Chinese migrant children

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Abstract:	To examine the relationship between relative deprivation and social anxiety, which affects mental health, and investigate the mediating role of perceived control and the moderating role of belief in a just world (BJW) in an understudied population in Asia, we surveyed 1,573 rural-tourban migrant children (48% female; Mage = 12.3, SD = 1.7) in southeast China. Relative deprivation was positively correlated with social anxiety; perceived control partially mediated this connection. Moreover, BJW moderated the indirect effect, which was stronger for male migrant children with lower levels of BJW. The limitations and practical implications of this study are discussed.

Relative deprivation and social anxiety among Chinese migrant children: Testing a moderated mediation model of perceived control and belief in a just world

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1 Relative deprivation and social anxiety among Chinese migrant

2 children: Testing a moderated mediation model of perceived

3 control and belief in a just world

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To examine the relationship between relative deprivation and social anxiety, which affects mental health, and investigate the mediating role of perceived control and the moderating role of belief in a just world (BJW) in an understudied population in Asia, we surveyed 1,573 rural-to-urban migrant children (48% female; $M_{age} = 12.3$, $SD = 1.7$) in southeast China. Relative deprivation was positively correlated with social anxiety; perceived control partially mediated this connection. Moreover, BJW moderated the indirect effect, which was stronger for male migrant children with lower levels of BJW. The limitations and practical implications of this study are discussed.

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Keywords: anxiety; adolescence; perceived control; moderator; mediator

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Introduction

Migration has been recognized as a global problem of the early 21st century (Beine et al., 2019). International migration is the movement of people across international borders for various purposes, one of them being seeking a better quality of life. International migrants change their usual place of residence from one country to another (Rees, 2009). Unlike international migration, in China, rapid economic development and urbanization have led to an increasing number of rural inhabitants migrating within the country to other regions—particularly to urban areas—to find employment and gain access to better education

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and living conditions (Chen et al., 2014). Thus, migration in China is largely internal—specifically, rural to urban, not movement across national borders. Recent statistics indicate that the number of migrants in China in 2020 reached 376 million, including 14 million internal migrant children (who had left their rural homes to live in urban areas with their parents; National Bureau of Statistics, 2021). Such rural-to-urban internal migrants within China are the subject of this research.

Owing to differences in culture, values, lifestyles, and family socioeconomic status

between urban and rural regions, internal migrant children often encounter social exclusion, prejudice, and discrimination as they adjust to city life (Chen et al., 2009; Jiang & Ngai, 2020). Specifically, when rural-to-urban internal migrant children arrive in their new urban settings, they often find that their peers dress more stylishly, speak with different accents, use unfamiliar slang, enjoy unfamiliar activities, and so on; they also may find themselves lagging in certain subjects at school (Guo et al., 2015). In addition, their new peers may see the ways they dress and speak and their lack of familiarity with things “everyone knows” as “backward” and treat them as less than welcome (Han et al., 2020; Wang & Mesman, 2015; Wang et al., 2016). Hence, migrant children may experience feelings of what has been termed “relative deprivation.” Relative deprivation refers to a subjective cognition and emotional experience in which an individual or group perceives itself to be in a disadvantageous position through horizontal comparisons (those between one individual and another) or vertical comparisons (a

person's current state compared to his past or future state) with the reference group (Wang, 2007), which leads to negative emotions such as anger and dissatisfaction (Crosby, 1976; Smith et al., 2012; Stouffer et al., 1949).

Furthermore, relative deprivation must be distinguished from absolute deprivation.

Absolute deprivation, also known as actual deprivation, refers to the objective state in which

the most basic living needs of some individuals or groups cannot be met due to lack of food,

water, shelter, etc. (Su et al., 2016). Previous studies have shown that absolute deprivation

directly affects children's health (Goode & Mavromaras, 2014; Lee, 2021; Okuzono et al., 2019).

However, when basic needs are met, absolute deprivation may have less impact

(Yngwe et al., 2003). In recent years, with the successful completion of poverty alleviation in

China, migrant children's basic life needs (e.g., food, clothing, housing, and transportation) have

been met (Xi, 2021); that is, they tend to experience less absolute deprivation but more relative

deprivation. Therefore, they may think their socioeconomic status and education level

are inferior to those of urban children, which, in turn, may affect their mental health. At the

same time, research has shown that individual relative deprivation still affects health behavior

even when absolute deprivation is controlled (Lhila & Simon, 2010). Therefore, even though

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36 58 actual deprivation may affect health, relative deprivation is also important, and it is necessary
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38 59 to explore the effects of relative deprivation on mental health (Gerry, 2005).
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41 60 Both internal and international/external migration can be a risk factor for a broad range 42
43 61 of mental health problems (e.g., anxiety, depression, and loneliness) among migrant
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46 62 populations (Diler et al., 2003; Dogra et al., 2011;Oppedal & Røysamb, 2004). According to a
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48 63 meta-analytic review by Smith et al. (2012), individuals who experience relative deprivation 49
50 64 may also experience more negative emotions, such as anger and resentment, that may
65 accentuate mental health problems (Abrams & Grant, 2012; Adjaye-Gbewonyo & Kawachi,
66 2012; Callan et al., 2015; Mishra & Carleton, 2015; Mishra & Meadows, 2018; Saito et al.,

67 2014) such as anxiety (Eibner et al., 2004; Lhila & Simon, 2010). Studies have consistently
8 68 observed that social anxiety is among the most common forms of anxiety in the general
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10 69 population (Costello et al., 2005; Fernández et al., 2018). Social anxiety is defined as typically
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experiencing intense fear of others' evaluations of social interactions (American Psychiatric

Association, 2013; Morrison & Heimerg, 2013). Social anxiety tends to develop into a chronic, unremitting condition without effective intervention (Hearn et al., 2016).

Consequently, it is important to examine the risk and protective factors and how they place migrant children at risk of social anxiety.

Relative deprivation theory (Mummendey et al., 1999) shows that the core process underlying the development of relative deprivation is social comparison (Appelgryn & Bornman, 1996; Kim et al., 2018). In particular, this comparison seems to affect people cognitively, causing feelings of anger and resentment; it may also lead to negative self-evaluation (Kuo & Yang, 2019; Osborne et al., 2015). According to the cognitive self-assessment model of social anxiety, the root of social anxiety lies in negative self-evaluations after social interactions (Amiri et al., 2017; Heinrichs & Hofmann, 2005; Iverach et al., 2017). Furthermore, empirical studies have observed that relative deprivation is positively related to anxiety (Jia et al., 2009; Zenses et al., 2019), and social comparison (the core component of relative deprivation) is significantly associated with social anxiety (Mitchell & Schmidt, 2014; Qiu et al., 2017; Tong et al., 2017). Therefore, we hypothesized that relative deprivation would positively correlate with social anxiety in migrant Chinese

children (Hypothesis 1).

Although previous studies have demonstrated that relative deprivation is significantly

correlated with anxiety (Mishra & Novakowski, 2016), the underlying mediating and

moderating processes in this relationship remain unclear. Therefore, we tested a moderated

mediation model using relative deprivation as the independent variable, perceived control as a

mediator, BJW as a moderator, and social anxiety as the dependent variable in a sample of

Chinese migrant children. As significant sex differences have been observed in relative

deprivation (Leviston et al., 2020), social anxiety (Asher & Aderka, 2018; La Greca et al.,

2014), and perceived control (Bhanji et al., 2016), we also sought to explore whether sex was

related to significant differences in these mediating and moderating effects.

Mediating Role of Perceived Control

Perceived control may be involved in the association between relative deprivation and social

anxiety. It refers to the extent to which people feel that they are able to predict, explain, and influence the occurrence and development of events relevant to their lives and objectives (Burger, 1989; Krumm & Corning, 2010; Ly et al., 2019). Given that perceived control is one of the most basic psychological needs of human beings (Erikson, 1963; Williams, 2007), it is important for individual survival and development. A lack of a sense of control can cause psychological problems such as post-traumatic stress (Flores et al., 2020), mood disorders (Rosenbaum et al., 2012), and panic disorders (White et al., 2006). For internal migrant children, the family move itself may have eroded perceived control, as they individually may not have wished to make it, and the unfamiliar social settings into which they are plunged on arrival may erode it further, especially when they perceive themselves to be relatively deprived of social and/or academic skills, and/or material advantages (Greitemeyer & Sagioglou, 2017; Marmot et al., 1997).

Furthermore, the etiological model of anxiety by Chorpita and Barlow (1998) suggested that a lack of perceived control plays a major role in the development of anxiety (Epkins & Heckler, 2011). Perceiving oneself as having a low degree of control over stressful

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13 114 life events can lead to general psychological vulnerabilities that are more likely to induce
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15 115 anxiety (Barlow, 2002; Gallagher et al., 2014). Additionally, encountering unfamiliar social
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17 116 situations can threaten anyone's perceived control, and individuals vulnerable to anxiety
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20 117 maybe especially prone to experience difficulty in shrugging off single interactions that go
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22 118 less than optimally; over time, these effects may accumulate and generate social anxiety
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24 119 (Hofmann, 2005). In the past few decades, perceived control has been recognized in the 25
26 120 literature as a general psychological vulnerability factor (Bentley et al., 2012). Specifically, a
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29 121 growing body of studies has indicated that perceived control is associated with general anxiety
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31 122 disorders (Stapinski et al., 2010; Vujanovic et al., 2010) and social anxiety (Kaur, 2017; Korte
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33 123 et al., 2015; Ren & Li, 2020).

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36 124 Moreover, relative deprivation theory, which provides a conceptual framework for the
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39 125 association between relative deprivation, perceived control, and social anxiety, points out that
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41 126 perceived control is an important mediating variable in the influence of relative deprivation on
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43 127 an individual's mental health (Crosby, 1976; Price et al., 2002). Mediation by perceived
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control in the relationship between relative deprivation and social anxiety has also been suggested by the cognitive theory of stress and coping by Lazarus and Folkman (1984). The theory holds that when people perceive relative deprivation, a series of adverse psychological adaptations may occur but can be buffered by the positive factor of a sense of control (Ursin, 2009; Wang & Delgado, 2021). Moreover, prior studies have supported the etiological model

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of childhood anxiety, finding that perceived control plays an intermediary role in the family environment and child anxiety (Chorpita et al., 2016; Scott & Weems, 2010). Although relative deprivation is not a “family environment,” it is part of the social environment (Pettigrew, 2016). Therefore, perceived control may also act as an intermediary between anxiety and the social environment. In view of the above, we investigated whether perceived control plays an intermediary role between relative deprivation and social anxiety in migrant children (Hypothesis 2).

Moderating Role of Belief in a Just World

Although relative deprivation may affect migrant children’s perceived control and social

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142 anxiety, all migrant children may not be equally vulnerable. Thus, it is necessary to consider
143 moderators that may affect the relationship between relative deprivation and perceived control
144 and/or between relative deprivation and social anxiety. Belief in a just world refers to people's
145 prevailing faith that the world is "just" in recognizing people's efforts, skills, and merits
146 (Lucas et al., 2009; Mendonça et al., 2016). Evidence indicates that BJW helps individuals
147 cope with threats and incidents of injustice and work to rectify injustice; thus, it is an
148 important personal resource and psychological buffer for maintaining good mental health
(Khera et al., 2014; Zhou & Guo, 2013). Furthermore, according to the justice motive theory
149 by Dalbert (2001), belief in a just world provides a psychological advantage by giving people
150 a sense of meaning, predictability, and control over their lives. In other words, as empirical
151 studies have shown, BJW is positively correlated with perceived control (Testé & Perrin, 2013; Zhang et al., 2018).

154 The model of conservation of resources (Hagger, 2015; Hobfoll, 1989) proposes that

when someone is under pressure or threat, the strategy of introducing resources is usually

employed to buffer the pressure and threat so that people can regain a sense of control and reach the state of conservation. Dalbert (2001) specified that individuals with a strong BJW might have a relatively lower sense of injustice resulting from adverse circumstances. Specifically, BJW can help disadvantaged groups effectively cope with negative events in their lives (Zhang et al., 2015; Zhou & Guo, 2013). Therefore, BJW may alleviate the adverse effects of relative deprivation on adolescent outcomes. Moreover, the theory of compensatory control (Kay et al., 2009) indicates that a person's sense of control is threatened and reduced in disordered, uncertain, and unfamiliar environments. Belief in a just world can foster perceived control because it suggests that the world will only "punish" when some "wrong" has been committed, and it will "reward" appropriately constructive actions, so one's efforts to avoid the former and pursue the latter should have the expected results (Ucara et al., 2019). Existing research has shown that BJW can moderate the adverse effects of relative deprivation on mental health (Osborne & Sibley, 2013). For example, a recent study conducted by Xiong and Liu (2020) indicated that BJW moderated the relationship between relative deprivation and depression in Chinese left-behind children⁰, with this effect being stronger for participants

⁰ The term "left-behind children" refers to children under 18 years old whose parent(s) have left (one or both parents have migrated to other places for work), but the children have stayed at their original residences; the term

171 with lower scores for BJW. Based on the above, we hypothesized that the indirect effect of
172 relative deprivation on social anxiety would be moderated by BJW (Hypothesis 3).

173 *The Current Study*

174 In this study, we explored the mechanisms underlying the association between relative

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175 deprivation and social anxiety among Chinese migrant children. We also explored whether
176 any mediating and moderating effects had significant sex differences. Previous mainstream
177 psychology research has been criticized as overly focused on American, British, or Globally
178 Northern samples. Specifically, while 11% of the world's population is represented in top
179 psychology journals, nearly 89% continues to be neglected (Arnett, 2008). The majority of
180 published studies and their included samples still sorely lack global representation in their

applies to such children if they have not lived together with their parent(s) for at least six months (Guo et al., 2017; Wu et al., 2019).

evidence base, as 89% of the population is represented in only 4%–5% of the samples of

published studies (Thalmayer et al., 2021). As the world's most populous country, China belongs to this neglected 89% (National Bureau of Statistics, 2021).

Rationale

Overall, the current study has the following potential contributions. First, this research

contributes to rectifying the disparity in the literature by enhancing the diversity of

psychological research samples, such as including more research, such as this study, with

Chinese samples. Second, we designed the study such that the conclusions can be extended to

other countries experiencing lifestyle changes related to rapid urbanization to provide

references for reducing psychological problems such as social anxiety among migrant

children. Although there are differences between internal migrant children and international migrant children, both groups encounter social discrimination and experience a range of medical, educational, and health inequities. These inequalities pose a serious threat to the

physical and mental health of migrant children. Third, most previous studies have only

explored the relationship between relative deprivation and anxiety in general; they have not

focused on social anxiety, although it is one of the most common specific anxiety types

(Eibner et al., 2004). Moreover, previous studies may have investigated the relationship among these variables separately, but we built a moderating mediation model to integrate several different variables; this approach is conducive to exploring the processes by which these variables impact social anxiety.

To achieve these goals, provide guidance to improve the lives of migrant children in China, and contribute to the global psychology research literature, we explored three hypotheses. Specifically, we examined a moderated mediation model (see Figure 1) to test three hypotheses: (i) relative deprivation is positively correlated with social anxiety in migrant Chinese children (Hypothesis 1); (ii) perceived control plays an intermediary role between relative deprivation and social anxiety (Hypothesis 2); and (iii) the indirect effect of relative deprivation on social anxiety is moderated by BJW (Hypothesis 3).

{INSERT FIGURE 1 HERE}

Methods 36 209

210 *Participants and Procedures*

211 This study was approved by the Ethical Committee of Academic Research at the
212 corresponding author's institution and funded by grants from the National Office for
213 Education Sciences Planning of China and from Humanities and Social Sciences Research
214 Project of Hubei Provincial Department of Education. We recruited participants from three
215 primary schools and three junior high schools in Fuzhou, Xiamen, and Quanzhou, three
216 coastal cities in southeast China. Based on previous research (Chen et al., 2014), our eligibility
217 criteria for migrant children were that they had (i) been born in rural regions, without urban

218 *hukou* (permanent urban household registration) at birth; (ii) accompanied their parents to the
219 destination cities; and (iii) been living in their destination cities for more than six months.

220 Questionnaire surveys in a paper-and-pencil format were conducted in different
221 classrooms during the 30-minute class period. In each classroom, two trained psychology
222 graduate students administered the surveys, answered questions, and monitored the

participants' progress. After completing the questionnaire, each participant was given a 19 ballpoint pen as a gift. The final sample consisted of 1,573 migrant children, with a mean age of 12.3 years ($SD = 1.7$, range 10–15). Of the total, 812 (51.6%) were male, and 761 (48.4%) were female, 962 (61.2%) were from primary schools, and 611 (38.8%) were from junior high schools. All the participants and their parents or legal guardians provided informed consent before the survey.

In terms of the educational background of migrant children's parents, 343 (21.8%) reported that their fathers had primary school education or below, 743 (47.2%) reported junior high school education, 369 (23.5%) reported senior high school education, and 118 (7.5%) reported college education or above. In addition, 560 (35.6%) mothers had primary school education or below, 658 (41.8%) had junior high school education, 261 (16.6%) had senior high school education, and 94 (6.0%) had a college education or above. Regarding family economic status, 265 (16.8%) of the participants had an average monthly household income of less than 2,000 yuan, 712 (45.3%) between 2,000 and 5,000 yuan, and 596 (37.9%) had more

237 than 5,000 yuan.

238 ***Measures***

239 *Relative Deprivation*

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240 Relative deprivation was measured using the Relative Deprivation Scale for Migrant Children

241 (RDS-MC; Ye & Xiong, 2017). This scale includes four dimensions: cognitive appraisal of

242 individual RD, emotional response to individual RD, cognitive appraisal of group RD, and

243 emotional response to group RD. It consists of 20 items (e.g., “What do you think of your

244 family’s economic status compared to that of your urban counterparts?”; “How satisfied are

245 you with this situation?”) and measures five aspects of migrant children’s current situation

246 (family economic status, housing conditions, residential stability, development of personal

247 strengths, and parental involvement in education). The cognitive dimensions range from 1

248 (*very good*) to 7 (*very bad*), and the emotional dimensions range from 1 (*very satisfied*) to 7

249 (*extremely unsatisfied*). Higher scores represent higher levels of RD.

250 This scale has been used in previous studies with good reliability and validity (Xiong

& Liu, 2020; Xiong, Liu, & Ye, 2021; Xiong, Xiao, & Ye, 2021; Ye & Xiong, 2017). The data of this study showed that the fit indices of the scale were acceptable (CFI = .92, TLI = .92, $\chi^2/df = 4.49$, SRMR = .067; Schumacker & Lomax, 2010; Wen et al., 2004). The RDS-MC showed good internal consistency reliability ($\alpha = .92$) in the current study.

Perceived Control

We used the perceived control scale (Pearlin & Schooler, 1978) to evaluate the level of perceived control in migrant children. The scale includes seven items (e.g., “I have little control over the things that happen to me;” “I often feel helpless while dealing with the problems of life”). Participants responded on a four-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Higher scores indicate higher levels of perceived control. This scale has been used in previous Chinese samples, with good reliability and

validity (Liu & Shen, 2009; Xiong & Liu, 2020). The data of this study showed that the fit

indices of the scale were good (CFI = .95, TLI = .94, $\chi^2/df = 3.21$, SRMR = .030). In the

present study, Cronbach's α for the scale was .72.

Belief in a Just World

We used the Chinese version of the Belief in a Just World Scale (BJWS; Dalbert, 1999; Su et al., 2012). It includes two subscales with a total of 13 items: belief that the world treats them

justly (e.g., "I believe that most of the things that happen in my life are fair") and belief that

the world generally treats everyone justly (e.g., "I am convinced that people are compensated

for injustices in the long run"). Participants responded on a five-point Likert scale ranging

from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating stronger BJW.

This scale has been used in previous studies with good reliability and validity (Jia et al., 2020;

Li et al., 2018; Liu et al., 2020; Song, 2018), and the data of this study showed that the fit

indices of the scale were good (CFI = .98, TLI = .97, $\chi^2/df = 3.25$, SRMR = .044). In the

current study, Cronbach's α for the scale was .88.

Social Anxiety

277 We assessed migrant children's social anxiety using the Chinese version of the Social Anxiety
278 Scale for Children (SASC; LaGreca et al., 1988; Ma, 1993). It includes 10 items loading on
two factors: fear of negative evaluation (e.g., "I worry about doing something new in front of
the other kids") and social avoidance and distress (e.g., "I only talk to kids that I know really
well"). Participants responded on a Likert scale ranging from 1 (*never*) to 4 (*always*), with
higher scores indicating higher levels of social anxiety. This scale has been used in previous

studies with good reliability and validity (Guo et al., 2017; Li et al., 2020; Xiong, Liu, & Ye,
2021). The data of this study showed that the fit indices of the scale were good (CFI = .97, TLI
= .96, $\chi^2/df = 2.85$, SRMR = .047). In this study, Cronbach's α for the SASC was .88.

Statistical Analyses

All statistical analyses were conducted using the IBM SPSS for Windows, version 25.0 (IBM
Corp., Armonk, NY, IBM Corp.). For the final data analysis, we processed the missing values

289 according to the mean method (Acock, 2012; Deng et al., 2019; Noor et al., 2014). We first
290 calculated descriptive statistics and variable correlations. Then, we used Model 4 of the
291 PROCESS macro (Hayes & Scharkow, 2013) to test the mediation effect and Model 7 to test
292 moderated mediation. This macro was developed to test complex models, including both
293 mediators and moderators, and has been used extensively in previous research (Yang et al.,
294 2019; Zhang & Wang, 2020). In addition, we examined whether these mediating and
295 moderating effects differed significantly by sex. Finally, we assessed potential common
296 method bias using Harman's single factor test for all research items (Podsakoff et al., 2003; 38
297 Podsakoff et al., 2012). It indicated ten distinct factors with eigenvalues greater than one, with
298 the largest factor accounting for 20.24% of the total variance, which was less than the
299 threshold level of 40% (Zhou & Long, 2004). Therefore, we concluded that no common
300 method bias was apparent in the present study.

301 *Data Sharing Statement*

302 The de-identified data set containing all variables used in the analyses, syntax file, and log
303 files will be available on the journal's Figshare repository.

Results

Preliminary Analyses

Descriptive statistics and Pearson correlation matrix are presented in Table 1. As

hypothesized, relative deprivation was positively correlated with social anxiety ($r = .15, p < .01$) and negatively correlated with perceived control ($r = -.15, p < .01$) and BJW ($r = -.37, p < .01$). Perceived control was positively correlated with BJW ($r = .25, p < .01$) and negatively correlated with social anxiety ($r = -.37, p < .01$). Belief in a just world was negatively correlated with social anxiety ($r = -.18, p < .01$). The key variables were moderately correlated. Independent samples t -tests (see Table 2) showed that only social anxiety had a significant sex difference ($t = -2.04, p < .05$, Cohen's $d = .099$). Specifically, the social

anxiety of females was significantly higher than that of males.

{INSERT TABLES 1 AND 2 HERE}

Testing the Mediation Model

As the preliminary results of the mediation analysis showed no difference by sex, we did not group by sex in the final selection of the mediation analysis. After controlling for age and sex, as shown in Table 3, relative deprivation was positively associated with social anxiety ($B = .14, t = 5.41, p < .001, 95\% \text{ CI } [.09, .19]$) and negatively associated with perceived control ($B = -.14, t = -5.24, p < .001, 95\% \text{ CI } [-.19, -.09]$). Perceived control was negatively associated with social anxiety ($B = -.36, t = -15.27, p < .001, 95\% \text{ CI } [-.41, -.31]$). Furthermore, relative deprivation was still positively associated with social anxiety ($B = .09, t = 3.75, p < .001, 95\% \text{ CI } [.04, .14]$) when both relative deprivation and perceived control were included in the model, suggesting that perceived control partially mediated the relationship between relative deprivation and social anxiety (indirect effect = .05, $SE = .01, 95\% \text{ CI } [.03, .07]$). Specifically, the mediating effect accounted for 36% of the total variance. Thus, Hypotheses 1 and 2 were supported.

{INSERT TABLE 3 HERE}

Testing the Moderated Mediation Model

We divided the data of migrant children into two groups according to sex (male and female groups), in consideration of their differences, and investigated their moderating effect separately. The results showed significant sex differences; namely, the moderating effect of B JW was significant for males but not for females. The results of the moderated mediation analysis of male migrant children are shown in Table 4. We observed that the relationship between relative deprivation and perceived control was moderated by B JW ($B = .10, t = 2.97, p < .01, 95\% \text{ CI } [.03, .16]$). We conducted simple slope analyses (Aiken & West, 1991) separately for low (1 SD below the mean) and high (1 SD above the mean) levels of male migrant children's belief in a just world to test and illustrate the moderating effect more clearly. As shown in Figure 2, the negative effect of relative deprivation on perceived control was stronger for male migrant children with lower scores for B JW ($\beta_{\text{simple slope}} = -.18, t =$

-3.40, $p < .001$) than for those with higher scores for BJW ($\beta_{\text{simple slope}} = .03$, $t = .49$, $p > .05$).

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{INSERT TABLE 4 AND FIGURE 2 HERE}

Moreover, the conditional indirect effect test indicated that the indirect effect of

relative deprivation on social anxiety through perceived control was moderated by BJW. Specifically (see Table 4), for male migrant children with lower scores for BJW, relative deprivation significantly affected social anxiety through perceived control ($B = .06$, $SE = .02$, $p < .01$, 95% CI [.02, .10]). However, for male migrant children with a stronger BJW, this indirect effect was non-significant ($B = -.008$, $SE = .02$, $p > .05$, 95% CI [-.05, .03]).

Therefore, Hypothesis 3 was supported, a moderating effect was found only in male migrant children. Figure 3 intuitively describes the moderated mediation model and its key path coefficients for male migrant children.

{INSERT FIGURE 3 HERE}

We constructed a moderated mediation model to test three hypotheses regarding the psychological processes underlying the relationship between relative deprivation and social anxiety in Chinese children whose families had migrated from rural areas to urban areas within China. Perceived control mediated the relationship between relative deprivation and social anxiety, and this relationship was moderated by BJW.

Discussion

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359 moderating effect of just-world beliefs was significant only in male migrant children.

360 Specifically, the indirect effect of relative deprivation on social anxiety via perceived control
was greater for male migrant children with lower scores for BJW than for those with higher

362 scores. These findings promote our understanding of how and when relative deprivation was

363 associated with migrant children's social anxiety.

364 When migrant children from rural areas to urban areas in China experience upward

365 social comparison, namely, when comparing themselves to non-migrant children,
migrant

children may perceive that they are in a disadvantaged position and experience inequality;
hence, they are prone to anger, dissatisfaction, and other negative emotions (Lan et al., 2020).
Therefore, they believe that the world is uncontrollable and that there is nothing they can do to
change the inequalities, and finally appear to have social anxiety. Consistent with previous
studies (Asher & Aderka, 2018; MacKenzie & Fowler, 2013; Wu et al., 2019), we observed
that female migrants experienced more social anxiety than male migrants, and females tended
to deal with problems less directly than males (Dou et al., 2021), which made them more
likely to experience social anxiety symptoms such as avoidance and withdrawal (Panayiotou,
2017). For male migrant children, when scores for BJW were high, that is, if they believed that
the world was fair and controllable, their sense of justice in the world could have been a
protective buffer against the adverse effects of disadvantage. Therefore, disadvantages did not
reduce the sense of control and contribute to social anxiety. However, for female migrant
children, being disadvantaged, whether the world was believed to be just or not, could have
contributed to social anxiety by reducing feelings of control.

The results of this study reveal a significant positive correlation between relative
deprivation and social anxiety, meaning that children who felt more disadvantaged since

migrating to urban areas of China also felt more socially anxious. This finding was consistent with prior studies showing that relative deprivation was positively correlated with anxiety (Jia et al., 2009; Lhila & Simon, 2010; Mishra & Novakowski, 2016). This finding is also congruent with social comparison theory (Festinger, 1954; Hu et al., 2021). Relative deprivation results from social comparisons where individuals compare themselves to those who are better off but pay little attention to those who are worse off (Kim et al., 2017;

Runciman, 1966). As a result, these negative comparisons may lead to stress and anxiety (Mitchell & Schmidt, 2014). Previous research also supports the possibility that the experience of relative deprivation may “trap” people in patterns of thought that contribute to the symptoms of anxiety (Nadler et al., 2020). Our study focused on social anxiety, a typical anxiety symptom, and found a consistent relationship between relative deprivation and social anxiety, further verifying and extending findings from previous relevant studies.

Our models indicated that relative deprivation was both directly and indirectly

associated with social anxiety through the mediating role of perceived control. Previous studies have indicated that perceived control is an important mediating variable in the relationship between relative deprivation and mental health. For instance, recent research indicated that the relationship between relative deprivation and depression in left-behind children was partially mediated by perceived control (Xiong & Liu, 2020). Regarding the first part of the mediation effect, higher levels of relative deprivation were associated with lower levels of perceived control in migrant children, which is consistent with the findings of prior studies (Moore, 2003; Xiong & Liu, 2020). Specifically, migrant children with higher levels of relative deprivation were more likely to experience negative emotions. Perhaps the negative emotions generated by unreasonable social comparisons led the individual to pay more attention to their present negative emotional states, which induced a decrease in perceived control (Ward & Mann, 2000). In terms of the second part of the mediation effect, higher levels of perceived control were associated with lower levels of social anxiety among migrant children, which is again consistent with prior studies (Stapinski et al., 2010; Vujanovic et al., 2010). This finding suggests that people with higher levels of perceived control may have a

higher sense of self-efficacy, easily adapt to their social environments, and experience less stress (Shek & Lee, 2006; Zhou et al., 2012), which, in turn, might lead to fewer mental health problems (e.g., social anxiety; Rosenbaum et al., 2012).

Our models also indicated that the relationship between relative deprivation and social anxiety via perceived control was moderated by BJW. However, this moderating effect was only significant in the group of male migrant children. Specifically, the relationship was stronger for male migrant children with a low level of BJW. Thus, BJW appears to alleviate the indirect impact of relative deprivation on social anxiety through the mediation of perceived control. These results were consistent with previous studies observing similar protective roles of BJW in other facets of mental health such as anxiety, depression, psychological distress (Otto et al., 2006), life satisfaction (Tian, 2019), and subjective well-being (Khera et al., 2014).

Additionally, our results were consistent with the risk-protective model of resiliency,

and the strength of the relationship between risks and outcomes will depend on the presence of

protective factors, which weaken the adverse effects of risks on outcomes (Hollister-Wagner

et al., 2001; Zimmerman et al., 1999). Specifically, protective factors (e.g., strong belief in a

just world) may weaken the associations between risk factors (e.g., high relative deprivation)

and outcome variables (e.g., perceived control). In migrant children with a strong belief in a

just world, relative deprivation was not related to perceived control, whereas, for migrant

children with a weak or moderate belief in a just world, relative deprivation was negatively

associated with perceived control. This result not only confirms the buffering effect of

protective factors but also supports the theory of resource conservation (Hobfoll, 1989; Park et

al., 2014). When an individual is under pressure or in threatening circumstances (e.g., relative

deprivation), the strategy of introducing resources (e.g., BJW, a positive psychological

resource) is usually employed to buffer the pressure and threat so that the individual can

regain a sense of control (e.g., perceived control; Hobfoll, 1989; Chen et al., 2015).

There were sex differences in the moderating effect of BJW, as it was only significant

18 437 in males. In other words, for female migrant children, relative deprivation can influence their 19 20438
social anxiety through perceived control, regardless of the degree to which they believe in a
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23 439 just world. Feminist theories contend that, in contrast to men, women are taught from an early
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25 440 age that they have limited control over their environment (Lips, 2002; Zalta & Chambless, 26
27 441 2012). Their sense of loss of control may have been so ingrained that it could not be changed
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29 442 by the protective factor of just-world beliefs; thus, the moderating effect of just-world beliefs
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32 443 does not exist in female migrant children. In addition, social role theory holds that society has
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34 444 different expectations regarding sex and gender roles. For example, men are expected to be
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36 445 better at controlling their emotions and solving problems than women (Tiedens, 2001). Hence,
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39 446 even if they perceive that they are at a disadvantage, they cannot be immersed in such negative
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41 447 emotions and must strive to adopt adaptive cognitive emotion regulation strategies to eliminate 42 43
448 negative cognitions and solve problems (Duarte et al., 2015). Therefore, for them, the
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46 449 just-world belief is a protective factor for reconstructing the just-world perception, which
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48 450 reduces the adverse effects of relative deprivation on perceptual control, thereby reducing
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50 451 social anxiety.

452 *Limitations, Recommendations for Further Study, and Potential Practical Implications*

453 Despite our study's contributions to the existing literature on the relative deprivation

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454 construct in general and the recent common Chinese experience of children migrating
with

455 their parents from rural residency to urban residency, the results have limited generalizability.

456 We cannot show causal relationships beyond the particular study sample and the migrant

457 population; the practical implications of the results are also somewhat limited. First, and most

458 importantly, this was a cross-sectional study; therefore, it is impossible to do more than

459 speculate about causal relationships among the study variables or the likelihood that the

460 relationships are reciprocal and mutually mediating and moderating. There are substantial

461 individual differences in both the reasons for and reactions to migratory moves; there are also

462 substantial differences in pre-existing personal characteristics and circumstances in the rural 25

463 homes of origin. Therefore, longitudinal and experimental studies are required to assess those

464 pre-existing characteristics and situations and further clarify the associations among relative

465 deprivation, perceived control, belief in a just world, and social anxiety (Xiong & Ye, 2016).

More insights could also come from studies that include objective data about the family situation before and after the migratory move, such as children's school performance, family resources, parental reasons for making the move, and how they were communicated to the children while preparing for the move.

Second, all data were self-reported by the migrant children, whose varied age range may be related to the variations in their abilities to comprehend the item content reliably. In the future, multi-method and multi-informant assessments can be used to collect data (e.g., children, parents, and teachers; Guo et al., 2015).

Third, we only assessed internal migrant children and did not compare them with international migration or other rural-to-urban migration; hence, it is difficult to generalize our

observations beyond this group or improve the understanding of the particularities of the rural-to-urban migratory experience in childhood. Future studies should compare internal migrant children with natively urban children, continuously rural children, international

migrant children, or other rural-to-urban migration to further evaluate the findings of this study (Wang et al., 2017).

Fourth, our results showed that there is a moderate correlation between key variables. In the mediation analysis, the mediating effect value was .05, accounting for 36% of the total variance. The relationship between these variables is not strong, and future studies should consider using more appropriate measurement tools or experimental operations to verify our findings further.

Despite these limitations, our study results have several practical implications. First, the government should support the physical and mental health of migrant children by formulating policies to ensure that they have equal access to education, medical care, and other environments and relieve the factors related to inequality to reduce their sense of relative deprivation. For example, China is gradually removing the restrictions of the *hukou* system, and migrant children can go to the same school as urban children and enjoy the same education and medical treatment; all these are examples of efforts to achieve fairness. Nevertheless, as a result of their long exposure to injustice, migrant children may have developed a belief that the world is unfair. Therefore, even though the government has tried its

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best to provide an environment of equality, migrant children may still find it challenging to change their beliefs and perceptions of “unfairness” and enjoy the fruits of the government’s equity measures. The past objective disadvantages, and residual subjective disadvantages, may

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leave children with physical and mental damage. Therefore, based on the government’s

policies to make up for the past, schools and parents should (as much as possible) work to

make equality the children’s subjective and objective reality by guiding cognitive changes in

migrant children to shift their perception that the world “is never fair” to “is fair” and, to the

greatest possible extent, help them enjoy the fruits of equality, both in the objective

environment and their subjective cognition of “fairness,” as part of their healthy growth.

Specifically, schools can set up corresponding courses so migrant children can perceive the

government’s efforts for fairness and gradually begin to adopt the view that society is, indeed,

gradually becoming fair. In this “fair environment,” parents should also guide migrant children to make reasonable social comparisons, overcome perceived injustice, foster a sense of perceived control, and promote their mental health and development by reinforcing their sense of self-esteem.

Furthermore, the study results have several theoretical implications. First, the sample of Chinese migrant children in this study represents a bigger population largely ignored by mainstream psychology, as these children may face similar problems as migrant children in the US and other countries. For example, different from internal migration in China, in the US, the migrant children come from other countries. Structural and environmental racism may cause them to experience more discrimination in school and be vulnerable to bullying by native American children (Artiga & Ubri, 2017). At the same time, because some immigrant children do not have green cards, they may also encounter inequality in access to medical treatment, education, and other resources. In addition, while studying, immigrant children also must cope with the pressure of knowing their parents may, at some point, be deported, and the

increased pressure caused by deprivation in various aspects may lead to panic among

immigrant children, which may lead to psychological problems, such as depression and anxiety (Cohodes et al., 2021). Therefore, the mental health problems that migration can bring are universal, and this study of Chinese children is conducive to popularizing the research conclusions, bringing them into mainstream psychology, prompting further studies, and increasing the representativeness of samples. Second, it is helpful to extend the conclusions to other cultures experiencing lifestyle changes associated with rapid urbanization in the international context to provide references for reducing psychological problems—such as social anxiety—among migrant children. Third, previous studies have investigated the relationship between these variables separately, and some have explored the relationship between relative deprivation and anxiety more broadly, without focusing on social anxiety. However, in this study, we built a moderating mediation model to integrate different variables, which is conducive to exploring the common impact of these variables on social anxiety.

Additionally, the results of this study indicate some sex-related differences that may reflect the reality that, due to the very nature of sexism, females tend to have accurate views

on, and an understanding of, the existence of sexism, which affect their mental health in multiple ways. Sexism exists objectively, and actual sexism has been proven to affect women's mental health (Borrell et al., 2010; Hosang & Bhui, 2018). Simultaneously, perceived sexism also impacts their mental health, and research shows that depression scores were higher in surveyed women who reported experiences of perceived sexism than those who did not perceive sexism (Vigod & Rochon, 2020). Thus, the health effects of sexism, both actual and perceived, are highly relevant. Policies are needed to reduce actual sexism so that

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the negative impacts of perceived sexism will also be reduced and both females and males can adopt beliefs in a just world.

Conclusion

We included Chinese migrant children as participants to examine (a) the relationship between relative deprivation and social anxiety, (b) the mediating role of perceived control in this relationship, and (c) the moderating roles of BJW and sex differences. The study design is conducive to increasing the representativeness of Asian populations in research, enhancing the generalizability of the results of studies regarding migrant children, and providing evidence

supporting the diversity of mainstream psychology samples. Additionally, the variables we analyzed included the sense of relative deprivation and the feeling that one's circumstances are worse than those of others, which often leads to anger, resentment, and other negative reactions. We also examined perceived control—the extent to which people feel that they are able to predict, explain, and influence the occurrence and development of events in their lives and their objectives. Of the four variables analyzed, relative deprivation had a negative relationship with mental health, while high scores for perceived control and having beliefs in a just world were positively related to mental health. Finally, social anxiety was shown to be an important indicator of an individual's mental health. Thus, the variables examined in this study were closely related to health psychology.

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1936 **Table 1.** Descriptive statistics and correlations among key variables.

Variables	<i>Mean</i>	<i>SD</i>	1	2	3	4	5	6
1.Age	12.28	1.66	-					
2.Sex	.52	.50	-.004	-				
3.Relative deprivation	3.24	.95	.26**	-.001	-			
4.Perceived control	2.75	.48	-.09**	-.04*	-.15**	-		
5.Belief in a just world	4.17	.94	-.19**	-.03	-.37**	.25**	-	
6.Social anxiety	1.03	.71	.08**	-.05*	.15**	-.37**	-.18**	-

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1937 Note. $N = 1573$. * $p < .05$;
 1938 $< .01$.

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Table 2. Independent sample *t*-test of sex on key variables.

Variables	Male		Female		<i>t</i>	<i>p</i>	<i>Cohen's d</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>			
Relative deprivation	3.24	.93	3.24	.98	-.04	.970	.002
Perceived control	2.73	.49	2.77	.47	-1.69	.092	.083
Belief in a just world	4.14	.97	4.19	.91	-1.09	.275	.053
Social anxiety	1.00	.70	1.07	.71	-2.04*	.041	.099

Note. *N* = 1573. **p* < .05.

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Table 3. Testing mediation of perceived control between relative deprivation and social anxiety.

		Model summary					
Outcome(Y)	Predictors(X)	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>B</i>	<i>SE</i>	95% CI
SA		.17		.03	14.93** *		
							[-.002, .06]
							[-.004, .20]
PC		.16		.03	14.26** *	.03 .10*	[.09, .19]
	Age					.14** *	.02
	Sex	.39					[-.06, -.001]
SA	RD			.15		-.03*	.03
					71.13** *	.09	[-.01, .18]
	Age						.02
	Sex					-.14* **	[-.19, -.09]
	RD						.03
							.02
							[-.01, .05]
	Age					.13**	.01
	Sex					.09** *	[.04, .22]
	RD						.05
	PC					-.36* **	[.04, .14]
							.02
							[-.41, -.31]
Effect	<i>B</i>	Boot SE			Boot LLCI		Boot ULCI
Direct	.09	.02			.04		.14
Indirect	.05	.01			.03		.07

Note. *N*=1573. Bootstrap sample size = 5000. CI = confidence interval; LL = low limit; UL = upper limit;

RD = relative deprivation; PC = perceived control; SA = social anxiety.

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1994 $p < .05$; $p < .01$; $p < .001$.

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Table 4. Moderated mediation model with belief in a just world as moderator in male migrant children.

Model summary							
Outcome(Y)	Predictors(X)	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>B</i>	<i>SE</i>	95% CI
PC		.24	.06	12.72**			
	Age				-.004	.02	[-.05, .04]
	RD				-.08	.03	[-.15, .002]
	BJW				.17***	.04	[.10, .25]
	RD×BJW				.10*	.03	[.03, .16]
Effect	BJW values	<i>B</i>	Boot SE		Boot LLCI	Boot ULCI	
Indirect	<i>M</i> - 1SD(3.22)	.058	.02		.02	.10	
	<i>M</i> (4.16)	.025	.01		-.002	.05	
	<i>M</i> +1SD(5.10)	-.008	.02		-.05	.03	

Note. *N*=1573 Bootstrap sample size = 5000. = confidence interval; LL = low limit; UL = upper limit; RD = relative deprivation; PC=perceived control; BJW = belief in a just world.
p* < .05; **p* < .001.

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Figure 1. Moderated mediation model of the current study.

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Note. RD = relative deprivation; BJW = belief in a just world.

Figure 2. The belief in a just world moderated the relationship between relative deprivation and perceived control in male migrant children

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Note: $^{**}p < .01$, $^{***}p < .001$.

Figure 3 Moderated mediation model with key results for male migrant children.

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