



THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Relative deprivation and social anxiety among Chinese migrant children

Citation for published version:

Xiong, M, Chen, J & Johnson, W 2021, 'Relative deprivation and social anxiety among Chinese migrant children: Testing a moderated mediation model of perceived control and belief in a just world', *Journal of Health Psychology*. <https://doi.org/10.1177/13591053211059388>

Digital Object Identifier (DOI):

[10.1177/13591053211059388](https://doi.org/10.1177/13591053211059388)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

Journal of Health Psychology

Publisher Rights Statement:

The final version of this paper has been published in the Journal of Health Psychology, Month/Year by SAGE Publications Ltd, All rights reserved. © Meng Xiong et al., 2021. It is available at: <https://journals.sagepub.com/doi/full/10.1177/13591053211059388>

General rights

Copyright for the publications made accessible via the Edinburgh Research Explorer is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The University of Edinburgh has made every reasonable effort to ensure that Edinburgh Research Explorer content complies with UK legislation. If you believe that the public display of this file breaches copyright please contact openaccess@ed.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.



Journal:	<i>Journal of Health Psychology</i>
Manuscript ID	JHP-21-0244.R4
Manuscript Type:	Article
Keywords:	ANXIETY, ADOLESCENCE, PERCEIVED CONTROL, MODERATOR, MEDIATOR
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

SCHOLARONE™
Manuscripts

1
2
3
4
5
6
7

Page 1 of 48

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

1 **Relative deprivation and social anxiety among Chinese migrant**
2
3
4
5
6 **children: Testing a moderated mediation model of perceived**
7
8
9
10
11
12 **control and belief in a just world**
13
14
15

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.

31

32

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

34

35

37

51

52

53

54

55

56

57

58

59

60

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

1
2
3
4
5
6
7
21
22
23 30 between urban and rural regions, internal migrant children often encounter social exclusion,
24
25 31 prejudice, and discrimination as they adjust to city life (Chen et al., 2009; Jiang & Ngai,
26
27 32 2020). Specifically, when rural-to-urban internal migrant children arrive in their new urban
28
29 33 settings, they often find that their peers dress more stylishly, speak with different accents, use
30
31
32 34 unfamiliar slang, enjoy unfamiliar activities, and so on; they also may find themselves lagging
33
34 35 in certain subjects at school (Guo et al., 2015). In addition, their new peers may see the ways
35
36 36 they dress and speak and their lack of familiarity with things “everyone knows” as “backward”
37
38
39 37 and treat them as less than welcome (Han et al., 2020; Wang & Mesman, 2015; Wang et al.,
40
41 38 2016). Hence, migrant children may experience feelings of what has been termed “relative
42
43 39 deprivation.” Relative deprivation refers to a subjective cognition and emotional experience in
44
45
46 40 which an individual or group perceives itself to be in a disadvantageous position through
47
48 41 horizontal comparisons (those between one individual and another) or vertical comparisons (a
49

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).

Page 3 of 48

1
2
3
4
5
6 45 Furthermore, relative deprivation must be distinguished from absolute deprivation.
7
8 46 Absolute deprivation, also known as actual deprivation, refers to the objective state in which
9
10 47 the most basic living needs of some individuals or groups cannot be met due to lack of food,
11
12
13 48 water, shelter, etc. (Su et al., 2016). Previous studies have shown that absolute deprivation
14
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
18
19
20 51 (Yngwe et al., 2003). In recent years, with the successful completion of poverty alleviation in
21
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
27
28
29 55 are inferior to those of urban children, which, in turn, may affect their mental health. At the
30
31 56 same time, research has shown that individual relative deprivation still affects health behavior
32
33 57 even when absolute deprivation is controlled (Lhila & Simon, 2010). Therefore, even though
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
35
36 58 actual deprivation may affect health, relative deprivation is also important, and it is necessary
37
38 59 to explore the effects of relative deprivation on mental health (Gerry, 2005).
39
40

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
44
45
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
9
10 69 population (Costello et al., 2005; Fernández et al., 2018). Social anxiety is defined as typically
11
12

13 70 experiencing intense fear of others' evaluations of social interactions (American Psychiatric

14
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).

18
19
20 73 Consequently, it is important to examine the risk and protective factors and how they place
21
22 74 migrant children at risk of social anxiety.

23
24
25 75 Relative deprivation theory (Mummendey et al., 1999) shows that the core process

26
27 76 underlying the development of relative deprivation is social comparison (Appelgryn &

28
29 77 Bornman, 1996; Kim et al., 2018). In particular, this comparison seems to affect people

30
31
32 78 cognitively, causing feelings of anger and resentment; it may also lead to negative

33
34 79 self-evaluation (Kuo & Yang, 2019; Osborne et al., 2015). According to the cognitive

35
36 80 self-assessment model of social anxiety, the root of social anxiety lies in negative

37
38
39 81 self-evaluations after social interactions (Amiri et al., 2017; Heinrichs & Hofmann, 2005;

40
41 82 Iverach et al., 2017). Furthermore, empirical studies have observed that relative deprivation is

42
43 83 positively related to anxiety (Jia et al., 2009; Zenses et al., 2019), and social comparison (the

44
45
46 84 core component of relative deprivation) is significantly associated with social anxiety

47
48 85 (Mitchell & Schmidt, 2014; Qiu et al., 2017; Tong et al., 2017). Therefore, we hypothesized

49
50 86 that relative deprivation would positively correlate with social anxiety in migrant Chinese

1
2
3
4
5
6
7
87 children (Hypothesis 1).

88 Although previous studies have demonstrated that relative deprivation is significantly

Page 5 of 48

1
2
3
4
5
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
9
10 91 mediation model using relative deprivation as the independent variable, perceived control as a
11
12
13 92 mediator, BJW as a moderator, and social anxiety as the dependent variable in a sample of
14
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.,
18
19
20 95 2014), and perceived control (Bhanji et al., 2016), we also sought to explore whether sex was
21
22 96 related to significant differences in these mediating and moderating effects.

23
24
25 97 ***Mediating Role of Perceived Control***

26
27 98 Perceived control may be involved in the association between relative deprivation and social
28

29 99 anxiety. It refers to the extent to which people feel that they are able to predict, explain, and
30
31
32 100 influence the occurrence and development of events relevant to their lives and objectives
33
34 101 (Burger, 1989; Krumm & Corning, 2010; Ly et al., 2019). Given that perceived control is one
35
36 102 of the most basic psychological needs of human beings (Erikson, 1963; Williams, 2007), it is
37
38
39 103 important for individual survival and development. A lack of a sense of control can cause
40
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
44
45
46 106 children, the family move itself may have eroded perceived control, as they individually may
47
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
9
10 113 (Epkins & Heckler, 2011). Perceiving oneself as having a low degree of control over stressful
11
12

1
2
3
4
5
6
7
114 life events can lead to general psychological vulnerabilities that are more likely to induce
14
115 anxiety (Barlow, 2002; Gallagher et al., 2014). Additionally, encountering unfamiliar social
16
116 situations can threaten anyone's perceived control, and individuals vulnerable to anxiety
18
19
20 117 maybe especially prone to experience difficulty in shrugging off single interactions that go
21
22 118 less than optimally; over time, these effects may accumulate and generate social anxiety
23
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
27
28
29 121 growing body of studies has indicated that perceived control is associated with general anxiety
30
31 122 disorders (Stapinski et al., 2010; Vujanovic et al., 2010) and social anxiety (Kaur, 2017; Korte
32
33 123 et al., 2015; Ren & Li, 2020).

34
35
36 124 Moreover, relative deprivation theory, which provides a conceptual framework for the
37
38
39 125 association between relative deprivation, perceived control, and social anxiety, points out that
40
41 126 perceived control is an important mediating variable in the influence of relative deprivation on
42
43 127 an individual's mental health (Crosby, 1976; Price et al., 2002). Mediation by perceived
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

45
46 128 ~~control in the relationship between relative deprivation and social anxiety has also been~~
47
48 129 suggested by the cognitive theory of stress and coping by Lazarus and Folkman (1984). The
49
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

Page 7 of 48

1
2
3
4
5

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

9

10 135 relative deprivation is not a “family environment,” it is part of the social environment

11

12

13 136 (Pettigrew, 2016). Therefore, perceived control may also act as an intermediary between

14

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

18

19

20 139 children (Hypothesis 2).

21

22

23 140 ***Moderating Role of Belief in a Just World***

24

25 Although relative deprivation may affect migrant children’s perceived control and social
26 141

27

51

52

53

54

55

56

57

58

59

60

1
2
3
4
5
6
7
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
9
10 157 reach the state of conservation. Dalbert (2001) specified that individuals with a strong BJW
11
12
13 158 might have a relatively lower sense of injustice resulting from adverse circumstances.
14
15 159 Specifically, BJW can help disadvantaged groups effectively cope with negative events in
16
17 160 their lives (Zhang et al., 2015; Zhou & Guo, 2013). Therefore, BJW may alleviate the adverse
18
19
20 161 effects of relative deprivation on adolescent outcomes. Moreover, the theory of compensatory
21
22 162 control (Kay et al., 2009) indicates that a person's sense of control is threatened and reduced
23
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"
27
28
29 165 has been committed, and it will "reward" appropriately constructive actions, so one's efforts to
30
31 166 avoid the former and pursue the latter should have the expected results (Ucara et al., 2019).
32
33 167 Existing research has shown that BJW can moderate the adverse effects of relative deprivation
34
35
36 168 on mental health (Osborne & Sibley, 2013). For example, a recent study conducted by Xiong
37
38 169 and Liu (2020) indicated that BJW moderated the relationship between relative deprivation
39
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

1
2
3
4
5
6
7
41
42
43 171 with lower scores for BJW. Based on the above, we hypothesized that the indirect effect of
44
45 172 relative deprivation on social anxiety would be moderated by BJW (Hypothesis 3).
46
47

48 173 ***The Current Study***
49
50

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

Page 9 of 48

1
2
3
4
5
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
9
10 177 psychology research has been criticized as overly focused on American, British, or Globally
11
12
13 178 Northern samples. Specifically, while 11% of the world's population is represented in top
14
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
18
19

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

193

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

1
2
3
4
5
6
7
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).

209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000

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

Page 11 of 48

1
2
3
4
5

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.

9
10
11
12

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
14
15
16 222 graduate students administered the surveys, answered questions, and monitored the

51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
17
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
21
22
23 225 of 12.3 years ($SD = 1.7$, range 10–15). Of the total, 812 (51.6%) were male, and 761 (48.4%)
24
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
28
29 228 before the survey.

32 229 In terms of the educational background of migrant children's parents, 343 (21.8%)
33
34
35 230 reported that their fathers had primary school education or below, 743 (47.2%) reported junior
36
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
40
41
42 233 education or below, 658 (41.8%) had junior high school education, 261 (16.6%) had senior
43
44 234 high school education, and 94 (6.0%) had a college education or above. Regarding family
45
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
49 236

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
9
10 242 individual RD, emotional response to individual RD, cognitive appraisal of group RD, and
11
12 243 emotional response to group RD. It consists of 20 items (e.g., “What do you think of your
13
14 244 family’s economic status compared to that of your urban counterparts?”; “How satisfied are
15
16 245 you with this situation?”) and measures five aspects of migrant children’s current situation
17
18 246 (family economic status, housing conditions, residential stability, development of personal
19
20 247 strengths, and parental involvement in education). The cognitive dimensions range from 1
21
22 248 (*very good*) to 7 (*very bad*), and the emotional dimensions range from 1 (*very satisfied*) to 7
23
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

1
2
3
4
5
6
7
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

8 263

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

9

10

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

12

13 265 *Belief in a Just World*

14

15

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

17

18

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

22

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

24

25

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

27

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

29

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

31

32

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

34

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

37

38 275 current study, Cronbach's α for the scale was .88.

39

40

41 276 *Social Anxiety*

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

1
2
3
4
5
6
7
43 277 We assessed migrant children’s social anxiety using the Chinese version of the Social Anxiety
44
45
46 278 Scale for Children (SASC; LaGreca et al., 1988; Ma, 1993). It includes 10 items loading on
47
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
9
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*

14
15
16 287 All statistical analyses were conducted using the IBM SPSS for Windows, version 25.0 (IBM
17
18
19 288 Corp., Armonk, NY, IBM Corp.). For the final data analysis, we processed the missing values

20
21 289 according to the mean method (Acock, 2012; Deng et al., 2019; Noor et al., 2014). We first
22
23 290 calculated descriptive statistics and variable correlations. Then, we used Model 4 of the
24
25
26 291 PROCESS macro (Hayes & Scharkow, 2013) to test the mediation effect and Model 7 to test
27
28 292 moderated mediation. This macro was developed to test complex models, including both
29
30 293 mediators and moderators, and has been used extensively in previous research (Yang et al.,
31
32
33 294 2019; Zhang & Wang, 2020). In addition, we examined whether these mediating and
34
35 295 moderating effects differed significantly by sex. Finally, we assessed potential common
36
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
40
41
42 298 the largest factor accounting for 20.24% of the total variance, which was less than the
43
44 299 threshold level of 40% (Zhou & Long, 2004). Therefore, we concluded that no common
45
46 300 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.

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 ($B = .09, t = 3.75, p < .001, 95\%$
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.

1
2
3
4
5
6
7
18 329 {INSERT TABLE 3 HERE}

19
20
21 330 *Testing the Moderated Mediation Model*

22
23
24 331 We divided the data of migrant children into two groups according to sex (male and female
25
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
29
30
31 334 BJW was significant for males but not for females. The results of the moderated mediation
32
33 335 analysis of male migrant children are shown in Table 4. We observed that the relationship
34
35 336 between relative deprivation and perceived control was moderated by BJW ($B = .10, t = 2.97,$
36
37
38 337 $p < .01, 95\% \text{ CI } [.03, .16]$). We conducted simple slope analyses (Aiken & West, 1991)
39
40 338 separately for low (1 SD below the mean) and high (1 SD above the mean) levels of male
41
42 339 migrant children's belief in a just world to test and illustrate the moderating effect more
43
44
45 340 clearly. As shown in Figure 2, the negative effect of relative deprivation on perceived control
46
47 341 was stronger for male migrant children with lower scores for BJW ($\beta_{\text{simple slope}} = -.18, t =$
48

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

342

343 {INSERT TABLE 4 AND FIGURE 2 HERE}

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

Page 17 of 48

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 **Discussion**
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.

1
2
3
4
5
6
7
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

355

356

357

358

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.

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

366 children may perceive that they are in a disadvantaged position and experience inequality;

8 367 hence, they are prone to anger, dissatisfaction, and other negative emotions (Lan et al., 2020).

10 368 Therefore, they believe that the world is uncontrollable and that there is nothing they can do to

13 369 change the inequalities, and finally appear to have social anxiety. Consistent with previous

15 370 studies (Asher & Aderka, 2018; MacKenzie & Fowler, 2013; Wu et al., 2019), we observed

17 371 that female migrants experienced more social anxiety than male migrants, and females tended

20 372 to deal with problems less directly than males (Dou et al., 2021), which made them more

22 373 likely to experience social anxiety symptoms such as avoidance and withdrawal (Panayiotou,

24 374 2017). For male migrant children, when scores for BJW were high, that is, if they believed that

25 26 375 the world was fair and controllable, their sense of justice in the world could have been a

29 376 protective buffer against the adverse effects of disadvantage. Therefore, disadvantages did not

31 377 reduce the sense of control and contribute to social anxiety. However, for female migrant

33 378 children, being disadvantaged, whether the world was believed to be just or not, could have

36 379 contributed to social anxiety by reducing feelings of control.

39 380 The results of this study reveal a significant positive correlation between relative

41 381 deprivation and social anxiety, meaning that children who felt more disadvantaged since

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

382 migrating to urban areas of China also felt more socially anxious. This finding was consistent
383 with prior studies showing that relative deprivation was positively correlated with anxiety (Jia
384 et al., 2009; Lhila & Simon, 2010; Mishra & Novakowski, 2016). This finding is also
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;

Page 19 of 48

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

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

20 394 Our models indicated that relative deprivation was both directly and indirectly
21 _____

22
23 395 associated with social anxiety through the mediating role of perceived control. Previous
24
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
28
29 398 indicated that the relationship between relative deprivation and depression in left-behind
30
31
32 399 children was partially mediated by perceived control (Xiong & Liu, 2020). Regarding the first
33
34 400 part of the mediation effect, higher levels of relative deprivation were associated with lower
35
36 401 levels of perceived control in migrant children, which is consistent with the findings of prior
37
38
39 402 studies (Moore, 2003; Xiong & Liu, 2020). Specifically, migrant children with higher levels of
40
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
44
45
46 405 attention to their present negative emotional states, which induced a decrease in perceived
47
48 406 control (Ward & Mann, 2000). In terms of the second part of the mediation effect, higher
49
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

1
2
3
4
5
6
7
410 higher sense of self-efficacy, easily adapt to their social environments, and experience less
8
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).

11
12
13 413 Our models also indicated that the relationship between relative deprivation and social
14
15 414 anxiety via perceived control was moderated by BJW. However, this moderating effect was
16
17 415 only significant in the group of male migrant children. Specifically, the relationship was
18
19 416 stronger for male migrant children with a low level of BJW. Thus, BJW appears to alleviate
20
21 417 the indirect impact of relative deprivation on social anxiety through the mediation of perceived
22
23 418 control. These results were consistent with previous studies observing similar protective roles
24
25 419 of BJW in other facets of mental health such as anxiety, depression, psychological distress
26
27 420 (Otto et al., 2006), life satisfaction (Tian, 2019), and subjective well-being (Khera et al.,
28
29 421 2014).

30
31
32
33
34
35 422 Additionally, our results were consistent with the risk-protective model of resiliency,
36

37 423 and the strength of the relationship between risks and outcomes will depend on the presence of
38

39 424 protective factors, which weaken the adverse effects of risks on outcomes (Hollister-Wagner

40
41
42 425 et al., 2001; Zimmerman et al., 1999). Specifically, protective factors (e.g., strong belief in a

43
44 426 just world) may weaken the associations between risk factors (e.g., high relative deprivation)

45
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

49 428

50
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

Page 21 of 48

1

2

3

4

5

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

9

10 434 resource) is usually employed to buffer the pressure and threat so that the individual can

11

12

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

14

15

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

17

51

52

53

54

55

56

57

58

59

60

1
2
3
4
5
6
7

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

21

22

23

439 just world. Feminist theories contend that, in contrast to men, women are taught from an early

24

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

28

29

442 by the protective factor of just-world beliefs; thus, the moderating effect of just-world beliefs

30

31

32

443 does not exist in female migrant children. In addition, social role theory holds that society has

33

34

444 different expectations regarding sex and gender roles. For example, men are expected to be

35

36

445 better at controlling their emotions and solving problems than women (Tiedens, 2001). Hence,

37

38

39

446 even if they perceive that they are at a disadvantage, they cannot be immersed in such negative

40

41

447 emotions and must strive to adopt adaptive cognitive emotion regulation strategies to eliminate 42 43

44

448 negative cognitions and solve problems (Duarte et al., 2015). Therefore, for them, the

45

46

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

47

48

450 reduces the adverse effects of relative deprivation on perceptual control, thereby reducing

49

50

451 social anxiety.

51

52

53

54

55

56

57

58

59

60

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.
9

10 456 We cannot show causal relationships beyond the particular study sample and the migrant
11

12 457 population; the practical implications of the results are also somewhat limited. First, and most
13

14 458 importantly, this was a cross-sectional study; therefore, it is impossible to do more than
15

16 459 speculate about causal relationships among the study variables or the likelihood that the
17

18 460 relationships are reciprocal and mutually mediating and moderating. There are substantial
19

20 461 individual differences in both the reasons for and reactions to migratory moves; there are also
21

22 462 substantial differences in pre-existing personal characteristics and circumstances in the rural 25
23

24 463 homes of origin. Therefore, longitudinal and experimental studies are required to assess those
25

26 464 pre-existing characteristics and situations and further clarify the associations among relative
27

28 465 deprivation, perceived control, belief in a just world, and social anxiety (Xiong & Ye, 2016).
29
30
31
32

1
2
3
4
5
6
7
33 466 More insights could also come from studies that include objective data about the family
34
35
36 467 situation before and after the migratory move, such as children's school performance, family
37
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.
41
42

43 470 Second, all data were self-reported by the migrant children, whose varied age range
44
45
46 471 may be related to the variations in their abilities to comprehend the item content reliably. In
47
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

Page 23 of 48
1
2
3
4
5
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
9
10 478 migrant children with natively urban children, continuously rural children, international

11
12
13 479 migrant children, or other rural-to-urban migration to further evaluate the findings of this
14
15 480 study (Wang et al., 2017).
16
17

18 481 Fourth, our results showed that there is a moderate correlation between key variables.
19
20 482 In the mediation analysis, the mediating effect value was .05, accounting for 36% of the total
21
22
23 483 variance. The relationship between these variables is not strong, and future studies should
24
25 484 consider using more appropriate measurement tools or experimental operations to verify our
26
27 485 findings further.
28
29

30 486 Despite these limitations, our study results have several practical implications. First,
31
32 487 the government should support the physical and mental health of migrant children by
33
34
35 488 formulating policies to ensure that they have equal access to education, medical care, and
36
37 489 other environments and relieve the factors related to inequality to reduce their sense of relative
38
39 490 deprivation. For example, China is gradually removing the restrictions of the *hukou* system,
40
41
42 491 and migrant children can go to the same school as urban children and enjoy the same
43
44 492 education and medical treatment; all these are examples of efforts to achieve fairness.
45
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

1
2
3
4
5
6
7
49 494

50
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

Page 24 of 48

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
27
28
29 508 perceived control, and promote their mental health and development by reinforcing their sense
30
31 509 of self-esteem.

32
33
34 510 Furthermore, the study results have several theoretical implications. First, the sample
35
36 511 of Chinese migrant children in this study represents a bigger population largely ignored by
37
38
39 512 mainstream psychology, as these children may face similar problems as migrant children in
40
41 513 the US and other countries. For example, different from internal migration in China, in the US,
42
43 514 the migrant children come from other countries. Structural and environmental racism may
44
45
46 515 cause them to experience more discrimination in school and be vulnerable to bullying by
47
48 516 native American children (Artiga & Ubri, 2017). At the same time, because some immigrant
49
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

Page 25 of 48

1
2
3
4
5
6 520 increased pressure caused by deprivation in various aspects may lead to panic among 7

1
2
3
4
5
6
7
8 521 immigrant children, which may lead to psychological problems, such as depression and
9
10 522 anxiety (Cohodes et al., 2021). Therefore, the mental health problems that migration can bring
11
12
13 523 are universal, and this study of Chinese children is conducive to popularizing the research
14
15 524 conclusions, bringing them into mainstream psychology, prompting further studies, and
16
17 525 increasing the representativeness of samples. Second, it is helpful to extend the conclusions to
18
19
20 526 other cultures experiencing lifestyle changes associated with rapid urbanization in the
21
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
27
28
29 530 between relative deprivation and anxiety more broadly, without focusing on social anxiety.
30
31 531 However, in this study, we built a moderating mediation model to integrate different variables,
32
33 532 which is conducive to exploring the common impact of these variables on social anxiety.
34
35

36 533 Additionally, the results of this study indicate some sex-related differences that may
37
38
39 534 reflect the reality that, due to the very nature of sexism, females tend to have accurate views
40
41
42
43
44
45
46
47
48
49
50

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~~
44
45
46 537 women's mental health (Borrell et al., 2010; Hosang & Bhui, 2018). Simultaneously,
47
48 538 perceived sexism also impacts their mental health, and research shows that depression scores
49
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
52 541 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
543 adopt beliefs in a just world. 9

10 **Conclusion** 11

544
12
13 545 We included Chinese migrant children as participants to examine (a) the relationship between
14
15 546 relative deprivation and social anxiety, (b) the mediating role of perceived control in this
16
17
18 547 relationship, and (c) the moderating roles of BJW and sex differences. The study design is
19
20 548 conducive to increasing the representativeness of Asian populations in research, enhancing the
21
22 549 generalizability of the results of studies regarding migrant children, and providing evidence
23
24
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
25 550 supporting the diversity of mainstream psychology samples. Additionally, the variables we
26
27 551 analyzed included the sense of relative deprivation and the feeling that one's circumstances
28
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
32
33
34 554 able to predict, explain, and influence the occurrence and development of events in their lives
35
36 555 and their objectives. Of the four variables analyzed, relative deprivation had a negative
37
38 556 relationship with mental health, while high scores for perceived control and having beliefs in a
39
40
41 557 just world were positively related to mental health. Finally, social anxiety was shown to be an
42
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.

46
47
48 56049
50 561 **References**

562 Abrams, D., & Grant, P. R. (2012). Testing the social identity relative deprivation (SIRD) model of
social
563 change: The political rise of Scottish nationalism. *British Journal of Social Psychology*, *51*(4),
564 674–689. <https://doi.org/10.1111/j.2044-8309.2011.02032.x>

51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6 565 Acock, A. C. (2012). What to do about missing values. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter,
7 566 D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, 3. Data analysis 8*
9 567 *and research publication* (pp. 27–50). American Psychological Association.

10 568 <https://doi.org/10.1037/13621-002>
11

12 569 Adjaye-Gbewonyo, K., & Kawachi, I. (2012). Use of the Yitzhaki index as a test of relative deprivation for 13
14 570 health outcomes: A review of recent literature. *Social Science & Medicine, 75*(1), 129–137.

15 571 <https://doi.org/10.1016/j.socscimed.2012.03.004>
16
17

18 572 Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

19
20 573 American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.).

21 574 Author.
22

23 575 Amiri, M., Taheri, E., Mohammadkhani, P., & Dolatshahi, B. (2017). The study of predictive model of 24
25 576 social anxiety, based on behavioral inhibition and cognitive factors. *Journal of Fundamentals of 26*

577 *Mental Health, 19*(1), 45–51. <https://jfmh.mums.ac.ir>
27
28

29 578 Appelgryn, A. E. M., & Bornman, E. (1996). Relative deprivation in contemporary South Africa. *The 30*
579 *Journal of Social Psychology, 136*(3), 381–397. <https://doi.org/10.1080/00224545.1996.9714016> 31

32 580 Arnett, J. J. (2008). The neglected 95%: Why American psychology needs to become less American.

33
34 581 *American Psychologist, 63*(7), 602–614. [https://doi: 1037/0003-066X.63.7.602](https://doi:10.1037/0003-066X.63.7.602) 35

36 582 Artiga, S., & Ubri, P. (2017). *Living in an immigrant family in America: How fear and toxic stress are*

1
2
3
4
5
6
7

37 583 *affecting daily life, well-being, & health*. Kaiser Family Foundation. Retrieved from [https://www.kff.org/disparities-policy/issue-brief/living-in-an-immigrant-family-in-america-how-fear-and-toxic-stress-are](https://www.kff.org/disparities-policy/issue-brief/living-in-an-immigrant-family-in-america-how-fear-and-toxic-stress-are-affecting-daily-life-well-being-health/) 38 39 584
585 *-affecting-*
586 *daily-life-well-being-health/*

40

41

42

43

586 Asher, M., & Aderka, I. M. (2018). Gender differences in social anxiety disorder.
587 *Journal of Clinical*

44

587 *Psychology*, 1–12. <https://doi.org/10.1002/jclp.22624> 45

46

47

48

49

50

588 Barlow, D. H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed.).
589 Guilford Press.

50

590 Beine, M., Bourgeon, P., & Bricongne, J.-C. (2019). Aggregate fluctuations and international migration.
591 *The Scandinavian Journal of Economics*, 121(1), 117–152. <https://dx.doi.org/10.1111/sjoe.12258>

592

592 Bentley, K. H., Gallagher, M. W., Boswell, J. F., Gorman, J. M., Shear, M. K., Woods, S. W., &
593 Barlow, D.

593

593 H. (2012). The interactive contributions of perceived control and anxiety sensitivity in panic disorder:

Page 28 of 48

594

594 A triple vulnerabilities perspective. *Journal of Psychopathology and Behavioral Assessment*, 35(1),
595 57–64. <https://doi.org/10.1007/s10862-012-9311-8>

8

9

11

596 Bhanji, J. P., Kim, E. S., & Delgado, M. R. (2016). Perceived control alters the effect of acute stress on 10
597 persistence. *Journal of Experimental Psychology: General*, 145(3), 356–365.

51

52

53

54

55

56

57

58

59

60

12 598 <https://doi.org/10.1037/xge0000137>
13
14

15 599 Borrell, C., Artazcoz, L., Gil-González, D., Pérez, K., Pérez, G., Vives-Cases, C., & Rohlfs, I. (2011).

16 600 Determinants of perceived sexism and their role on the association of sexism with mental health.

17
18 601 *Women & Health*, 51(6), 583–603. <https://doi.org/10.1080/03630242.2011.608416>

19
20 602 Burger, J. M. (1989). Negative reactions to increases in perceived personal control. *Journal of Personality*
21 603 *and Social Psychology*, 56(2), 246–256. <https://doi.org/10.1037/0022-3514.56.2.246> 22

23 604 Callan, M. J., Kim, H., & Matthews, W. J. (2015). Predicting self-rated mental and physical health: The 24
25 605 contributions of subjective socioeconomic status and personal relative deprivation. *Frontiers in 26*

606 *Psychology*, 6, 1415. <https://doi.org/10.3389/fpsyg.2015.01415>

27
28
29 607 Chen, L. H., Su, S. B., Li, X. M., Tam, C. C., & Lin, D. H. (2014). Perceived discrimination, schooling
30 608 arrangements and psychological adjustments of rural-to-urban migrant children in Beijing, China.

31
32 609 *Health Psychology and Behavioral Medicine*, 2(1), 713–722.

33 610 <https://doi.org/10.1080/21642850.2014.919865> 34

35 611 Chen, S., Westman, M., & Hobfoll, S. E. (2015). The commerce and crossover of resources: Resource 36
37 612 conservation in the service of resilience. *Stress and Health*, 31(2), 95–105.

38 613 <https://doi:10.1002/smi.2574>

39
40
41 614 Chen, X., Wang, L., & Wang, Z. (2009). Shyness-sensitivity and social, school, and psychological
42 615 adjustment in rural migrant and urban children in China. *Child Development*, 80(5), 1499–1513.

43
44 616 <https://doi.org/10.1111/j.1467-8624.2009.01347.x>

45
46 617 Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: The role of control in the early 47
618 environment. *Psychological Bulletin*, 124(1), 3–21. <https://psycnet.apa.org/buy/1998-04232-001> 48

49 619 Chorpita, B. F., Brown, T. A., & Barlow, D. H. (2016). Perceived control as a mediator of family 50
620 environment in etiological models of childhood anxiety—republished article. *Behavior Therapy*, 47(5),

1
2
3
4
5
6
7
621 622–632. <https://doi.org/10.1016/j.beth.2016.08.008>

622 Cohodes, E. M., Kribakaran, S., Odriozola, P., Bakirci, S., McCauley, S., Hodges, H. R., Sisk, L. M., 623
Zacharek, S. J., & Gee, D. G. (2021). Migration-related trauma and mental health among migrant

Page 29 of 48

1
2
3
4
5
6 624 children emigrating from Mexico and Central America to the United States: Effects on developmental 7
625 neurobiology and implications for policy. *Developmental Psychobiology*, 63(6), e22158.

8
9 626 <https://doi.org/10.1002/dev.22158>

10
11 627 Costello, E. J., Egger, H. L., & Angold, A. (2005). The developmental epidemiology of anxiety disorders:
12 628 Phenomenology, prevalence, and comorbidity. *Child and Adolescent Psychiatric Clinics of North 13*
14 629 *America*, 14, 631–648. <https://doi.org/10.1016/j.chc.2005.06.003> 15 16 630 Crosby, F.
(1976). A model of egoistical relative deprivation. *Psychological Review*, 83(2), 85–113.

17
18 631 <https://doi.org/10.1037/0033-295x.83.2.85>

19
20 632 Dalbert, C. (1999). The world is more just for me than generally: About the personal belief in a just world
21 633 scale's validity. *Social Justice Research*, 12(2), 79–98. <https://doi.org/10.1023/a:1022091609047> 22

23 634 Dalbert, C. (2001). *The justice motive as a personal resource: Dealing with challenges and critical life*
24 25 635 *events*. Springer. <https://doi.org/10.1007/978-1-4757-3383-9>

26
27 636 Deng, J. X., Shang, L. B., He, D. Q., & Tang, R. (2019). The processing method of missing data and its 28
29 637 development trend. *Journal of Statistics and Decision Making*, 35(23), 28–34.

30 638 <https://doi.org/10.13546/j.cnki.tjyj.2019.23.005> 31

32 639 Diler, R. S., Avci, A., & Seydaoglu, G. (2003). Emotional and behavioural problems in migrant children.

33
34 640 *Swiss Medical Weekly*, 133(1–2), 16–21. <https://doi.org/2003/01/smw-09943> 35

36 641 Dogra, N., Karim, K., & Ronzoni, P. (2011). Migration and its effects on child mental health. In Bhugra, D

37 642 & Gupta, S (Eds.), *Migration and mental health* (pp.196–208). Cambridge University Press.

38
39
40 643 Dou, F., Li, Q. L., & Wang, S. H. (2021). Self-differentiation and college students' experiential avoidance:

41 644 Mediating effect of shyness and its gender difference. *Psychological Development and Education*, 42

43 645 37(4), 517–524. <https://doi.org/10.16187/j.cnki.issn1001-4918.2021.04.08> 44

45 646 Duarte, A. C., Matos, A. P., & Marques, C. (2015). Cognitive emotion regulation strategies and depressive 46

647 symptoms: Gender's moderating effect. *Procedia Social & Behavioral Sciences*, 165, 275–283.

47
48 648 <https://doi.org/10.1016/j.sbspro.2014.12.632> 49

50 649 Eibner, C., Sturm, R., & Gresenz, C. R. (2004). Does relative deprivation predict the need for mental health

650 services? *Journal of Mental Health Policy and Economics*, 7(4), 167–175.

651 Epkins, C., & Heckler, D. (2011). Integrating etiological models of social anxiety and depression in youth:

652 Evidence for a cumulative interpersonal risk model. *Clinical Child & Family Psychology Review*,

8
9 653 14(4), 329–376. <https://doi.org/10.1007/s10567-011-0101-8> 10

11 654 Erikson, E. H. (1963). *Childhood and society* (2nd ed.). Norton.

12
13 655 Fernández, R. S., Pedreira, M. E., Boccia, M. M., & Kaczer, L. (2018). Commentary: Forgetting the best

14

51

52

53

54

55

56

57

58

59

60

- 1
2
3
4
5
6
7
15 656 when predicting the worst: Preliminary observations on neural circuit function in adolescent social 16 657
anxiety. *Frontiers in Psychology*, 9, 1088. <https://doi.org/10.3389/fpsyg.2018.01088>
17
18 658 Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7(2), 117–140.
19
20 659 <https://doi.org/10.1177/001872675400700202> 21
22 660 Flores, J., Caqueo-Urizar, A., Ramírez, C., Arancio, G., & Cofré, J. P. (2020). Locus of control,
23 661 self-control, and gender as predictors of internalizing and externalizing problems in children and 24
25 662 adolescents in Northern Chile. *Frontiers in Psychology*, 11, 2015.
26 663 <https://doi.org/10.3389/fpsyg.2020.02015>
27
28
29 664 Gallagher, M. W., Bentley, K. H., & Barlow, D. H. (2014). Perceived control and vulnerability to anxiety 30
665 disorders: A meta-analytic review. *Cognitive Therapy and Research*, 38(6), 571–584.
31
32 666 <https://doi.org/10.1007/s10608-014-9624-x>
33
34 667 Gerry, V. (2005). Social status and health: Absolute deprivation or relative comparison, or both? *Health*
35 668 *Sociology Review*, 14(2), 121–134. <https://doi.org/10.5172/hesr.14.2.121> 36
37 669 Goode, A., & Mavromaras, K. (2014). Family income and child health in China. *China Economic Review*, 38
39 670 29, 152–165. <https://doi.org/10.1016/j.chieco.2014.04.007>
40
41 671 Greitemeyer, T., & Sagioglou, C. (2017). Increasing wealth inequality may increase interpersonal hostility:
42
43 672 The relationship between personal relative deprivation and aggression. *The Journal of Social* 44
673 *Psychology*, 157(6), 766–776. <https://doi.org/10.1080/00224545.2017.1288078> 45
46 674 Guo, H. Y., Chen, L. H., Ye, Z., Pan, J., & Lin, D. H. (2017). Characteristics of peer victimization and the 47

48 675 bidirectional relationship between peer victimization and internalizing problems among rural-to-urban 49

676 migrant children in China: A longitudinal study. *Acta Psychologica Sinica*, 49(3), 336–348.

50 677 <https://doi.org/10.3724/SP.J.1041.2017.00336>

678 Guo, J., Ren, X. Z., Wang, X. H., Qu, Z. Y., Zhou, Q. Y., Ran, C., Wang, X., & Hu, J. (2015).
679 Depression

679 among migrant and left-behind children in China in relation to the quality of parent-child and

Page 31 of 48

1
2
3
4
5
6 680 teacher-child relationships. *PLoS ONE*, 10(12), Article e0145606. <https://doi.org/10.1371/journal>.

7 681 [pone.0145606](https://doi.org/10.1371/journal.pone.0145606)

9 682 Hagger, M. S. (2015). Conservation of resources theory and the “strength” model of self-control:

10
11 683 Conceptual overlap and commonalities. *Stress & Health*, 31(2), 89–94.

12 684 <https://doi.org/10.1002/smi.2639>

13
14
15 685 Han, J. L., Zhang, Y. N., & Liu, Y. (2020). Changes and new characteristics of the definition of migrant 16

686 children and left-behind children. *Journal of Research on Education for Ethnic Minorities*, 31(6),

17
18 687 81–88. <https://doi.org/10.15946/j.cnki.1001-7178.2020.06.013>

19
20 688 Hayes, A. F., & Scharkow, M. (2013). The relative trustworthiness of inferential tests of the indirect effect 21

689 in statistical mediation analysis. *Psychological Science*, 24(10), 1918–1927.

22
23 690 <https://doi.org/10.1177/0956797613480187> 24

25 691 Hearn, C. S., Donovan, C. L., Spence, S. H., & March, S. (2017). A worrying trend in social anxiety: To

51
52
53
54
55
56
57
58
59
60

- 1
2
3
4
5
6
7
-
- 692 what degree are worry and its cognitive factors associated with youth social anxiety disorder? *Journal* 27 28
693 *of Affective Disorders*, 208, 33–40. <https://doi.org/10.1016/j.jad.2016.09.052>
- 29
30 694 Heinrichs, N., & Hofmann, S. G. (2005). Cognitive assessment of social anxiety: A comparison of 31
32 695 self-report and thought listing methods. *Cognitive Behaviour Therapy*, 34(1), 3–
15.
33 696 <https://doi.org/10.1080/1650607041003010634>
- 35 697 Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American* 36
37 698 *Psychologist*, 44(3), 513–524. <https://doi.org/10.1037/0003-066x.44.3.513>
- 39 699 Hofmann, S. G. (2005). Perception of control over anxiety mediates the relation between catastrophic 40
700 thinking and social anxiety in social phobia. *Behaviour Research and Therapy*, 43(7), 885–895.
41
42 701 <https://doi.org/10.1016/j.brat.2004.07.002>
- 44 702 Hollister-Wagner, G. H., Foshee, V. A., & Jackson, C. (2001). Adolescent aggression: Models of resiliency.
45
46 703 *Journal of Applied Social Psychology*, 31(3), 445–466.
47 704 <https://doi.org/10.1111/j.1559-1816.2001.tb02050.x>
- 49 705 Hosang, G., & Bhui, K. (2018). Gender discrimination, victimisation and women’s mental health. *The* 50
706 *British Journal of Psychiatry*, 213(6), 682–684. <https://doi.org/10.1192/bjp.2018.244>
- 707 Hu, Y., Zhou, M., Shao, Y., Wei, J., Li, Z., Xu, S., Maguire, P., & Wang, D. (2021). The effects of
social
708 comparison and depressive mood on adolescent social decision-making. *BMC Psychiatry*, 21(1), 1–15.
709 <https://doi.org/10.1186/s12888-020-02928-y>

- 710 Iverach, L., Rapee, R. M., Wong, Q. J. J., & Lowe, R. (2017). Maintenance of social anxiety in
stuttering: A cognitive-behavioral model. *American Journal of Speech-Language Pathology*,
26(2), 540–556.
- 8
9 712 https://doi.org/10.1044/2016_AJSLP-16-0033 10
- 11 713 Jia, R., Tai, F., An, S., Zhang, X., & Broders, H. (2009). Effects of neonatal paternal deprivation or early 12
714 deprivation on anxiety and social behaviors of the adults in mandarin voles. *Behavioural Processes*, 13
14 715 82(3), 271–278. <https://doi.org/10.1016/j.beproc.2009.07.006>
- 15
16 716 Jia, X. J., Bai, J. R., Lin, L., & Liu, X. (2020). Relationships between perceived discrimination and
17
18 717 satisfaction in migrant children: The role of belief in a just world and teacher support. *Journal of 19*
718 *Beijing Normal University (Social Sciences Edition)*, 6, 29–35.
- 20
21 719 Jiang, S., & Ngai, S. S. (2020). Social exclusion and multi-domain well-being in Chinese migrant children:
22
23 720 Exploring the psychosocial mechanisms of need satisfaction and need frustration. *Children and Youth 24*
721 *Services Review*, 116, Article 105182. <https://doi.org/10.1016/j.childyouth.2020.105182> 25
- 26 722 Kaur, R. (2017). Role of attributional styles and perceived control in control in social anxiety among 27
28 723 university entrants. *Electronic Journal of Research in Educational Psychology*, 15(2), 355–376.
29 724 <https://doi.org/10.14204/ejrep.42.16056>
- 30
31
32 725 Kay, A. C., Whitson, J. A., Gaucher, D., & Galinsky, A. D. (2009). Compensatory control: Achieving order
33 726 through the mind, our institutions, and the heavens. *Current Directions in Psychological Science*, 34
35 727 18(5), 264–268. <https://doi.org/10.1111/j.1467-8721.2009.01649.x>
- 36
37 728 Khera, M. L. K., Harvey, A. J., & Callan, M. J. (2014). Beliefs in a just world, subjective well-being and 38
729 attitudes towards refugees among refugee workers. *Social Justice Research*, 27(4), 432–443.
- 39
40 730 <https://doi.org/10.1007/s11211-014-0220-8> 41
- 42 731 Kim, H., Callan, M. J., Gheorghiu, A. I., & Matthews, W. J. (2017). Social comparison, personal relative
43
44
45
46
47
48
49
50

1
2
3
4
5
6
7
44 732 deprivation, and materialism. *British Journal of Social Psychology*, 56(2),
373–392.

45 733 <https://doi.org/10.1111/bjso.12176> 46

47 734 Kim, H., Callan, M. J., Gheorghiu, A. I., & Skylark, W. J. (2018). Social comparison processes in the 48
49 735 experience of personal relative deprivation. *Journal of Applied Social Psychology*, 48(9), 519–532.

50 736 <https://doi.org/10.1111/jasp.12531>

737 Korte, K. J., Unruh, A. S., Oglesby, M. E., & Schmidt, N. B. (2015). Safety aid use and social anxiety 738
symptoms: The mediating role of perceived control. *Psychiatry Research*, 228(3), 510–515.

739 <https://doi.org/10.1016/j.psychres.2015.06.006>

Page 33 of 48

1
2
3
4
5
6 740 Krumm, A. J., & Corning, A. F. (2010). Perceived control as a moderator of the prototype effect in the 7
741 perception of discrimination. *Journal of Applied Social Psychology*, 38(5), 1109–1126.

8
9 742 <https://doi.org/10.1111/j.1559-1816.2008.00341.x> 10

11 743 Kuo, F. W., & Yang, S. C. (2019). In-group comparison is painful but meaningful: The moderator of
12 744 classroom ethnic composition and the mediators of self-esteem and school belonging for upward 13
14 745 comparisons. *The Journal of Social Psychology*, 159(5), 531–545.

15 746 <https://doi.org/10.1080/00224545.2018.1515721>
16
17

- 18 747 La Greca, A. M., Dandes, S. K., Wick, P., Shaw, K., & Stone, W. L. (1988). Development of the social 19
748 anxiety scale for children: Reliability and concurrent validity. *Journal of Clinical Child Psychology*, 20
21 749 17(1), 84–91. https://doi.org/10.1207/s15374424jccp1701_11
22
23 750 La Greca, A. M., Ingles, C. J., Lai, B. S., & Marzo, J. C. (2014). Social anxiety scale for adolescents: 24
751 Factorial invariance across gender and age in Hispanic American adolescents. *Assessment*, 22(2), 25
26 752 224–232. <https://doi.org/10.1177/1073191114540749> 27
28 753 Lan, X. Y., Scrimin, S., & Moscardino, U. (2020). Emotional awareness moderates the association between
29 754 discrimination and emotional-behavioral problems: A cross-informant study in Chinese rural-to-urban 30
31 755 migrant youth. *The Journal of Early Adolescence*, 40(6), 857–879.
32 756 <https://doi.org/10.1177/0272431619874399>
33
34
35 757 Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
36
37 758 Lee, J. (2021). The effect of deprivation on depression across different age groups in Korea. *Asian Social 38*
759 *Work and Policy Review*, 15(2), 173–183. <https://doi.org/10.1111/aswp.12229>
39
40
41 760 Leviston, Z., Dandy, J., Jetten, J., & Walker, I. (2020). The role of relative deprivation in majority-culture
42 761 support for multiculturalism. *Journal of Applied Social Psychology*, 50(4), 228–239.
43
44 762 <https://doi.org/10.1111/jasp.12652>
45
46 763 Lhila, A., & Simon, K. I. (2010). Relative deprivation and child health in the USA. *Social Science &*
47 764 *Medicine*, 71(4), 777–785. <https://doi.org/10.1016/j.socscimed.2010.03.058> 48
49 765 Li, M. L., Ren, Y. J., Yang, J., & Lei, X. Y. (2020). Influence of physical activities on social anxiety of 50
766 left-behind children in rural areas: Mediating role of psychological capital. *Journal of Clinical*
767 *Psychology*, 28(6), 1297–1300. <https://doi.org/10.16128/j.cnki.1005-3611.2020.06.045>

- 1
2
3
4
5
6
7
- 768 Li, X., Lu, H., Wang, H., Zun, P. H., & Zhang, J. X. (2018). General belief in a just world, moral 769
disengagement, and helping propensity in emergencies. *Social Behavior & Personality: An*
8
9 770 *International Journal*, 46(11), 1923–1936. <https://doi.org/10.2224/sbp.7407>
- 10
11 771 Lips, H. M. (2002). Female powerlessness: Still a case of ‘cultural preparedness’? In A. E. Hunter & C. 12
772 Forden (Eds.), *Readings in the psychology of gender: Exploring our differences and commonalities*
13
14 773 (pp. 19–37). Allyn & Bacon.
- 15
16 774 Liu, G. Z., Zhang, D. J., Zhu, Z. G., Li, J. J., & Chen, X. (2020). The effect of family socioeconomic status
17
18 775 on adolescents’ problem behaviors: The chain mediating role of parental emotional warmth and belief 19
776 in a just world. *Journal of Psychological Development and Education*, 36(2), 240–248.
20
21 777 <https://doi.org/10.16187/j.cnki.issn1001-4918.2020.02.13>
- 22
23 778 Liu, X., & Shen, J. L. (2009). Chinese migrant children’s attributions to discrimination and its effect on 24
779 affect. *Chinese Journal of Mental Health*, 23(8), 599–602.
- 25
26 780 Lucas, T., Alexander, S., Firestone, I., & Lebreton, J. M. (2009). Belief in a just world, social influence and
27
28 781 illness attributions. *Journal of Health Psychology*, 14(2), 258–266.
29 782 <https://doi.org/10.1177/1359105308100210>
30
31

- 32 783 Ly, V., Wang, K. S., Bhanji, J., & Delgado, M. R. (2019). A reward-based framework of perceived control.
33 784

Frontiers in Neuroscience, 13, 65. <https://doi.org/10.3389/fnins.2019.00065> 34
- 35 785 Ma, A. (1993). Social anxiety scale for children. *Chinese Journal of Mental Health*, 7(3), 216–217.
36
- 37 786 Mackenzie, M. B., & Fowler, K. F. (2013). Social anxiety disorder in the Canadian population: Exploring
38 39 787 gender differences in sociodemographic profile. *Journal of Anxiety Disorders*, 27(4), 427–434.
40
41 788 <https://doi.org/10.1016/j.janxdis.2013.05.006>
- 42
- 43 789 Marmot, M., Bosma, H., Hemingway, H., Brunner, E., & Stansfeld, S. (1997). Contribution of job control 44
790 and other risk factors to social variations in coronary heart disease incidence. *The Lancet*, 350(9073), 45
46 791 235–239. [https://doi.org/10.1016/S0140-6736\(97\)04244-X](https://doi.org/10.1016/S0140-6736(97)04244-X)
- 47
- 48 792 Mendonça, R. D., Gouveia-Pereira, M., & Miranda, M. (2016). Belief in a just world and secondary 49
793 victimization: The role of adolescent deviant behavior. *Personality and Individual Differences*, 97, 50
794 82–87. <https://doi.org/10.1016/j.paid.2016.03.021>
- 795 Mishra, S., & Carleton, R. N. (2015). Subjective relative deprivation is associated with poorer physical
and 796 mental health. *Social Science & Medicine*, 147, 144–149.
797 <https://doi.org/10.1016/j.socscimed.2015.10.030>

Page 35 of 48

1
2
3
4
5
6
7
8
9
10
11
12

51
52
53
54
55
56
57
58
59
60

- 1
2
3
4
5
6
7
803 90, 22–26. <https://doi.org/10.1016/j.paid.2015.10.031> 15
- 804 Mitchell, M. A., & Schmidt, N. B. (2014). An experimental manipulation of social comparison in social
805 anxiety. *Cognitive Behaviour Therapy*, 43(3), 221–229.
806 <https://doi.org/10.1080/16506073.2014.914078> 20
- 807 Moore, D. (2003). Perceptions of sense of control, relative deprivation, and expectations of young Jews and 22
808 Palestinians in Israel. *The Journal of Social Psychology*, 143(4), 521–540.
809 <https://doi.org/10.1080/00224540309598460> 25
- 810 Morrison, A. S., & Heimberg, R. G. (2013). Anxiety and social anxiety disorder. *Annual Review of Clinical*
811 *Psychology*, 9(1), 249–274. <https://doi.org/10.1146/annurev-clinpsy-050212-185631>
- 812 Mummendey, A., Kessler, T., Klink, A., & Mielke, R. (1999). Strategies to cope with negative social 31
813 identity: Predictions by social identity theory and relative deprivation theory. *Journal of Personality* 33
814 *and Social Psychology*, 76(2), 229–245. <https://doi.org/10.1037/0022-3514.76.2.229> 34
- 815 Nadler, J., Day, M. V., Beshai, S., & Mishra, S. (2020). The relative deprivation trap: How feeling deprived 36
816 relates to symptoms of generalized anxiety disorder. *Journal of Social and Clinical Psychology*, 38
817 39(10), 897–922. <https://doi.org/10.1521/jscp.2020.39.10.897>
- 818 National Bureau of Statistics. (2021). *Bulletin of the Seventh National Census*. Retrieved May 11, 2021,
819 from http://www.stats.gov.cn/tjsj/tjgb/rkpcgb/qgrkpcgb/202106/t20210628_1818826.html
- 820 Noor, N. M., Abdullah, M. M. A. B., Yahaya, A. S., & Ramli, N. A. (2014). Comparison of linear 45
821 interpolation method and mean method to replace the missing values in environmental data set. 47
822 *Materials Science Forum*, 803, 278–281. <https://doi.org/10.4028/www.scientific.net/msf.803.278> 48
- 823 Okuzono, S. S., Fujiwara, T., Gero, K., Shiba, K., & Kawachi, I. (2019). Absolute and relative income 50
824 deprivation and children's subjective well-being in Japan. *Journal of Adolescent Health*, 64(2),

826 Oppedal, B., & Røysamb, E. (2004). Mental health, life stress and social support among young
Norwegian 827 adolescents with immigrant and host national back-ground. *Scandinavian Journal
of Psychology,*

828 *45(2), 131–144.* <https://doi.org/10.1111/j.1467-9450.2004.00388.x>

829 Osborne, D., & Sibley, C. G. (2013). Through rose-colored glasses: System-justifying beliefs dampen the
830 effects of relative deprivation on well-being and political mobilization. *Personality and Social
14 831 Psychology Bulletin, 39(8), 991–1004.* <https://doi.org/10.1177/0146167213487997>

832 Osborne, D., Sibley, C. G., & Sengupta, N. K. (2015). Income and neighbourhood-level inequality predict
17 833 self-esteem and ethnic identity centrality through individual- and group-based relative deprivation: A
19
834 multilevel path analysis. *European Journal of Social Psychology, 45(3), 368–377.*

20
21 835 <https://doi.org/10.1002/ejsp.2087>

22
23 836 Otto, K., Boos, A., Dalbert, C., Schops, D., & Hoyer, J. (2006). Posttraumatic symptoms, depression, and
24 837 anxiety of flood victims: The impact of the belief in a just world. *Personality and Individual
26 838 Differences, 40(5), 1075–1084.* <https://doi.org/10.1016/j.paid.2005.11.010>

27
28 839 Panayiotou, G., Karekla, M., & Leonidou, C. (2017). Coping through avoidance may explain gender
29
840 disparities in anxiety. *Journal of Contextual Behavioral Science, 6(2), 215–220.*

30
31 841 <https://doi.org/10.1016/j.jcbs.2017.04.005> 32

- 1
2
3
4
5
6
7
-
- 33 842 Park, H. I., Jacob, A. C., Wagner, S. H., & Baiden, M. (2014). Job control and burnout: A meta-analytic test
34
35 843 of the conservation of resources model. *Applied Psychology*, *63*(4), 607–642.
36 844 <https://doi.org/10.1111/apps.12008>
37
- 38 845 Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, *19*(1),
39
40 846 2–21. <https://doi.org/10.2307/2136319> 41
- 42 847 Pettigrew, T. F. (2016). In pursuit of three theories: Authoritarianism, relative deprivation, and intergroup
43
44 848 contact. *Annual Review of Psychology*, *67*(1), 1–21.
45 849 <https://doi.org/10.1146/annurev-psych-122414-033327>
46
- 47 850 Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science 48
49 851 research and recommendations on how to control it. *Annual Review of Psychology*, *63*(1), 539–569.
50 852 <https://doi.org/10.1146/annurev-psych-120710-100452> 665
- 853 Podsakoff, P. M., MacKenzie, S. B., Lee, J.Y., & Podsakoff, N. P. (2003). Common method biases in
854 behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied*
855 *Psychology*, *88*(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>

Page 37 of 48

- 1
2
3
4
5
6 856 Price, R. H., Choi, J. N., & Vinokur, A. D. (2002). Links in the chain of adversity following job loss: How
7 857 financial strain and loss of personal control lead to depression, impaired functioning, and poor health.
8
- 51
52
53
54
55
56
57
58
59
60

9 858 *Journal of Occupational Health Psychology*, 7(4), 302–312. <https://doi.org/10.1037/1076-8998.7.4.302> 10

11 859 Qiu, W. F., Lin, G. Y., Ye, Y. D., & Chen, Z. Y. (2017). The effect of social media on college students'
12 860 anxiety: The serial mediations of upward social comparison and psychological capital based on an 13
14 861 analysis of wechat and qzone. *Chinese Journal of Special Education*, 8, 88–92.

15
16 862 Rees, P. (2009). Population: Demography. In N. J. Thrift & R. Kitchin (Eds.), *International encyclopedia of 17*
18 863 *human geography*. Elsevier.

19
20 864 Ren, Y. J., & Li, M. L. (2020). Influence of physical exercise on social anxiety of left-behind children in
21 865 rural areas in China: The mediator and moderator role of perceived social support. *Journal of Affective 22*
23 866 *Disorders*, 266, 223–229. <https://doi.org/10.1016/j.jad.2020.01.152> 24

25 867 Rosenbaum, D. L., White, K. S., & Gervino, E. V. (2012). The impact of perceived stress and perceived 26
868 control on anxiety and mood disorders in noncardiac chest pain. *Journal of Health Psychology*, 17(8), 27 28 869
1183–1192. <https://doi.org/10.1177/1359105311433906>

29
30 870 Runciman, W. G. (1966). *Relative deprivation and social justice*. Routledge.

31
32 871 Saito, M., Kondo, K., Kondo, N., Abe, A., Ojima, T., Suzuki, K., & JAGES group. (2014). Relative 33
34 872 deprivation, poverty, and subjective health: JAGES cross-sectional study. *PLoS ONE*,
9(10), Article

35 873 e111169. <https://doi.org/10.1371/journal.pone.0111169> 36

37 874 Schumacker, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling* (3rd ed.).

38
39 875 Routledge.

40
41 876 Scott, B., & Weems, C. (2010). Patterns of actual and perceived control: Are control profiles differentially 42
43 877 related to internalizing and externalizing problems in youth? *Anxiety, Stress & Coping*, 23(5), 44
878 515–528. <https://doi.org/10.1080/10615801003611479> 45

46 879 Shek, D. T. L., & Lee, T. Y. (2007). Family life quality and emotional quality of life in Chinese adolescents 47
48 880 with and without economic disadvantage. *Social Indicators Research*, 80(2), 393–410.

49 881 <https://doi.org/10.1007/s11205-006-6624-6>

50
882 Smith, H. J., Pettigrew, T. F., Pippin, G. M., & Bialosiewicz, S. (2012). Relative deprivation: A theoretical
883 and meta-analytic review. *Personality and Social Psychology Review*, 16(3), 203–232.

51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
884 <https://doi.org/10.1177/1088868311430825>

Page 38 of 48

885 Song, Y. Z., Tian, Y., Zhou, Z. K., Lian, S. L., & Niu, G. F. (2018). The impact of belief in a just world
on 886 depression: The serial mediating roles of gratitude and self-esteem. *Journal of Psychological
Science,*

8
9 887 41(4), 828–834. <https://10.16719/j.cnki.1671-6981.20180410>

10
11 888 Stapinski, L. A., Abbott, M. J., & Rapee, R. M. (2010). Evaluating the cognitive avoidance model of
12 889 generalised anxiety disorder: Impact of worry on threat appraisal, perceived control and anxious 13
14 890 arousal. *Behaviour Research and Therapy*, 48(10), 1032–1040.

15 891 <https://doi.org/10.1016/j.brat.2010.07.005>

16
17
18 892 Stouffer, S. A., Suchman, E. A., DeVinney, L. C., Star, S. A., & Williams, R. M. (1949). *The American
19 893 soldier: Adjustment during army life (Studies in social psychology in World War II)*. Princeton 20
21 894 University Press.

22
23 895 Su, Q., Zhao, X., & Ji, L. (2016). A study on mental health of migrant workers based on deprivation theory.
24 896 *Journal of Huazhong Agricultural University (Social Sciences Edition)*, 42(6), 93–101.

25
26 897 <https://doi.org/10.13300/j.cnki.hnwkxb.2016.06.013>

- 28 898 Su, Z. Q., Zhang, D. J., & Wang, X. Q. (2012). Revision of the belief in a just world scale and study on its 29
899 reliability and validity in college Students. *Chinese Journal of Behavioral Medicine and Brain Science*,
30
31 900 21(6), 561–563.
- 33 901 Testé, B., & Perrin, S. (2013). The impact of endorsing the belief in a just world on social judgments. *Social*
34
35 902 *Psychology*, 44(3), 209–218. <https://doi.org/10.1027/1864-9335/a000105>
- 37 903 Thalmayer, A. G., Toscanelli, C., & Arnett, J. J. (2021). The neglected 95% revisited: Is American 38
904 psychology becoming less American? *American Psychologist*, 76(1), 116–129.
39
40 905 <https://doi.org/10.1037/amp0000622>
- 42 906 Tian, X. L. (2019). Negative life events and life satisfaction in university students: Belief in a just world as
43
44 907 a mediator and moderator. *Journal of Health Psychology*, 24(4), 526-534.
45 908 <https://doi.org/10.1177/1359105316678054> 46
- 47 909 Tiedens, L. Z. (2001). Anger and advancement versus sadness and subjugation: The effect of negative 48
49 910 emotion expressions on social status conferral. *Journal of Personality and Social Psychology*, 80(1),
50 911 86–94. <https://doi.org/10.1037/0022-3514.80.1.86>
- 912 Tong, Y. T., Qiu, X. W., Lian, S. L., & Zhang, M. M. (2017). Upward social comparison in social
network
913 siteand depression: Mediating of social anxiety. *Chinese Journal of Clinical Psychology*, 25(3),
914 498–501. <https://doi.org/10.16128/j.cnki.1005-3611.2017.03.022>

Page 39 of 48

1

2

3

4

5

6

- 915 Ucara, G. K., Hastab, D., & Malatyali, M. K. (2019). The mediating role of perceived control and

51

52

53

54

55

56

57

58

59

60

- 1
2
3
4
5
6
7
916 hopelessness in the relation between personal belief in a just world and life satisfaction. *Personality 8*
917 *and Individual Differences*, 143, 68–73. <https://doi.org/10.1016/j.paid.2019.02.021> 10
- 11 918 Ursin, H. (2009). The development of a cognitive activation theory of stress: From limbic structures to 12
919 behavioral medicine. *Scandinavian Journal of Psychology*, 50(6), 639–644.
- 13
14 920 <https://doi.org/10.1111/j.1467-9450.2009.00790.x> 15
- 16 921 Vigod, S. N., & Rochon, P. A. (2020). The impact of gender discrimination on a woman's mental health.
17
18 922 *EClinicalMedicine*, 20, Article 100311. <https://doi.org/10.1016/j.eclinm.2020.100311>
- 19
20 923 Vujanovic, A. A., Marshall, E. C., Gibson, L. E., & Zvolensky, M. J. (2010). Cognitive–affective
21 924 characteristics of smokers with and without posttraumatic stress disorder and panic psychopathology.
22
23 925 *Addictive Behaviors*, 35(5), 419–425. <https://doi.org/10.1016/j.addbeh.2009.12.005> 24
- 25 926 Wang, D. Y., Lu, X., & Yin, X. (2017). The association of negative academic emotions on perceived
26 927 academic self-efficacy of migrant children: The moderating role of emotion regulation strategies.
27
28 928 *Psychological Development and Education*, 3(1), 56–64.
29 929 <https://doi.org/10.16187/j.cnki.issn1001-4918.2017.01.07>
- 30
31
32 930 Wang, K. S., & Delgado, M. R. (2021). The protective effects of perceived control during repeated exposure
33 931 to aversive stimuli. *Frontiers in Neuroscience*, 15, Article 625816.
34
35 932 <https://doi.org/10.3389/fnins.2021.625816>
36

37 933 Wang, L., & Mesman, J. (2015). Child development in the face of rural-to-urban migration in China. 38

934 *Perspectives on Psychological Science*, 10(6), 813–831. <https://doi.org/10.1177/1745691615600145>

39
40 935 Wang, N. (2007). Relative deprivation: A case of the retired urban elders' experience on medical security
41 42 936 system. *Journal of Northwest Normal University (Social Sciences)*, 44(4), 19–25.

43
44 937 Wang, Z. H., Lin, X. Y., Hou, X. N., & Fang, X. Y. (2016). Urban adaptation of migrant children in China:
45
46 938 A review of the studies of the last 20 years. *Journal of Beijing Normal University (Social Science*

47 939 *Edition)*, 2, 37–46.

48
49 940 Ward, A., & Mann, T. (2000). Don't mind if I do: Disinhibited eating under cognitive load. *Journal of 50*
941 *Personality and Social Psychology*, 78(4), 753–763. <https://doi.org/10.1037/0022-3514.78.4.753>

942 Wen, Z. L., Hau, K. T., & Marsh, H. W. (2004). Structural equation model testing: Cutoff criteria for
943 goodness of fit indices and chi-square test. *Acta Psychologica Sinica*, 36(2), 186–194.

944 <https://journal.psych.ac.cn/acps/EN/Y2004/V36/I02/186>

Page 40 of 48

945 White, K. S., Brown, T. A., Somers, T. J., & Barlow, D. H. (2006). Avoidance behavior in panic
disorder: 946 The moderating influence of perceived control. *Behaviour Research and Therapy*,
44(1), 147–157.

8
9 947 <https://doi:10.1016/j.brat.2005.07.009>

10
11 948 Williams, K. D. (2007). Ostracism. *Annual Review of Psychology*, 58(1), 425–452.

12 949 <https://doi.org/10.1146/annurev.psych.58.110405.085641>
13
14

51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
15 950 Wu, W., Qu, G., Wang, L., Tang, X., & Sun, Y. (2019). Meta-analysis of the mental health status of 16
951 left-behind children in China. *Journal of Paediatrics and Child Health*, 55(3), 260–270.

17
18 952 <https://doi.org/10.1111/jpc.14349>

19
20 953 Xi, J. P. (2021). *Speech at the national poverty alleviation summary commendation conference*. Retrieved

21 954 February 25, 2021, from http://www.gov.cn/gongbao/content/2021/content_5591398.htm 22

23 955 Xiong, M., & Liu, R. J. (2020). The relationship between relative deprivation and depression in left-behind
24 956 children: the role of perceived control and a belief in a just world. *Journal of Fujian Normal University* 26
957 (*Philosophy and Social Sciences Edition*), 2, 148–157.

27
28 958 <https://doi.org/10.12046/j.issn.1000-5285.2020.02.017>

29
30 959 Xiong, M., & Ye, Y. D. (2016). The concept, measurement, influencing factors and effects of relative 31
32 960 deprivation. *Advances in Psychological Science*, 24(3), 438–453.

33 961 <https://doi.org/10.3724/SP.J.1042.2016.00438> 34

35 962 Xiong, M., Liu, R. J., & Ye, Y. D. (2021). Reciprocal relations between relative deprivation and 36
37 963 psychological adjustment among single-parent children in China: A longitudinal study. *Acta* 38

964 *Psychologica Sinica*, 53(1), 67–80. <https://dx.doi.org/10.3724/SP.J.1041.2021.00067>

39
40
41 965 Xiong, M., Xiao, L., & Ye, Y. D. (2021). Relative deprivation and prosocial tendencies in Chinese migrant

42 966 children: Testing an integrated model of perceived social support and group identity. *Frontiers in*

43
44 967 *Psychology*, 12, 2161. <https://doi.org/10.3389/fpsyg.2021.658007>

45
46 968 _____
Yang, X. J., Fan, C. Y., Liu, Q. Q., Lian, S. L., Cao, M., & Zhou, Z. K. (2019). The mediating role of
47 969 boredom proneness and the moderating role of meaning in life in the relationship between mindfulness 48
49 970 and depressive symptoms. *Current Psychology*, *40*, 4635–4646.

50 971 <https://doi.org/10.1007/s12144-019-00408-5>

972 Ye, Y. D., & Xiong, M. (2017). The effect of environmental factors on migrant children's relative
973 deprivation: The moderating effect of migrant duration. *Chinese Journal of Special Education*, *24*(7),
974 41–46.

Page 41 of 48

1
2
3
4
5

6 975 Yngwe, M. A., Fritzell, J., Lundberg, O., Diderichsen, F., & Burström, B. (2003). Exploring relative
7 976 deprivation: Is social comparison a mechanism in the relation between income and health? *Social 8*
9 977 *Science & Medicine*, *57*(8), 1463–1473. [https://doi.org/10.1016/s0277-9536\(02\)00541-5](https://doi.org/10.1016/s0277-9536(02)00541-5) 10

11 978 Zalta, A. K., & Chambless, D. L. (2012). Understanding gender differences in anxiety: The mediating 12
979 effects of instrumentality and mastery. *Psychology of Women Quarterly*, *36*(4), 488–499.

13
14
15

980 <https://doi.org/10.1177/0361684312450004>

16 981 Zenses, A. K., Lenaert, B., Peigneux, P., Beckers, T., & Boddez, Y. (2019). Sleep deprivation increases
17
18 982 threat beliefs in human fear conditioning. *Journal of Sleep Research*, *29*(3),
Article 12873.

19 983 <https://doi.org/10.1111/jsr.12873> 20

21 984 Zhang, L., Li, J. Y., & Zhao, J. X. (2015). Parent supporting and emotional adaptation of juvenile offenders:
22
23 985 Mediating effect of belief in a just world. *Psychological Development and Education*,
31(6), 746–752.

51
52
53
54
55
56
57
58
59
60

- 1
2
3
4
5
6
7
8 986 <https://doi.org/10.16187/j.cnki.issn1001-4918.2015.06.14> 25
- 9 987 Zhang, L., Wang, Y. L., You, Z. Q., & Lian, B. (2018). Influence of belief in a just world on academic
10 988 procrastination of rural junior high school students: Sequential mediating effect of sense of control and
11 989 sense of time efficacy. *Chinese Journal of Clinical Psychology*, 26(2), 367–370.
- 12
13
14
15
16
17
18 990 Zhang, T., & Wang, Z. (2020). The effects of family functioning and psychological sushi between school
19 991 climate and problem behaviors. *Frontiers in Psychology*, 11, 212.
- 20
21
22 992 <https://doi.org/10.3389/fpsyg.2020.00212>
- 23
24 993 Zhou, C. Y., & Guo, Y. Y. (2013). Belief in a just world: A double-edged sword for justice restoration. 38
25 994 *Advances in Psychological Science*, 21(1), 144–154. <https://doi.org/10.3724/SP.J.1042.2013.00144>
- 26
27
28 995 Zhou, H., & Long, L. R. (2004). Statistical remedies for common method biases. *Advances in Psychological*
29 996 *Science*, 12(6), 942–950. <https://doi.org/10.3969/j.issn.1671-3710.2004.06.018>
- 30
31
32 997 Zhou, X., He, L., Yang, Q., Lao, J., & Baumeister, R. F. (2012). Control deprivation and styles of thinking.
33 998 *Journal of Personality and Social Psychology*, 102(3), 460–478. <https://doi.org/10.1037/a0026316>
- 34
35
36 999 Zimmerman, M. A., Ramírez-Valles, J., & Maton, K. I. (1999). Resilience among urban African American
37 1000 male adolescents: A study of the protective effects of sociopolitical control on their mental health.
38 1001 *American Journal of Community Psychology*, 27(6), 733–751.
39 1002 <https://doi.org/10.1023/a:1022205008237>

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 $< .01$.

 p

54 1019
 55 1020
 56 1021
 57 1022
 58 1023
 59 1024
 60 1025

1939

1

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.

For Peer Review

42
43
44
45
46
47
48
49
50
51
52
53

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.

1041

1042

1043

1044

1045

1046

1047

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

1995

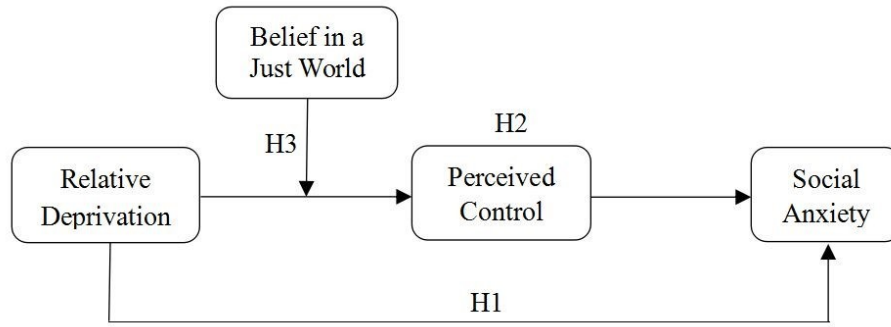
3

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.

44
45
46
47
48
49
50
51
52
53



2018

2019

Figure 1. Moderated mediation model of the current study.

For Peer Review

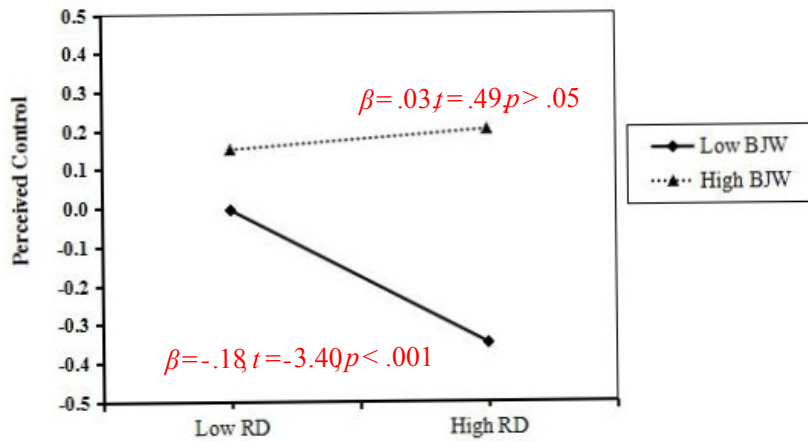
2020

- 54 1063
- 55 1064
- 56 1065
- 57 1066
- 58 1067
- 59 1068
- 60 1069

1070

2021

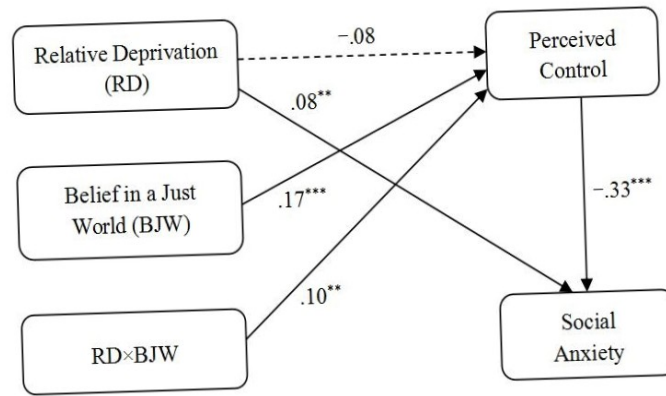
1



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

42
43
44
45
46
47
48
49
50
51
52
53



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

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

2077

54 1085
 55 1086
 56 1087
 57 1088
 58 1089
 59 1090
 60 1091

1092

2078

3