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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**

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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15 Introduction

16 Migration has been recognized as a global problem of the early 21st century (Beine et al.,
17 2019). International migration is the movement of people across international borders for 45
18 various purposes, one of them being seeking a better quality of life. International migrants 47
19 change their usual place of residence from one country to another (Rees, 2009). Unlike
20 international migration, in China, rapid economic development and urbanization have led to an
21 increasing number of rural inhabitants migrating within the country to other
22 regions—particularly to urban areas—to find employment and gain access to better education
23 and living conditions (Chen et al., 2014). Thus, migration in China is largely
24 internal—specifically, rural to urban, not movement across national borders. Recent statistics
25 indicate that the number of migrants in China in 2020 reached 376 million, including 14
26 million internal migrant children (who had left their rural homes to live in urban areas with
27 their parents; National Bureau of Statistics, 2021). Such rural-to-urban internal migrants 16
28 within China are the subject of this research.

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

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23 30 between urban and rural regions, internal migrant children often encounter social exclusion,
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25 31 prejudice, and discrimination as they adjust to city life (Chen et al., 2009; Jiang & Ngai,
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27 32 2020). Specifically, when rural-to-urban internal migrant children arrive in their new urban
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29 33 settings, they often find that their peers dress more stylishly, speak with different accents, use
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32 34 unfamiliar slang, enjoy unfamiliar activities, and so on; they also may find themselves lagging
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34 35 in certain subjects at school (Guo et al., 2015). In addition, their new peers may see the ways
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36 36 they dress and speak and their lack of familiarity with things “everyone knows” as “backward”
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39 37 and treat them as less than welcome (Han et al., 2020; Wang & Mesman, 2015; Wang et al.,
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41 38 2016). Hence, migrant children may experience feelings of what has been termed “relative
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43 39 deprivation.” Relative deprivation refers to a subjective cognition and emotional experience in
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46 40 which an individual or group perceives itself to be in a disadvantageous position through
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48 41 horizontal comparisons (those between one individual and another) or vertical comparisons (a
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50 42 person's current state compared to his past or future state) with the reference group (Wang, 43
2007), which leads to negative emotions such as anger and dissatisfaction (Crosby, 1976;
44 Smith et al., 2012; Stouffer et al., 1949).

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6 45 Furthermore, relative deprivation must be distinguished from absolute deprivation.
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8 46 Absolute deprivation, also known as actual deprivation, refers to the objective state in which
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10 47 the most basic living needs of some individuals or groups cannot be met due to lack of food,
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13 48 water, shelter, etc. (Su et al., 2016). Previous studies have shown that absolute deprivation
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15 49 directly affects children's health (Goode & Mavromaras, 2014; Lee, 2021; Okuzono et al., 16
17 50 2019). However, when basic needs are met, absolute deprivation may have less impact
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20 51 (Yngwe et al., 2003). In recent years, with the successful completion of poverty alleviation in
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22 52 China, migrant children's basic life needs (e.g., food, clothing, housing, and transportation) 23
24 53 have been met (Xi, 2021); that is, they tend to experience less absolute deprivation but more 25
26 54 relative deprivation. Therefore, they may think their socioeconomic status and education level
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29 55 are inferior to those of urban children, which, in turn, may affect their mental health. At the
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31 56 same time, research has shown that individual relative deprivation still affects health behavior
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33 57 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
47
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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13 70 experiencing intense fear of others' evaluations of social interactions (American Psychiatric

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15 71 Association, 2013; Morrison & Heimerg, 2013). Social anxiety tends to develop into a 16
17 72 chronic, unremitting condition without effective intervention (Hearn et al., 2016).

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20 73 Consequently, it is important to examine the risk and protective factors and how they place
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22 74 migrant children at risk of social anxiety.

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25 75 Relative deprivation theory (Mummendey et al., 1999) shows that the core process

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27 76 underlying the development of relative deprivation is social comparison (Appelgryn &

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29 77 Bornman, 1996; Kim et al., 2018). In particular, this comparison seems to affect people

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32 78 cognitively, causing feelings of anger and resentment; it may also lead to negative

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34 79 self-evaluation (Kuo & Yang, 2019; Osborne et al., 2015). According to the cognitive

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36 80 self-assessment model of social anxiety, the root of social anxiety lies in negative

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39 81 self-evaluations after social interactions (Amiri et al., 2017; Heinrichs & Hofmann, 2005;

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41 82 Iverach et al., 2017). Furthermore, empirical studies have observed that relative deprivation is

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43 83 positively related to anxiety (Jia et al., 2009; Zenses et al., 2019), and social comparison (the

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46 84 core component of relative deprivation) is significantly associated with social anxiety

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48 85 (Mitchell & Schmidt, 2014; Qiu et al., 2017; Tong et al., 2017). Therefore, we hypothesized

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50 86 that relative deprivation would positively correlate with social anxiety in migrant Chinese

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87 children (Hypothesis 1).

88 Although previous studies have demonstrated that relative deprivation is significantly

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6 89 correlated with anxiety (Mishra & Novakowski, 2016), the underlying mediating and 7
8 90 moderating processes in this relationship remain unclear. Therefore, we tested a moderated
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10 91 mediation model using relative deprivation as the independent variable, perceived control as a
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13 92 mediator, BJW as a moderator, and social anxiety as the dependent variable in a sample of
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15 93 Chinese migrant children. As significant sex differences have been observed in relative 16
17 94 deprivation (Leviston et al., 2020), social anxiety (Asher & Aderka, 2018; La Greca et al.,
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19
20 95 2014), and perceived control (Bhanji et al., 2016), we also sought to explore whether sex was
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22 96 related to significant differences in these mediating and moderating effects.

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25 97 ***Mediating Role of Perceived Control***

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27 98 Perceived control may be involved in the association between relative deprivation and social
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29 99 anxiety. It refers to the extent to which people feel that they are able to predict, explain, and
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32 100 influence the occurrence and development of events relevant to their lives and objectives
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34 101 (Burger, 1989; Krumm & Corning, 2010; Ly et al., 2019). Given that perceived control is one
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36 102 of the most basic psychological needs of human beings (Erikson, 1963; Williams, 2007), it is
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39 103 important for individual survival and development. A lack of a sense of control can cause
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41 104 psychological problems such as post-traumatic stress (Flores et al., 2020), mood disorders 42
43 105 (Rosenbaum et al., 2012), and panic disorders (White et al., 2006). For internal migrant
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46 106 children, the family move itself may have eroded perceived control, as they individually may
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48 107 not have wished to make it, and the unfamiliar social settings into which they are plunged on 49
50 108 arrival may erode it further, especially when they perceive themselves to be relatively 109 deprived
of social and/or academic skills, and/or material advantages (Greitemeyer &
110 Sagioglou, 2017; Marmot et al., 1997).

111 Furthermore, the etiological model of anxiety by Chorpita and Barlow (1998)
8 112 suggested that a lack of perceived control plays a major role in the development of anxiety
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10 113 (Epkins & Heckler, 2011). Perceiving oneself as having a low degree of control over stressful
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114 life events can lead to general psychological vulnerabilities that are more likely to induce
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115 anxiety (Barlow, 2002; Gallagher et al., 2014). Additionally, encountering unfamiliar social
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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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46 128 ~~control in the relationship between relative deprivation and social anxiety has also been~~
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48 129 suggested by the cognitive theory of stress and coping by Lazarus and Folkman (1984). The
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50 130 theory holds that when people perceive relative deprivation, a series of adverse psychological
131 adaptations may occur but can be buffered by the positive factor of a sense of control (Ursin,
132 2009; Wang & Delgado, 2021). Moreover, prior studies have supported the etiological model

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6 133 of childhood anxiety, finding that perceived control plays an intermediary role in the family 7

8 134 environment and child anxiety (Chorpita et al., 2016; Scott & Weems, 2010). Although
910 135 relative deprivation is not a “family environment,” it is part of the social environment
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13 136 (Pettigrew, 2016). Therefore, perceived control may also act as an intermediary between
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15 137 anxiety and the social environment. In view of the above, we investigated whether perceived 16

17 138 control plays an intermediary role between relative deprivation and social anxiety in migrant
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20 139 children (Hypothesis 2).
2122
23 140 ***Moderating Role of Belief in a Just World***
2425 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;
152 Zhang et al., 2018).

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

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

8 156 employed to buffer the pressure and threat so that people can regain a sense of control and
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10 157 reach the state of conservation. Dalbert (2001) specified that individuals with a strong BJW
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13 158 might have a relatively lower sense of injustice resulting from adverse circumstances.
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15 159 Specifically, BJW can help disadvantaged groups effectively cope with negative events in
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17 160 their lives (Zhang et al., 2015; Zhou & Guo, 2013). Therefore, BJW may alleviate the adverse
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20 161 effects of relative deprivation on adolescent outcomes. Moreover, the theory of compensatory
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22 162 control (Kay et al., 2009) indicates that a person's sense of control is threatened and reduced
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24 163 in disordered, uncertain, and unfamiliar environments. Belief in a just world can foster 25
26 164 perceived control because it suggests that the world will only "punish" when some "wrong"
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29 165 has been committed, and it will "reward" appropriately constructive actions, so one's efforts to
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31 166 avoid the former and pursue the latter should have the expected results (Ucara et al., 2019).
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33 167 Existing research has shown that BJW can moderate the adverse effects of relative deprivation
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36 168 on mental health (Osborne & Sibley, 2013). For example, a recent study conducted by Xiong
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38 169 and Liu (2020) indicated that BJW moderated the relationship between relative deprivation
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40 170 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

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43 171 with lower scores for BJW. Based on the above, we hypothesized that the indirect effect of
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45 172 relative deprivation on social anxiety would be moderated by BJW (Hypothesis 3).
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48 173 ***The Current Study***
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174 In this study, we explored the mechanisms underlying the association between relative

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6 175 deprivation and social anxiety among Chinese migrant children. We also explored whether 7
8 176 any mediating and moderating effects had significant sex differences. Previous mainstream
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10 177 psychology research has been criticized as overly focused on American, British, or Globally
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13 178 Northern samples. Specifically, while 11% of the world's population is represented in top
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15 179 psychology journals, nearly 89% continues to be neglected (Arnett, 2008). The majority of 16
17 180 published studies and their included samples still sorely lack global representation in their
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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).

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

182 published studies (Thalmayer et al., 2021). As the world's most populous country, China 23
183 belongs to this neglected 89% (National Bureau of Statistics, 2021).

184 *Rationale*

185 Overall, the current study has the following potential contributions. First, this research
186 contributes to rectifying the disparity in the literature by enhancing the diversity of
187 psychological research samples, such as including more research, such as this study, with
188 Chinese samples. Second, we designed the study such that the conclusions can be extended to
189 other countries experiencing lifestyle changes related to rapid urbanization to provide
190 references for reducing psychological problems such as social anxiety among migrant

191 children. Although there are differences between internal migrant children and international
192 migrant children, both groups encounter social discrimination and experience a range of 47 48 medical,
educational, and health inequities. These inequalities pose a serious threat to the

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194 physical and mental health of migrant children. Third, most previous studies have only
195 explored the relationship between relative deprivation and anxiety in general; they have not
196 focused on social anxiety, although it is one of the most common specific anxiety types

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

201 To achieve these goals, provide guidance to improve the lives of migrant children in

202
203 China, and contribute to the global psychology research literature, we explored three
204 hypotheses. Specifically, we examined a moderated mediation model (see Figure 1) to test
205 three hypotheses: (i) relative deprivation is positively correlated with social anxiety in migrant
206 Chinese children (Hypothesis 1); (ii) perceived control plays an intermediary role between
207 relative deprivation and social anxiety (Hypothesis 2); and (iii) the indirect effect of relative
208 deprivation on social anxiety is moderated by BJW (Hypothesis 3).

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208 **{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

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6 218 *hukou* (permanent urban household registration) at birth; (ii) accompanied their parents to the 7
8 219 destination cities; and (iii) been living in their destination cities for more than six months.

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11 220 Questionnaire surveys in a paper-and-pencil format were conducted in different
13 221 classrooms during the 30-minute class period. In each classroom, two trained psychology
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16 222 graduate students administered the surveys, answered questions, and monitored the

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18 223 participants' progress. After completing the questionnaire, each participant was given a 19
20 224 ballpoint pen as a gift. The final sample consisted of 1,573 migrant children, with a mean age
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23 225 of 12.3 years ($SD = 1.7$, range 10–15). Of the total, 812 (51.6%) were male, and 761 (48.4%)
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25 226 were female, 962 (61.2%) were from primary schools, and 611 (38.8%) were from junior high 26
27 227 schools. All the participants and their parents or legal guardians provided informed consent
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29 228 before the survey.

32 229 In terms of the educational background of migrant children's parents, 343 (21.8%)
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35 230 reported that their fathers had primary school education or below, 743 (47.2%) reported junior
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37 231 high school education, 369 (23.5%) reported senior high school education, and 118 (7.5%)
38
39 232 reported college education or above. In addition, 560 (35.6%) mothers had primary school
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42 233 education or below, 658 (41.8%) had junior high school education, 261 (16.6%) had senior
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44 234 high school education, and 94 (6.0%) had a college education or above. Regarding family
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46 235 economic status, 265 (16.8%) of the participants had an average monthly household income of 47 48
less than 2,000 yuan, 712 (45.3%) between 2,000 and 5,000 yuan, and 596 (37.9%) had more
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237 than 5,000 yuan.

238 **Measures**

239 *Relative Deprivation*

Page 12 of 48

240 Relative deprivation was measured using the Relative Deprivation Scale for Migrant Children
8 241 (RDS-MC; Ye & Xiong, 2017). This scale includes four dimensions: cognitive appraisal of
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10 242 individual RD, emotional response to individual RD, cognitive appraisal of group RD, and
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12 243 emotional response to group RD. It consists of 20 items (e.g., “What do you think of your
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14 244 family’s economic status compared to that of your urban counterparts?”; “How satisfied are
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16 245 you with this situation?”) and measures five aspects of migrant children’s current situation
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18 246 (family economic status, housing conditions, residential stability, development of personal
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20 247 strengths, and parental involvement in education). The cognitive dimensions range from 1
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22 248 (*very good*) to 7 (*very bad*), and the emotional dimensions range from 1 (*very satisfied*) to 7
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24 249 (*extremely unsatisfied*). Higher scores represent higher levels of RD.

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

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251 & Liu, 2020; Xiong, Liu, & Ye, 2021; Xiong, Xiao, & Ye, 2021; Ye & Xiong, 2017). The data
252 of this study showed that the fit indices of the scale were acceptable (CFI = .92, TLI = .92,
253 $\chi^2/df = 4.49$, SRMR = .067; Schumacker & Lomax, 2010; Wen et al., 2004). The RDS-MC
254 showed good internal consistency reliability ($\alpha = .92$) in the current study.

255 *Perceived Control*

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

6 262 validity (Liu & Shen, 2009; Xiong & Liu, 2020). The data of this study showed that the fit 7

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

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11 264 present study, Cronbach's α for the scale was .72.

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13 265 *Belief in a Just World*

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16 266 We used the Chinese version of the Belief in a Just World Scale (BJWS; Dalbert, 1999; Su et

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19 267 al., 2012). It includes two subscales with a total of 13 items: belief that the world treats them 20

21 268 justly (e.g., "I believe that most of the things that happen in my life are fair") and belief that

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23 269 the world generally treats everyone justly (e.g., "I am convinced that people are compensated

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26 270 for injustices in the long run"). Participants responded on a five-point Likert scale ranging

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28 271 from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating stronger BJW.

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30 272 This scale has been used in previous studies with good reliability and validity (Jia et al., 2020;

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33 273 Li et al., 2018; Liu et al., 2020; Song, 2018), and the data of this study showed that the fit

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35 274 indices of the scale were good (CFI = .98, TLI = .97, $\chi^2/df = 3.25$, SRMR = .044). In the 36

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37 275 current study, Cronbach's α for the scale was .88.

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40 276 *Social Anxiety*

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43 277 We assessed migrant children's social anxiety using the Chinese version of the Social Anxiety
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46 278 Scale for Children (SASC; LaGreca et al., 1988; Ma, 1993). It includes 10 items loading on
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48 279 two factors: fear of negative evaluation (e.g., "I worry about doing something new in front of 49
50 280 the other kids") and social avoidance and distress (e.g., "I only talk to kids that I know really
281 well"). Participants responded on a Likert scale ranging from 1 (*never*) to 4 (*always*), with
282 higher scores indicating higher levels of social anxiety. This scale has been used in previous
283 studies with good reliability and validity (Guo et al., 2017; Li et al., 2020; Xiong, Liu, & Ye,
8 284 2021). The data of this study showed that the fit indices of the scale were good (CFI = .97, TLI
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10 285 = .96, $\chi^2/df = 2.85$, SRMR = .047). In this study, Cronbach's α for the SASC was .88.

13 286 *Statistical Analyses*

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16 287 All statistical analyses were conducted using the IBM SPSS for Windows, version 25.0 (IBM
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19 288 Corp., Armonk, NY, IBM Corp.). For the final data analysis, we processed the missing values

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21 289 according to the mean method (Acock, 2012; Deng et al., 2019; Noor et al., 2014). We first
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23 290 calculated descriptive statistics and variable correlations. Then, we used Model 4 of the
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26 291 PROCESS macro (Hayes & Scharkow, 2013) to test the mediation effect and Model 7 to test
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28 292 moderated mediation. This macro was developed to test complex models, including both
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30 293 mediators and moderators, and has been used extensively in previous research (Yang et al.,
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33 294 2019; Zhang & Wang, 2020). In addition, we examined whether these mediating and
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35 295 moderating effects differed significantly by sex. Finally, we assessed potential common
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37 296 method bias using Harman's single factor test for all research items (Podsakoff et al., 2003; 38
39 297 Podsakoff et al., 2012). It indicated ten distinct factors with eigenvalues greater than one, with
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42 298 the largest factor accounting for 20.24% of the total variance, which was less than the
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44 299 threshold level of 40% (Zhou & Long, 2004). Therefore, we concluded that no common
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46 300 method bias was apparent in the present study.

49 301 *Data Sharing Statement*

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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.

304 Results

305 *Preliminary Analyses*

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

307 hypothesized, relative deprivation was positively correlated with social anxiety ($r = .15, p <$

308 $.01$) and negatively correlated with perceived control ($r = -.15, p < .01$) and BJW ($r = -.37, p <$

309 $< .01$). Perceived control was positively correlated with BJW ($r = .25, p < .01$) and negatively
310 correlated with social anxiety ($r = -.37, p < .01$). Belief in a just world was negatively

311 correlated with social anxiety ($r = -.18, p < .01$). The key variables were moderately
312 correlated. Independent samples t -tests (see Table 2) showed that only social anxiety had a

313 significant sex difference ($t = -2.04, p < .05$, Cohen's $d = .099$). Specifically, the social
314 anxiety of females was significantly higher than that of males.

315 {INSERT TABLES 1 AND 2 HERE}

316 *Testing the Mediation Model*

317 As the preliminary results of the mediation analysis showed no difference by sex, we did not
318 group by sex in the final selection of the mediation analysis. After controlling for age and sex, 44
319 as shown in Table 3, relative deprivation was positively associated with social anxiety ($B = 46$
320 $.14, t = 5.41, p < .001, 95\% \text{ CI } [.09, .19]$) and negatively associated with perceived control (B
321 $= -.14, t = -5.24, p < .001, 95\% \text{ CI } [-.19, -.09]$). Perceived control was negatively associated
322 with social anxiety ($B = -.36, t = -15.27, p < .001, 95\% \text{ CI } [-.41, -.31]$). Furthermore, relative
323 deprivation was still positively associated with social anxiety ($B = .09, t = 3.75, p < .001, 95\%$

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324 $\text{CI } [.04, .14]$) when both relative deprivation and perceived control were included in the
325 model, suggesting that perceived control partially mediated the relationship between relative
326 deprivation and social anxiety (indirect effect = $.05, SE = .01, 95\% \text{ CI } [.03, .07]$). Specifically,
327 the mediating effect accounted for 36% of the total variance. Thus, Hypotheses 1 and 2 were
328 supported.

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18 329 {INSERT TABLE 3 HERE}

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21 330 *Testing the Moderated Mediation Model*

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24 331 We divided the data of migrant children into two groups according to sex (male and female
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26 332 groups), in consideration of their differences, and investigated their moderating effect 27
28 333 separately. The results showed significant sex differences; namely, the moderating effect
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31 334 BJW was significant for males but not for females. The results of the moderated mediation
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33 335 analysis of male migrant children are shown in Table 4. We observed that the relationship
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35 336 between relative deprivation and perceived control was moderated by BJW ($B = .10, t = 2.97,$
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38 337 $p < .01, 95\% \text{ CI } [.03, .16]$). We conducted simple slope analyses (Aiken & West, 1991)
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40 338 separately for low (1 SD below the mean) and high (1 SD above the mean) levels of male
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42 339 migrant children's belief in a just world to test and illustrate the moderating effect more
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45 340 clearly. As shown in Figure 2, the negative effect of relative deprivation on perceived control
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47 341 was stronger for male migrant children with lower scores for BJW ($\beta_{\text{simple slope}} = -.18, t =$
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-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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343 {INSERT TABLE 4 AND FIGURE 2 HERE}

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

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345 relative deprivation on social anxiety through perceived control was moderated by BJW.

346 Specifically (see Table 4), for male migrant children with lower scores for BJW, relative

347 deprivation significantly affected social anxiety through perceived control ($B = .06, SE = .02,$

348 $p < .01, 95\% CI [.02, .10]$). However, for male migrant children with a stronger BJW, this

349 indirect effect was non-significant ($B = -.008, SE = .02, p > .05, 95\% CI [-.05, .03]$).

350 Therefore, Hypothesis 3 was supported, a moderating effect was found only in male

351 migrant children. Figure 3 intuitively describes the moderated mediation model and its key
352 path coefficients for male migrant children.

353 {INSERT FIGURE 3 HERE}

354 We constructed a moderated mediation model to test three hypotheses regarding the
Discussion 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.

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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 44 45 361 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.

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

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

366 children may perceive that they are in a disadvantaged position and experience inequality;
367 hence, they are prone to anger, dissatisfaction, and other negative emotions (Lan et al., 2020).
368 Therefore, they believe that the world is uncontrollable and that there is nothing they can do to
369 change the inequalities, and finally appear to have social anxiety. Consistent with previous
370 studies (Asher & Aderka, 2018; MacKenzie & Fowler, 2013; Wu et al., 2019), we observed
371 that female migrants experienced more social anxiety than male migrants, and females tended
372 to deal with problems less directly than males (Dou et al., 2021), which made them more
373 likely to experience social anxiety symptoms such as avoidance and withdrawal (Panayiotou,
374 2017). For male migrant children, when scores for BJW were high, that is, if they believed that
375 the world was fair and controllable, their sense of justice in the world could have been a
376 protective buffer against the adverse effects of disadvantage. Therefore, disadvantages did not
377 reduce the sense of control and contribute to social anxiety. However, for female migrant
378 children, being disadvantaged, whether the world was believed to be just or not, could have
379 contributed to social anxiety by reducing feelings of control.

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

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43 382 migrating to urban areas of China also felt more socially anxious. This finding was consistent
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46 383 with prior studies showing that relative deprivation was positively correlated with anxiety (Jia
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48 384 et al., 2009; Lhila & Simon, 2010; Mishra & Novakowski, 2016). This finding is also
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50 385 congruent with social comparison theory (Festinger, 1954; Hu et al., 2021). Relative
386 deprivation results from social comparisons where individuals compare themselves to those
387 who are better off but pay little attention to those who are worse off (Kim et al., 2017;

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6 388 Runciman, 1966). As a result, these negative comparisons may lead to stress and anxiety
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8 389 (Mitchell & Schmidt, 2014). Previous research also supports the possibility that the experience
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10 390 of relative deprivation may “trap” people in patterns of thought that contribute to the
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13 391 symptoms of anxiety (Nadler et al., 2020). Our study focused on social anxiety, a typical
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15 392 anxiety symptom, and found a consistent relationship between relative deprivation and social 16
17 393 anxiety, further verifying and extending findings from previous relevant studies.
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20 394 Our models indicated that relative deprivation was both directly and indirectly
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23 395 associated with social anxiety through the mediating role of perceived control. Previous
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25 396 studies have indicated that perceived control is an important mediating variable in the 26
27 397 relationship between relative deprivation and mental health. For instance, recent research
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29 398 indicated that the relationship between relative deprivation and depression in left-behind
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32 399 children was partially mediated by perceived control (Xiong & Liu, 2020). Regarding the first
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34 400 part of the mediation effect, higher levels of relative deprivation were associated with lower
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36 401 levels of perceived control in migrant children, which is consistent with the findings of prior
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39 402 studies (Moore, 2003; Xiong & Liu, 2020). Specifically, migrant children with higher levels of
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41 403 relative deprivation were more likely to experience negative emotions. Perhaps the negative 42
43 404 emotions generated by unreasonable social comparisons led the individual to pay more
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46 405 attention to their present negative emotional states, which induced a decrease in perceived
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48 406 control (Ward & Mann, 2000). In terms of the second part of the mediation effect, higher
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50 407 levels of perceived control were associated with lower levels of social anxiety among migrant
408 children, which is again consistent with prior studies (Stapinski et al., 2010; Vujanovic et al.,
409 2010). This finding suggests that people with higher levels of perceived control may have a

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410 higher sense of self-efficacy, easily adapt to their social environments, and experience less
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9 411 stress (Shek & Lee, 2006; Zhou et al., 2012), which, in turn, might lead to fewer mental health
10 412 problems (e.g., social anxiety; Rosenbaum et al., 2012).

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13 413 Our models also indicated that the relationship between relative deprivation and social
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15 414 anxiety via perceived control was moderated by BJW. However, this moderating effect was
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17 415 only significant in the group of male migrant children. Specifically, the relationship was
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19 416 stronger for male migrant children with a low level of BJW. Thus, BJW appears to alleviate
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21 417 the indirect impact of relative deprivation on social anxiety through the mediation of perceived
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23 418 control. These results were consistent with previous studies observing similar protective roles
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25 419 of BJW in other facets of mental health such as anxiety, depression, psychological distress
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27 420 (Otto et al., 2006), life satisfaction (Tian, 2019), and subjective well-being (Khera et al.,
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29 421 2014).

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35 422 Additionally, our results were consistent with the risk-protective model of resiliency,
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37 423 and the strength of the relationship between risks and outcomes will depend on the presence of
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39 424 protective factors, which weaken the adverse effects of risks on outcomes (Hollister-Wagner
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42 425 et al., 2001; Zimmerman et al., 1999). Specifically, protective factors (e.g., strong belief in a
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44 426 just world) may weaken the associations between risk factors (e.g., high relative deprivation)
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46 427 and outcome variables (e.g., perceived control). In migrant children with a strong belief in a 47

48 just world, relative deprivation was not related to perceived control, whereas, for migrant
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429 children with a weak or moderate belief in a just world, relative deprivation was negatively

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

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

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6 432 al., 2014). When an individual is under pressure or in threatening circumstances (e.g., relative 7

8 433 deprivation), the strategy of introducing resources (e.g., BJW, a positive psychological
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10 434 resource) is usually employed to buffer the pressure and threat so that the individual can

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13 435 regain a sense of control (e.g., perceived control; Hobfoll, 1989; Chen et al., 2015).

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16 436 There were sex differences in the moderating effect of BJW, as it was only significant

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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

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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

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46 449 just-world belief is a protective factor for reconstructing the just-world perception, which

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

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

Page 22 of 48

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

8 455 their parents from rural residency to urban residency, the results have limited generalizability.
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10 456 We cannot show causal relationships beyond the particular study sample and the migrant
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12 457 population; the practical implications of the results are also somewhat limited. First, and most
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14 458 importantly, this was a cross-sectional study; therefore, it is impossible to do more than
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16 459 speculate about causal relationships among the study variables or the likelihood that the
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18 460 relationships are reciprocal and mutually mediating and moderating. There are substantial
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20 461 individual differences in both the reasons for and reactions to migratory moves; there are also
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22 462 substantial differences in pre-existing personal characteristics and circumstances in the rural 25
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24 463 homes of origin. Therefore, longitudinal and experimental studies are required to assess those
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26 464 pre-existing characteristics and situations and further clarify the associations among relative
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28 465 deprivation, perceived control, belief in a just world, and social anxiety (Xiong & Ye, 2016).
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33 466 More insights could also come from studies that include objective data about the family
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36 467 situation before and after the migratory move, such as children's school performance, family
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38 468 resources, parental reasons for making the move, and how they were communicated to the 39
40 469 children while preparing for the move.
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43 470 Second, all data were self-reported by the migrant children, whose varied age range
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46 471 may be related to the variations in their abilities to comprehend the item content reliably. In
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48 472 the future, multi-method and multi-informant assessments can be used to collect data (e.g., 49
50 473 children, parents, and teachers; Guo et al., 2015).

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

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6 476 observations beyond this group or improve the understanding of the particularities of the 7
8 477 rural-to-urban migratory experience in childhood. Future studies should compare internal
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10 478 migrant children with natively urban children, continuously rural children, international

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13 479 migrant children, or other rural-to-urban migration to further evaluate the findings of this
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15 480 study (Wang et al., 2017).
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18 481 Fourth, our results showed that there is a moderate correlation between key variables.
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20 482 In the mediation analysis, the mediating effect value was .05, accounting for 36% of the total
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23 483 variance. The relationship between these variables is not strong, and future studies should
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25 484 consider using more appropriate measurement tools or experimental operations to verify our
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27 485 findings further.
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30 486 Despite these limitations, our study results have several practical implications. First,
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32 487 the government should support the physical and mental health of migrant children by
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35 488 formulating policies to ensure that they have equal access to education, medical care, and
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37 489 other environments and relieve the factors related to inequality to reduce their sense of relative
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39 490 deprivation. For example, China is gradually removing the restrictions of the *hukou* system,
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42 491 and migrant children can go to the same school as urban children and enjoy the same
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44 492 education and medical treatment; all these are examples of efforts to achieve fairness.
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46 493 Nevertheless, as a result of their long exposure to injustice, migrant children may have 47
48 developed a belief that the world is unfair. Therefore, even though the government has tried its

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

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498 leave children with physical and mental damage. Therefore, based on the government’s
499 policies to make up for the past, schools and parents should (as much as possible) work to
500 make equality the children’s subjective and objective reality by guiding cognitive changes in
501 migrant children to shift their perception that the world “is never fair” to “is fair” and, to the
502 greatest possible extent, help them enjoy the fruits of equality, both in the objective
503 environment and their subjective cognition of “fairness,” as part of their healthy growth.
504 Specifically, schools can set up corresponding courses so migrant children can perceive the
505 government’s efforts for fairness and gradually begin to adopt the view that society is, indeed,

24 506 gradually becoming fair. In this “fair environment,” parents should also guide migrant children 25
26 507 to make reasonable social comparisons, overcome perceived injustice, foster a sense of
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29 508 perceived control, and promote their mental health and development by reinforcing their sense
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31 509 of self-esteem.

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34 510 Furthermore, the study results have several theoretical implications. First, the sample
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36 511 of Chinese migrant children in this study represents a bigger population largely ignored by
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39 512 mainstream psychology, as these children may face similar problems as migrant children in
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41 513 the US and other countries. For example, different from internal migration in China, in the US,
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43 514 the migrant children come from other countries. Structural and environmental racism may
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46 515 cause them to experience more discrimination in school and be vulnerable to bullying by
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48 516 native American children (Artiga & Ubri, 2017). At the same time, because some immigrant
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50 517 children do not have green cards, they may also encounter inequality in access to medical
518 treatment, education, and other resources. In addition, while studying, immigrant children also
519 must cope with the pressure of knowing their parents may, at some point, be deported, and the

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6 520 increased pressure caused by deprivation in various aspects may lead to panic among 7

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8 521 immigrant children, which may lead to psychological problems, such as depression and
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10 522 anxiety (Cohodes et al., 2021). Therefore, the mental health problems that migration can bring
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13 523 are universal, and this study of Chinese children is conducive to popularizing the research
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15 524 conclusions, bringing them into mainstream psychology, prompting further studies, and
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17 525 increasing the representativeness of samples. Second, it is helpful to extend the conclusions to
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20 526 other cultures experiencing lifestyle changes associated with rapid urbanization in the
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22 527 international context to provide references for reducing psychological problems—such as 23
24 528 social anxiety—among migrant children. Third, previous studies have investigated the 25 26
2529 relationship between these variables separately, and some have explored the relationship
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29 530 between relative deprivation and anxiety more broadly, without focusing on social anxiety.
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31 531 However, in this study, we built a moderating mediation model to integrate different variables,
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33 532 which is conducive to exploring the common impact of these variables on social anxiety.
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36 533 Additionally, the results of this study indicate some sex-related differences that may
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39 534 reflect the reality that, due to the very nature of sexism, females tend to have accurate views
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41 535 on, and an understanding of, the existence of sexism, which affect their mental health in 42
43 536 ~~multiple ways. Sexism exists objectively, and actual sexism has been proven to affect~~
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46 537 women's mental health (Borrell et al., 2010; Hosang & Bhui, 2018). Simultaneously,
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48 538 perceived sexism also impacts their mental health, and research shows that depression scores
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50 539 were higher in surveyed women who reported experiences of perceived sexism than those who
51 540 did not perceive sexism (Vigod & Rochon, 2020). Thus, the health effects of sexism, both
51 541 actual and perceived, are highly relevant. Policies are needed to reduce actual sexism so that

542 the negative impacts of perceived sexism will also be reduced and both females and males can
8 543 adopt beliefs in a just world. 9

10 **Conclusion** 11

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13 545 We included Chinese migrant children as participants to examine (a) the relationship between
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15 546 relative deprivation and social anxiety, (b) the mediating role of perceived control in this
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18 547 relationship, and (c) the moderating roles of BJW and sex differences. The study design is
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20 548 conducive to increasing the representativeness of Asian populations in research, enhancing the
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22 549 generalizability of the results of studies regarding migrant children, and providing evidence
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25 550 supporting the diversity of mainstream psychology samples. Additionally, the variables we
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27 551 analyzed included the sense of relative deprivation and the feeling that one's circumstances
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29 552 are worse than those of others, which often leads to anger, resentment, and other negative 30
31 553 reactions. We also examined perceived control—the extent to which people feel that they are
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34 554 able to predict, explain, and influence the occurrence and development of events in their lives
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36 555 and their objectives. Of the four variables analyzed, relative deprivation had a negative
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38 556 relationship with mental health, while high scores for perceived control and having beliefs in a
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41 557 just world were positively related to mental health. Finally, social anxiety was shown to be an
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43 558 important indicator of an individual's mental health. Thus, the variables examined in this 44
45 559 study were closely related to health psychology.

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

Variables	Mean	SD	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**	-

**

For Peer Review

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>	Cohen's <i>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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1988 **Table 3.** Testing mediation of perceived control between relative deprivation and social anxiety.

		Model summary						
1989	Outcome(Y)	Predictors(X)	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>B</i>	<i>SE</i>	95% CI
1990	SA		.17		.03	14.93** *		[-.002, .06] [.004, .20]
	PC		.16		.03	14.26** *	.03 .10*	[.09, .19]
		Age					.14** *	.02 [-.06, .05]
		Sex	.39					-.001]
	SA	RD			.15		-.03* 71.13** *	.03 [-.01, .18]
		Age					.09 -.14* **	.02 [-.19, -.09]
		Sex						.05
		RD						.03 [.02, .05]
		Age					.13**	.01 [-.04, .22]
		Sex					.09** *	.05 [.04, .14]
		RD						.02 [-.41, .02]
		PC					-.36* **	.02 [-.31, .02]
	Effect	<i>B</i>	Boot SE			Boot LLCI	Boot ULCI	
	Direct	.09	.02			.04	.14	
	Indirect	.05	.01			.03	.07	

1991 Note. *N*=1573. Bootstrap sample size = 5000. CI = confidence interval; LL = low limit; UL = upper
 1992 limit;

1993 RD = relative deprivation; PC = perceived control; SA = social anxiety.

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

1995

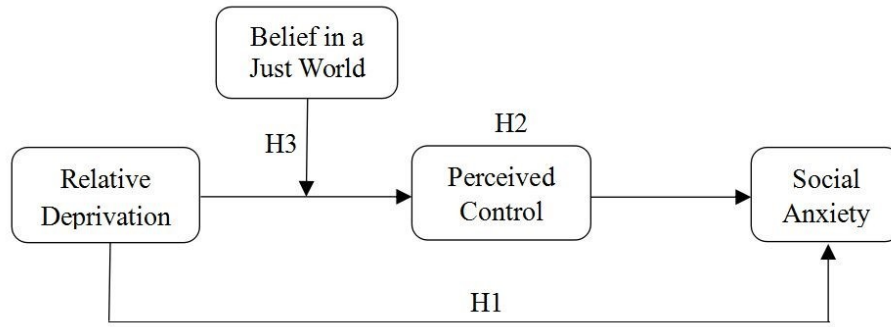
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Table 4. Moderated mediation model with belief in a just world as moderator in male migrant children.

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		
	<i>M</i> - 1SD(3.22)	.058	.02	.02	.10		
Indirect	<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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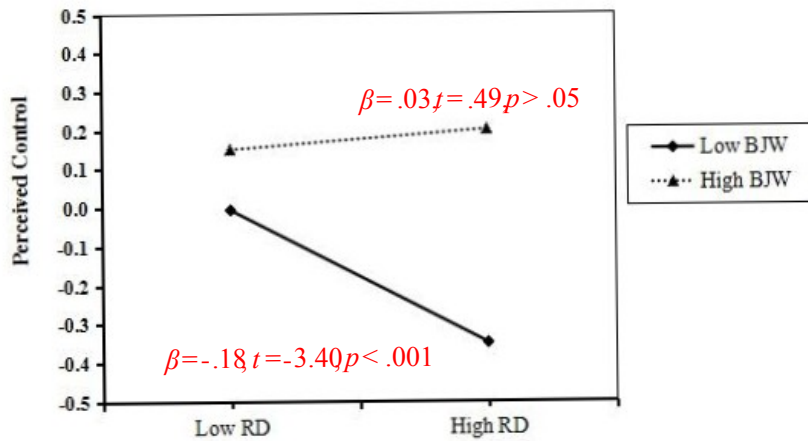
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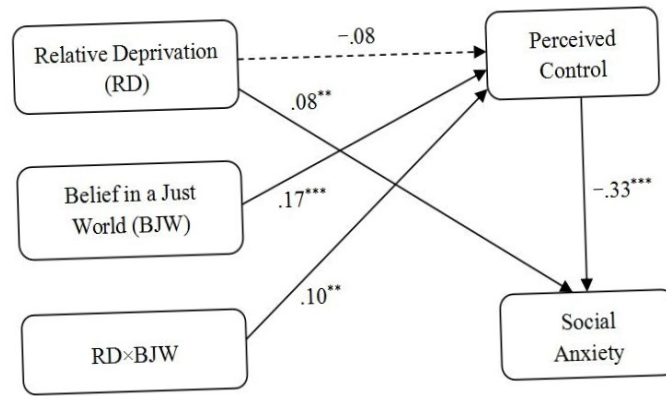
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Note. RD = relative deprivation; BJW = belief in a just world.

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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