



Deposited via The University of York.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/id/eprint/131412/>

Version: Accepted Version

---

**Article:**

Wu, Qiaobing, Ge, Ting, Emond, Alan et al. (2018) Acculturation, Resilience and the Mental health of Migrant Youth: A Cross-Country Comparative Study. *Public Health*. pp. 63-70. ISSN: 0033-3506

<https://doi.org/10.1016/j.puhe.2018.05.006>

---

**Reuse**

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) licence. This licence only allows you to download this work and share it with others as long as you credit the authors, but you can't change the article in any way or use it commercially. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

**Takedown**

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing [eprints@whiterose.ac.uk](mailto:eprints@whiterose.ac.uk) including the URL of the record and the reason for the withdrawal request.

Manuscript Number: PUHE-D-17-00643R1

Title: Acculturation, Resilience and the Mental Health of Migrant Youth:  
A Cross-Country Comparative Study

Article Type: Original Research

Keywords: Acculturation; Mental Health; Migration; Resilience; Youth

Corresponding Author: Professor Qiaobing Wu, Ph.D.

Corresponding Author's Institution: Department of Applied Social  
Sciences, The Hong Kong Polytechnic University

First Author: Qiaobing Wu, Ph.D.

Order of Authors: Qiaobing Wu, Ph.D.; Ting Ge, MA; Alan Emond, MD; Kim  
Foster, PhD; Justine Gatt, PhD; Kristin Hadfield, PhD; Amanda Mason-  
Jones, PhD; Steve Reid, PhD; Linda Theron, PhD; Michael Ungar, PhD;  
Trecia Wouldes, PhD

Abstract: Objectives: Using data from an international collaborative  
research project on youth resilience in the context of migration, this  
study aims to investigate how different acculturation patterns (i.e.,  
integration, assimilation, separation and marginalization) influence the  
mental health of migrant youth, and whether resilience might function as  
a mediator in the association between acculturation and mental health.

Study Design: A cross-sectional pilot study conducted in six countries  
employing a common survey questionnaire.

Methods: The study sample was 194 youths aged 10-17 years (Median=13.6)  
from six countries (Australia, Canada, China, New Zealand, South Africa,  
and United Kingdom), and included cross-border and internal migrants.  
Mental health and well-being was measured by the Warwick-Edinburgh Mental  
Well-Being Scale (WEMWBS). Resilience was measured by the Child and Youth  
Resilience Measure-28 (CYRM-28). Acculturation was assessed using the  
Acculturation, Habits, and Interests Multicultural Scale for Adolescents  
(AHIMSA). Multivariate regression and path analysis were performed to  
examine the hypothesized mediation model.

Results: Resilience scores correlated strongly with mental health and  
well-being. Acculturation exerted no significant direct effects on the  
mental health of migrant youths. Nevertheless, compared to youths who  
were integration-oriented, assimilation-oriented youths tended to exhibit  
lower levels of resilience, resulting in poorer mental health. Compared  
to youths from other countries, migrant youths from China also reported  
lower levels of resilience, which led to poorer mental health outcome.

Conclusion: Acculturation plays a significant role in the mental health  
of migrant youth, with different acculturative orientations exhibiting  
different influences through the mediation effect of resilience.

Fostering resilience and facilitating integration-oriented acculturation are recommended public health strategies for migrant youth.

## Response to Reviewers

We highly appreciate the comments and suggestions provided by the reviewers on the earlier version of our manuscript. Below please find our point-by-point response to the reviewers' comments.

1. The sample is too small and spread out over too many migration/immigration ecosystems to justify the study's conclusions.

Response: We acknowledge in the discussion that the sample is small, and the findings will need to be replicated on a larger sample. However, the diversity of sites, and the mix of internal and international migrants, should also be considered a strength of the study. The relationships found across the different countries with the same age group of migrant youths suggest that there may be a consistent relationship between acculturation orientation, resilience and mental health. Therefore, this study would serve as a pioneer investigation that implies a promising direction for future large-scale comparative research.

2. The authors did not describe important details about the study sample, including the age of the respondents, and a description of differences between youth who participated in the study and those in the sampling frame who did not participate. Given that the study focuses on mental health and resilience, it is probable that the most resilient youth many have been recruited -which would skew results.

Response: We have now provided more details about the study sample (both the total sample and subsamples of each country) in Table 1. We have also added into the methods the way in which the sample was recruited in each country. We acknowledge that these are convenience samples in which selectivity bias might exist, and do not claim them to be representative of *all* migrant youth in each setting. However, the purpose of this pilot study is to test the feasibility of using the same questionnaire with migrant youth in diverse settings, and to demonstrate potential relationships between acculturation orientation, resilience and mental health. The value of this study is not about generalizing the findings to all migrant youth, but using highly comparable data across different settings of migration (which is rarely available in the extant literature) to test the hypothesis that acculturation orientation impacts on mental health in migrant youth through the potential mediating effect of resilience. Findings of this pilot study will need to be confirmed in future studies with larger and more representative samples, and will have valuable implications for public health intervention.

All revisions are highlighted in yellow in the manuscript.

Acculturation, Resilience and the Mental Health of Migrant Youth:

A Cross-Country Comparative Study

Qiaobing Wu<sup>1</sup>, Ting Ge<sup>2</sup>, Alan Emond<sup>3</sup>, Kim Foster<sup>4</sup>, Justine Gatt<sup>5,6</sup>, Kristin Hadfield<sup>7</sup>,  
Amanda Mason-Jones<sup>8</sup>, Steve Reid<sup>9</sup>, Linda Theron<sup>10</sup>, Michael Ungar<sup>11</sup>, Trecia Wouldes<sup>12</sup>

<sup>1</sup> Department of Applied Social Sciences, The Hong Kong Polytechnic University

<sup>2</sup> Department of Social Work, The Chinese University of Hong Kong

<sup>3</sup> School of Social and Community Medicine, University of Bristol

<sup>4</sup> School of Nursing and Midwifery, Australian Catholic University

<sup>5</sup> Neuroscience Research Australia

<sup>6</sup> School of Psychology, University of New South Wales

<sup>7</sup> School of Biological and Chemical Sciences, Queen Mary University of London

<sup>8</sup> Department of Health Sciences, University of York

<sup>9</sup> Primary Health Care Directorate, University of Cape Town

<sup>10</sup> Department of Educational Psychology, University of Pretoria

<sup>11</sup> Resilience Research Centre, Dalhousie University

<sup>12</sup> Department of Psychological Medicine, University of Auckland

Corresponding Author: Qiaobing Wu, PhD, MPH, Associate Professor, Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong. Tel: +852 34003676; Email: qiaobing.wu@gmail.com

1  
2  
3  
4 **Abstract**  
5  
6  
7  
8

9 **Objectives:** Using data from an international collaborative research project on youth resilience  
10 in the context of migration, this study aims to investigate how different acculturation patterns  
11 (i.e., integration, assimilation, separation and marginalization) influence the mental health of  
12 migrant youth, and whether resilience might function as a mediator in the association between  
13 acculturation and mental health.  
14  
15  
16  
17  
18  
19  
20  
21  
22

23 **Study Design:** A cross-sectional pilot study conducted in six countries employing a common  
24 survey questionnaire.  
25  
26  
27  
28  
29  
30

31 **Methods:** The study sample was 194 youths aged 10-17 years (Median=13.6) from six countries  
32 (Australia, Canada, China, New Zealand, South Africa, and United Kingdom), and included  
33 cross-border and internal migrants. Mental health and well-being was measured by the Warwick-  
34 Edinburgh Mental Well-Being Scale (WEMWBS). Resilience was measured by the Child and  
35 Youth Resilience Measure-28 (CYRM-28). Acculturation was assessed using the Acculturation,  
36 Habits, and Interests Multicultural Scale for Adolescents (AHIMSA). Multivariate regression and  
37 path analysis were performed to examine the hypothesized mediation model.  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49

50 **Results:** Resilience scores correlated strongly with mental health and well-being. Acculturation  
51 exerted no significant direct effects on the mental health of migrant youths. Nevertheless,  
52 compared to youths who were integration-oriented, assimilation-oriented youths tended to  
53 exhibit lower levels of resilience, resulting in poorer mental health. Compared to youths from  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 other countries, migrant youths from China also reported lower levels of resilience, which led to  
5  
6 poorer mental health outcome.  
7  
8  
9

10  
11 **Conclusion:** Acculturation plays a significant role in the mental health of migrant youth, with  
12  
13 different acculturative orientations exhibiting different influences through the mediation effect of  
14  
15 resilience. Fostering resilience and facilitating integration-oriented acculturation are  
16  
17 recommended public health strategies for migrant youth.  
18  
19  
20  
21  
22

23  
24 **Keywords:** Acculturation; Mental Health; Migration; Resilience; Youth  
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  
61  
62  
63  
64  
65

1  
2  
3  
4 **Acculturation, Resilience and the Mental Health of Migrant Youth:**  
5  
6  
7 **A Cross-Country Comparative Study**  
8  
9

10  
11 **Introduction**  
12

13  
14 It has been well documented that youths in the context of migration face more challenges  
15 in maintaining mental health and well-being.<sup>1-3</sup> Acculturation is one distinct factor associated  
16 with migration that contributes to a variety of mental health outcomes of migrant youth.<sup>4-7</sup>  
17  
18 According to Berry,<sup>8</sup> acculturation refers to the process by which individuals from one culture  
19 acquire the culture and code of behaviors of another culture through prolonged contact and  
20 interactions between two or more cultural groups and their members. Acculturation occurs not  
21 only in cross-country migration, but also within a country when people with certain sociocultural  
22 background relocate to areas of different cultural beliefs and behavioral patterns.<sup>9,10</sup> Building  
23 upon Berry's<sup>11</sup> bi-dimensional model which recognizes the coexistence of maintaining/rejecting  
24 one's original culture and adopting/rejecting the host culture, acculturation could have four  
25 possible patterns: 1) integration—maintaining the original culture while embracing the host  
26 culture; 2) assimilation—endorsing the host culture with little interest in maintaining the original  
27 culture; 3) separation—holding firmly to the original culture while rejecting to adopt the host  
28 culture; and 4) marginalization—keeping apart and becoming alienated from both the original  
29 and host culture. Among these four orientations, integration has been considered the most  
30 adaptive mode of acculturation and has been associated with positive mental health outcomes,<sup>6</sup>  
31 while marginalization is more likely to be associated with poorer mental health indicators.<sup>12</sup>  
32  
33 Despite the numerous studies that have acknowledged the impact of acculturation on youth  
34 development,<sup>13-15</sup> it remains inconclusive as to which acculturation pattern tends to be associated  
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  
61  
62  
63  
64  
65

1  
2  
3  
4 with more positive or negative mental health outcomes. Even less known is the underlying  
5  
6 mechanism as to how acculturation influences mental health.  
7  
8

9 Resilience is another powerful concept that has been widely applied and found to predict  
10 youth mental health. Understood as a process, resilience refers to positive adaptation despite  
11 exposure to significant risk and adversity.<sup>16,17</sup> Resilience involves characteristics and  
12 competencies possessed by children that allow them to maintain positive functioning and  
13 develop successfully even in adverse circumstances, as well as access to resources in their  
14 environment that provide support.<sup>18,19</sup> In the context of migration, resilience involves positive  
15 adaptation to the stressors and challenges encountered in a new environment through persistent  
16 coping.<sup>20</sup> Numerous studies have demonstrated positive mental health as one of the main  
17 resilience outcomes of youth.<sup>21</sup> Higher levels of resilience have been found to result in enhanced  
18 self-esteem,<sup>22</sup> lower depression and anxiety,<sup>23</sup> and better psychological well-being<sup>24</sup>. While  
19 examining the resilience of migrant youth, recent studies have also paid attention to the effect of  
20 acculturation. For example, Luna's<sup>25</sup> study with youths of Mexican origin in Oregon suggested  
21 that more assimilated individuals would exhibit increased levels of resilience. This implies a  
22 potential path that links acculturation to the mental health outcomes of migrant youth: resilience  
23 could be considered either as the outcome of cultural adaptation, or a factor in the process chain  
24 of acculturation, thus functioning as a mediator in the association between acculturation and the  
25 mental health of migrant youth. However, this mechanism has been rarely tested in the existing  
26 literature and warrants further examination in empirical studies.  
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 Using data from an international collaborative research project on youth resilience, the  
54 present study set out to test the hypothesis that acculturation pattern influences the mental health  
55 of migrant youth through resilience. The study aimed to investigate how different acculturation  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 patterns (i.e., integration, assimilation, separation and marginalization) influence the mental  
5  
6 health of migrant youth both directly, and also indirectly through the mediating effect of  
7  
8 resilience. A secondary aim was to use cross-national data to explore how the context of  
9  
10 migration and acculturation might make a difference in the association among acculturation,  
11  
12 resilience and the mental health of migrant youth. The conceptual framework of the study is  
13  
14 presented in Figure 1.  
15  
16  
17

18  
19 **[Insert Figure 1 about here]**  
20  
21

## 22 23 24 **Methods**

### 25 26 **Participants and Procedure**

27  
28 Data came from a pilot study on the resilience of migrant youth conducted by an  
29  
30 international collaborative team of researchers from six countries (Australia, Canada, China,  
31  
32 New Zealand, South Africa, and the United Kingdom). A standard survey questionnaire was  
33  
34 developed through several rounds of face-to-face and virtual team meetings at the preparatory  
35  
36 stage, and was administered in each study site. Migrant youths were recruited through  
37  
38 convenience sampling with the assistance of schools and community organizations, and a total of  
39  
40 194 participants (aged 10-17 years) from six countries completed the survey (25 from Australia,  
41  
42 21 from Canada, 77 from China, 33 from New Zealand, 28 from South Africa, and 10 from the  
43  
44 United Kingdom). The sample was derived from schools in China and the UK, from community  
45  
46 sampling in South Africa, New Zealand and Australia, and from a migrant center in Canada. Data  
47  
48 were collected in each country in 2015-2016, and the process of data collection in each site was  
49  
50 supervised by the team member(s) from that country. The study was approved and monitored by  
51  
52 the Research Ethics Committees of the authors' institutions in all six countries. Full descriptive  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 statistics of the total sample and subsamples in each country are presented in Table 1.  
5  
6

7 [Insert Table 1 about here]  
8

## 9 Measures

10  
11 *Mental health* was measured by the 14-item Warwick-Edinburgh Mental Well-Being  
12 Scale (WEMWBS).<sup>26</sup> Respondents were asked to describe to what extent each item about  
13 feelings and thoughts applied to them over the past 2 weeks, such as “I’ve been feeling  
14 optimistic about the future”. Each item was responded to on a 5-point scale ranging from  
15 “1=none of the time” to “5=all of the time”. The Cronbach's alpha of the WEMWBS in this study  
16 was 0.898. The sum score of the 14 items was used in the study as an outcome variable.  
17  
18  
19  
20  
21  
22  
23  
24  
25

26 *Resilience* was assessed by the 28-item Child and Youth Resilience Measure-28 (CYRM-  
27 28).<sup>27</sup> On a 5-point scale ranging from “1=not at all” to “5=a lot”, participants were asked to  
28 describe to what extent each item applied to them, such as “I have people I look up to”. The  
29 Cronbach's alpha for the CYRM-28 in this study was 0.904. The sum score of the 28 items was  
30 used in the study as an observed indicator to assess resilience.  
31  
32  
33  
34  
35  
36  
37

38 *Acculturation* was identified and differentiated the respondents into four categories:  
39 assimilation-oriented, separation-oriented, integration-oriented and marginalization-oriented.  
40 This categorical variable was created and coded based on the Acculturation, Habits, and Interests  
41 Multicultural Scale for Adolescents (AHIMSA).<sup>28</sup> Respondents were asked to describe their  
42 identity towards each item, such as “I am most comfortable being with people from...”. The  
43 response categories were, “The country I am living right now (i.e. Britain)” (indicating  
44 assimilation), “The country my family is from” (indicating separation), “Both” (indicating  
45 integration), and “Neither” (indicating marginalization). Note that in the survey with Chinese  
46 migrant youth, “country” in the response categories was replaced by “place”, given that the  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 internal migration in China is characterized by people moving from one place to another. These  
5  
6 responses thus generated four scores according to the categories above: 1) assimilation score was  
7  
8 represented by the total number of “The country I am living in right now” responses; 2)  
9  
10 separation score was assessed by the total number of “The country my family is from” responses;  
11  
12 3) integration score was measured by the total number of “Both” responses; 4) marginalization  
13  
14 score was rated by the total number of “Neither” responses. Based on the above scoring, we  
15  
16 defined youth whose assimilation score was the highest among these four scores as assimilation-  
17  
18 oriented; whose separation score was the highest as separation-oriented; whose integration score  
19  
20 was the highest as integration-oriented; and whose marginalization score was the highest as  
21  
22 marginalization-oriented. In data analysis, the group of integration-oriented youth was used as  
23  
24 the reference group.  
25  
26  
27  
28  
29  
30

31 *Sociodemographic variables* controlled in this study included gender (1=male), age (in  
32  
33 years), whether or not living with both parents (1=yes), number of siblings living together,  
34  
35 number of bedrooms, and times of moving home in the past five years. Another variable being  
36  
37 controlled was the country or context of migration. Considering that internal (China) and  
38  
39 international (other countries) migration could have created different contexts of adaptation and  
40  
41 settlement, we created a country variable (1=China, 0=other countries) to test if differences  
42  
43 would appear in the examined relationship patterns as a consequence of migration context.  
44  
45  
46  
47  
48  
49

## 50 **Analytical Plan**

51  
52  
53 The analytical plan included two steps. First, multivariate regression modeling (nested  
54  
55 models) was performed using Stata 14<sup>29</sup> to preliminarily estimate the effects of acculturation on  
56  
57 youth’s mental health and resilience respectively. Second, based on the results of the regression  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 models, path analysis was conducted using Mplus 7.0<sup>30</sup> to test the hypothesized model of  
5  
6 mediation among acculturation, resilience, and the mental health of migrant youth. While testing  
7  
8 the path model, we used multiple indices to assess the model fit, including: 1) the likelihood ratio  
9  
10 test statistic ( $\chi^2$ )—a non-significant  $\chi^2$  indicates the model's closer fit to the perfect fit; 2) the  
11  
12 Comparative Fit Index (CFI)—values above 0.90 denote a good model fit; and 3) the Root Mean  
13  
14 Square Error of Approximation (RMSEA)—values less than 0.05 indicate a good fit.<sup>31</sup>  
15  
16  
17  
18  
19  
20

## 21 Results

### 22 Multivariate Regression Modeling

23  
24  
25  
26 Table 2 presented the results from multivariate regression models predicting youths'  
27  
28 mental health. Model 1 was the baseline model with only control variables included. Among  
29  
30 these predictors, gender showed significant effects on mental health, with male youth exhibiting  
31  
32 better mental health than female youth ( $\beta=3.384, p<0.05$ ). Model 2 was an additive model with  
33  
34 resilience and acculturation variables incorporated. It suggested that, controlling for other  
35  
36 variables, youths with higher resilience were significantly more likely to report better mental  
37  
38 well-being ( $\beta=0.392, p<0.001$ ). Compared to integration-oriented youth, assimilation-oriented,  
39  
40 separation-oriented and marginalization-oriented youth did not show significant differences in  
41  
42 their mental health status. Model 3 is a nested model of Model 2 which added the country factor.  
43  
44 Youth from China and other countries did not differ significantly in their reports of mental well-  
45  
46 being, while the effects of resilience and acculturation variables on mental health remained  
47  
48 unchanged as in Model 2. The percentage of variance explained by the models ( $R^2$ ) increased  
49  
50 from 5.5% in Model 1 to 47.5% in Model 3.  
51  
52  
53  
54  
55  
56

57  
58 [Insert Table 2 about here]  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 Table 3 presented the results from multivariate regression models predicting youth's  
5  
6 resilience. Still, Model 4 was the baseline model with control variables only. Gender, age and  
7  
8 number of siblings live together exerted significant effects on resilience. Being male ( $\beta=8.604$ ,  
9  
10  $p<0.01$ ), at an older age ( $\beta=2.577$ ,  $p<0.01$ ), and living with more siblings ( $\beta=2.425$ ,  $p<0.01$ )  
11  
12 were all associated with higher levels of resilience. Model 5 was an additive model with  
13  
14 acculturation patterns included. The results indicated that, compared to integration-oriented  
15  
16 youth, assimilation-oriented youth ( $\beta=-6.305$ ,  $p<0.05$ ) and marginalization-oriented youth ( $\beta=-$   
17  
18  $8.123$ ,  $p<0.05$ ) exhibited significantly lower levels of resilience, holding constant all other  
19  
20 factors. Nevertheless, separation-oriented youth showed no significant differences from those  
21  
22 integration-oriented youth in terms of resilience. Model 6 was a nested model of Model 5 with  
23  
24 the country factor being introduced. The effect of the assimilation-oriented acculturation pattern  
25  
26 on youth mental health, as compared to integration-oriented, remained significant ( $\beta=-5.994$ ,  
27  
28  $p<0.05$ ), controlling for other variables. However, the previously significant effect of  
29  
30 marginalization-oriented acculturation pattern on mental health became non-significant in this  
31  
32 model. In addition, migrant youth from China exhibited significantly lower levels of resilience  
33  
34 than youth from other countries ( $\beta=-8.138$ ,  $p<0.05$ ). The percentage of variance explained by the  
35  
36 models ( $R^2$ ) increased from 13.6% in Model 4 to 24.2% in Model 6.  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46

47 **[Insert Table 3 about here]**  
48

49 Overall, results from the multivariate regression models suggested that resilience  
50  
51 presumably played a mediating role in the association between acculturation and youth's mental  
52  
53 health. However, the multivariate regression analysis itself cannot test the model as a whole and  
54  
55 estimate the relationships among all variables simultaneously. Therefore, based on the above  
56  
57 results, we further performed path analysis via Mplus 7.0 to examine the mediating effects of  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 resilience in the second step.  
5  
6  
7

## 8 9 **Path Analysis**

10  
11 The goodness-of-fit indices generated from the test of the structural model demonstrated  
12 satisfying results ( $\chi^2 = 3.857$ ,  $df = 3$ ,  $p < 0.277$ ; CFI= .990; RMSEA= 0.043). A total of 42.4  
13  
14 percent of the variance in the mental health of youth was explained by this model. The  
15  
16 standardized solution for the path model is presented in Figure 2. Bootstrapping method was  
17  
18 used to test the significance of the indirect effects of major predictor variables in the model. The  
19  
20 standardized direct, indirect and total effects were presented in Table 4.  
21  
22  
23  
24

25  
26 **[Insert Figure 2 and Table 4 about here]**  
27

28  
29 As hypothesized, effects of the various acculturation orientations on youth mental health  
30  
31 were mediated by the effect of resilience. Compared to those integration-oriented youths,  
32  
33 assimilation-oriented youths exhibited significantly lower levels of resilience ( $\beta=-0.192$ ,  $p<0.05$ ),  
34  
35 which, in turn, predicted worse mental well-being ( $\beta=0.622$ ,  $p<0.001$ ). However, neither  
36  
37 separation-oriented ( $\beta=0.038$ ,  $p>0.05$ ) nor marginalization-oriented acculturation pattern ( $\beta=-$   
38  
39  $0.067$ ,  $p>0.05$ ) demonstrated significant influences on youth mental health through this indirect  
40  
41 pathway. In addition, the country context of migration also made a difference. Although living in  
42  
43 China or other countries did not show significant direct effect on youth's mental health ( $\beta=-$   
44  
45  $0.039$ ,  $p>0.05$ ), migrant youths from China, as compared to those from other countries, tended to  
46  
47 have lower resilience level ( $\beta=-0.242$ ,  $p<0.05$ ), which predicted poorer mental health ( $\beta=0.622$ ,  
48  
49  $p<0.001$ ). Moreover, to further test whether the country context might function as a moderator,  
50  
51 we also conducted a multiple-group comparison to examine whether the relationships among  
52  
53 acculturation, resilience and mental health would differ between the sample of youth from China  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 and those from other countries. This additional analysis found no significant difference across  
5  
6 the two groups.  
7

8  
9 Of the sociodemographic variables, gender showed no significant direct effect on youth's  
10  
11 mental health ( $\beta=0.085$ ,  $p>0.05$ ), but being male was associated with higher resilience ( $\beta=0.216$ ,  
12  
13  $p<0.01$ ), which led to more positive mental health ( $\beta=0.622$ ,  $p<0.001$ ). Other control variables  
14  
15 did not show similar results.  
16  
17

## 18 19 20 21 **Discussion** 22

23  
24 Migration is a global phenomenon in the 21<sup>st</sup> century with longer stay and family  
25  
26 resettlement in the destination countries/regions being increasingly observed.<sup>32</sup> Consequently, the  
27  
28 number of children and youths migrating with their parents is continuously growing. According  
29  
30 to the United Nations,<sup>33</sup> one in every six migrants is under the age of 20. Similar figures are also  
31  
32 reported in individual countries that have been popular destinations for migrants. As a critical  
33  
34 indicator of integration of migrants to the host society, the mental health of migrant youth has  
35  
36 been paid increasing attention by researchers, policy makers and service providers, all bearing a  
37  
38 strong commitment to promoting the mental well-being of this population. The present study  
39  
40 draws upon data from a pilot study conducted in six countries experiencing large waves of  
41  
42 migration, and contributes to the literature by illustrating how cultural adaptation, one inevitable  
43  
44 component associated with the process of migration, influences a resilient response to adversity  
45  
46 and impacts on the mental health of migrant youth.  
47  
48  
49  
50  
51

52  
53 Results of the multivariate regression and path analysis clearly suggest that, although  
54  
55 acculturation orientation did not affect mental well-being directly, there was evidence that  
56  
57 acculturation contributed to the mental health of migrant youth through promoting resilience.  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 Specifically, the study probes into the nuance of different acculturation orientations and  
5  
6 investigates which acculturation pattern is more likely to be associated with better mental well-  
7  
8 being. It is well acknowledged in the literature that the ability to retain one's original cultural  
9  
10 identity and at the same time striving to integrate into the new host culture, that is, integration-  
11  
12 orientated acculturation, is usually predictive of better mental health outcomes.<sup>34</sup> Therefore, in  
13  
14 our analysis, "integration-oriented" was used as the reference group while examining the effect  
15  
16 of acculturation. The research findings indicate that, although not showing any direct effect on  
17  
18 mental health, compared to those integration-oriented youths, assimilation-oriented youths tend  
19  
20 to experience poorer mental health as a result of lower resilience predicted by their acculturation  
21  
22 pattern. This echoes what has been documented in the literature that recognizes the advantage of  
23  
24 integration, and also supports the hypothesis of the current study that resilience functions as a  
25  
26 mediator to link the acculturation pattern of migrant youth to their mental health outcomes. The  
27  
28 results convey a message that, endorsing the new host culture of the destination country/place  
29  
30 could be more beneficial for the youth's mental health when it is accompanied by maintaining  
31  
32 interest in the original culture (integration) rather than by abandoning the original cultural  
33  
34 identity (assimilation). In other words, being able to balance one's original and new cultural  
35  
36 identity is a strength for migrant youth and a pathway to higher resilience and positive mental  
37  
38 health. Failure to detect any significant differences in mental health between youths who are  
39  
40 integration-oriented in their acculturation pattern and youths who are separation- or  
41  
42 marginalization-oriented is probably a consequence of the small sample size and the distribution  
43  
44 of the acculturation variable, with only about 3% being separation-orientated.  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54

55 Another major finding of the research is the reaffirmed importance of resilience in youth  
56  
57 development. A large body of the literature has documented the positive association between  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 resilience and various developmental outcomes of youth.<sup>22,23,35</sup> Children and youths with the  
5  
6 ability to adapt positively in the face of adversity are able to perform better at school and  
7  
8 experience less mental health difficulties. The present study has demonstrated the same  
9  
10 proposition. Moreover, in the particular context of migration that this study focuses on, our  
11  
12 findings highlight the role of resilience not only in promoting the mental health of youths  
13  
14 directly, but also bridging the process of cultural adaption to the maintenance of mental well-  
15  
16 being. It suggests that resilience is not an immutable personality trait but rather a systemic  
17  
18 response to the adversity of migration. For migrant youth, the level of resilience appears to vary  
19  
20 with their stage and orientation of cultural adaptation. Although previous studies have also  
21  
22 identified other factors that may mediate the effect of acculturation on the mental health of  
23  
24 migrant youth,<sup>36</sup> the fact that the model tested in the present study explains 42.4 percent of the  
25  
26 variance in mental health suggests that resilience is a uniquely important contributing factor for  
27  
28 youth mental well-being.  
29  
30  
31  
32  
33  
34

35  
36 The country context of migration also makes a difference. Compared to youths from  
37  
38 other countries, migrant youth from the China sample appears to have lower levels of resilience,  
39  
40 which leads to poorer mental well-being. This could be attributed to the difference between  
41  
42 internal (China) and predominantly international migration (other countries), or the cultural  
43  
44 differences between the eastern and western countries. Although migrating within the country,  
45  
46 the long enforced household registration system in China that creates a divide between rural and  
47  
48 urban citizens have generated many barriers for the adaptation of rural-urban migrants in the city.  
49  
50 This has made the acculturation of Chinese migrant youth even more complex and  
51  
52 challenging.<sup>37,9</sup> More research is needed along this line of inquiry for cross-country and cross-  
53  
54 cultural comparison.  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 The study has several limitations, especially in terms of the study sample. Since it is only  
5  
6 a pilot study of an international collaborative research team, the sample size is fairly small in  
7  
8 each country, which constrains the possibility to perform more sophisticated analyses and might  
9  
10 have distorted some analysis results. In addition, participants of the pilot study are recruited  
11  
12 through convenience sampling, which limits the generalizability of the research findings.  
13  
14  
15 Therefore, results of the study must be interpreted with caution, and will need to be replicated  
16  
17  
18 with larger samples of migrant youth in future studies. However, the diversity of study sites and  
19  
20  
21 the mix of internal and international migrants should also be considered a strength of the study,  
22  
23  
24 given that similar kind of comparable datasets across multiple settings of migration are rarely  
25  
26  
27 available in the existing literature. This study has served as a pioneer investigation that implies a  
28  
29  
30 promising direction for future large-scale comparative research.

31  
32 Despite the aforementioned limitations, this study advances the extant knowledge and  
33  
34 illustrates the relationship between the mental health of migrant youth and the larger process of  
35  
36 cultural adaptation and resilience building. The findings could have important implications for  
37  
38 public health intervention in two directions. On the one hand, given the significance of resilience  
39  
40 in promoting youth mental health, resilience building would still be a recommended strategy to  
41  
42 improve the mental well-being of migrant youth. On the other hand, considering that specific  
43  
44 patterns of acculturation do contribute to the resilience of youth, and indirectly to youth mental  
45  
46 health, in different ways, some culturally sensitive and appropriate components could be built  
47  
48 into the public health intervention programs in an effort to facilitate the integration-oriented  
49  
50 acculturation that is shown to benefit mental health. Support programs should aim to motivate  
51  
52 migrant youths to acknowledge the value of their original culture as well as to enhance their  
53  
54 appreciation of the host culture, thus amplifying the advantage of integration to foster resilience  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

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  
61  
62  
63  
64  
65

and to promote mental health.

## References

1. Belhadj Kouider E, Koglin U, Petermann F. Emotional and behavioral problems in migrant children and adolescents in Europe: a systematic review. *Eur Child Adolesc Psychiatry*. 2014;23(6):373-91.
2. Belhadj Kouider E, Koglin U, Petermann F. Emotional and Behavioral Problems in Migrant Children and Adolescents in American Countries: A Systematic Review. *J Immigr Minor Health*. 2015;17(4):1240-58.
3. Frankenberg E, Kupper K, Wagner R, Bongard S. Immigrant youth in Germany: Psychological and sociocultural adaptation. *Eur Psychol*. 2013;18(3):158.
4. Farver JA, Narang SK, Bhadha BR. East meets west: ethnic identity, acculturation, and conflict in Asian Indian families. *J Fam Psychol*. 2002;16(3):338-50.
5. Lawton KE, Gerdes AC. Acculturation and Latino adolescent mental health: integration of individual, environmental, and family influences. *Clin Child Fam Psychol Rev*. 2014;17(4):385-98.
6. Lo Y. The impact of the acculturation process on Asian American youth's psychological well-being. *J Child Adolesc Psychiatr Nurs*. 2010;23(2):84-91.
7. Nguyen HH, Messé LA, Stollak GE. Toward a more complex understanding of acculturation and adjustment cultural involvements and psychosocial functioning in Vietnamese youth. *J Cross Cult Psychol*. 1999;30(1):5-31.
8. Berry JW. Acculturation as varieties of adaptations. In: Padilla A, editor. *Acculturation: Theory, models and some new findings*. Boulder, CO: Westview; 1980. p. 9-25.
9. Fang L, Sun RC, Yuen M. Development and preliminary validation of an acculturation scale for China's rural to urban migrant children. *Int J Intercult Relat*. 2017;58:1-11.

- 1  
2  
3  
4 10. Ozer S, Schwartz SJ. Measuring globalization-based acculturation in Ladakh: Investigating  
5 possible advantages of a tridimensional acculturation scale. *Int J Intercult Relat.* 2016;53:1-  
6  
7 15.  
8
- 9  
10  
11 11. Berry JW. Immigrant acculturation: Psychological and social adaptations. In: Azzi AE,  
12 Chrysochoou X, Klandermans B, Simon B, editors. *Identity and participation in culturally*  
13  
14 *diverse societies.* West Sussex: John Wiley & Sons; 2010. p. 279-95.  
15  
16
- 17  
18 12. Berry JW, Sabatier C. Acculturation, discrimination, and adaptation among second  
19  
20 generation immigrant youth in Montreal and Paris. *Int J Intercult Relat.* 2010;34(3):191-207.  
21  
22
- 23 13. Berry JW. Acculturation: Living successfully in two cultures. *Int J Intercult Relat.*  
24  
25 2005;29(6):697-712.  
26  
27
- 28 14. Kim SY, Chen Q, Li J, Huang X, Moon UJ. Parent-child acculturation, parenting, and  
29  
30 adolescent depressive symptoms in Chinese immigrant families. *J Fam Psychol.*  
31  
32 2009;23(3):426-37.  
33  
34
- 35 15. Yeh CJ. Age, acculturation, cultural adjustment, and mental health symptoms of Chinese,  
36  
37 Korean, and Japanese immigrant youths. *Cultur Divers Ethnic Minor Psychol.* 2003;9(1):34-  
38  
39 48.  
40  
41
- 42 16. Luthar SS. *Resilience and vulnerability: Adaptation in the context of childhood adversities.*  
43  
44 Cambridge: Cambridge University Press; 2003.  
45  
46
- 47 17. Masten AS. Global perspectives on resilience in children and youth. *Child Dev.*  
48  
49 2014;85(1):6-20.  
50  
51
- 52 18. Kirby LD, Fraser MW. Risk and resilience in childhood. In: Fraser MW, editor. *Risk and*  
53  
54 *resilience in childhood: An ecological perspective.* Washington, DC: NASW Press; 1997. p.  
55  
56 10-33.  
57  
58  
59  
60  
61  
62  
63  
64  
65

- 1  
2  
3  
4 19. Ungar M. Resilience across cultures. *Br J Soc Work*. 2006;38(2):218-35.
- 5  
6  
7 20. Castro FG, Murray KE. Cultural adaptation and resilience: Controversies, issues, and  
8  
9 emerging models. In: Reich JW, Zautra AJ, Hall JS, editors. *Handbook of adult resilience*.  
10  
11 New York: Guilford Press; 2010. p. 375-403.
- 12  
13  
14 21. Masten AS, Best KM, Garmezy N. Resilience and development: Contributions from the  
15  
16 study of children who overcome adversity. *Dev Psychopathol*. 1990;2(04):425-44.
- 17  
18  
19 22. Benetti C, Kambouropoulos N. Affect-regulated indirect effects of trait anxiety and trait  
20  
21 resilience on self-esteem. *Pers Individ Dif*. 2006;41(2):341-52.
- 22  
23  
24 23. Haddadi P, Besharat MA. Resilience, vulnerability and mental health. *Procedia Soc Behav*  
25  
26 *Sci*. 2010;5:639-42.
- 27  
28  
29 24. Sagone E, De Caroli ME. Relationships between psychological well-being and resilience in  
30  
31 middle and late adolescents. *Procedia Soc Behav Sci*. 2014;141:881-7.
- 32  
33  
34 25. Luna LE. *Language brokers: the relationship of acculturation, shame, hope, and resilience in*  
35  
36 *Latinos of Mexican descent*: George Fox University; 2013.
- 37  
38  
39 26. Tennant R, Hiller L, Fishwick R, Platt S, Joseph S, Weich S, et al. The Warwick-Edinburgh  
40  
41 *Mental Well-being Scale (WEMWBS): development and UK validation*. *Health Qual Life*  
42  
43 *Outcomes*. 2007;5:63.
- 44  
45  
46 27. Ungar M, Liebenberg L. Assessing resilience across cultures using mixed methods:  
47  
48 *Construction of the child and youth resilience measure*. *J Mix Methods Res*. 2011;5(2):126-  
49  
50 49.
- 51  
52  
53 28. Unger JB, Gallaher P, Shakib S, Ritt-Olson A, Palmer PH, Johnson CA. The AHIMSA  
54  
55 *acculturation scale: A new measure of acculturation for adolescents in a multicultural society*.  
56  
57 *J Early Adolesc*. 2002;22(3):225-51.
- 58  
59  
60  
61  
62  
63  
64  
65

- 1
- 2
- 3
- 4 29. StataCorp. Stata: Release 14. College Station, TX: StataCorp LLC; 2015.
- 5
- 6
- 7 30. Muthén LK, Muthén BO. Mplus User's Guide. Seventh ed. Los Angeles, CA: Muthén &
- 8 Muthén; 2012.
- 9
- 10
- 11 31. Kline RB. Principles and practice of structural equation modeling. 2nd ed. New York, NY:
- 12 The Guilford Press; 2005.
- 13
- 14
- 15
- 16 32. Cortina J, Taran P, Raphael A. Migration and youth: Challenges and opportunities. New
- 17 York, NY: UNICEF; 2014.
- 18
- 19
- 20
- 21 33. UN. International migrant stock 2015 New York. NY: United Nations; 2015 [Available from:
- 22 [http://www.un.org/en/development/desa/population/migration/da](http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates15.shtml)
- 23 [ta/estimates2/estimates15.shtml](http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates15.shtml)].
- 24
- 25
- 26
- 27
- 28
- 29 34. Berry JW. Acculturation and adaptation of immigrant youth. *Can Divers*. 2008;6(2):50-3.
- 30
- 31 35. Wu Q, Tsang B, Ming H. Social capital, family support, resilience and educational outcomes
- 32 of Chinese migrant children. *Br J Soc Work*. 2012;44(3):636-56.
- 33
- 34
- 35
- 36 36. Gonzales NA, Deardorff J, Formoso D, Barr A, Barrera M. Family mediators of the relation
- 37 between acculturation and adolescent mental health. *Fam Relat*. 2006;55(3):318-30.
- 38
- 39
- 40
- 41 37. Fang L, Sun RC, Yuen M. Acculturation, economic stress, social relationships and school
- 42 satisfaction among migrant children in urban China. *J Happiness Stud*. 2016;17(2):507-31.
- 43
- 44
- 45
- 46
- 47
- 48
- 49
- 50
- 51
- 52
- 53
- 54
- 55
- 56
- 57
- 58
- 59
- 60
- 61
- 62
- 63
- 64
- 65

**Table1** Descriptive statistics of the study sample

Variables	Means/Percent (%)						
	Total	Australia	Canada	China	New Zealand	South Africa	UK
Male (%)	53.2	68.0	38.1	57.1	27.3	67.9	40.0
Age	13.88 (1.360)	13.28 (0.614)	14.05 (0.970)	13.23 (0.959)	15.25 (1.107)	13.77 (1.583)	15.70 (1.252)
Living with parents (%)	77.0	96.0	76.2	94.6	72.7	17.9	80.0
Number of siblings living with	1.58 (1.509)	1.72 (1.021)	2.20 (1.576)	1.23 (0.958)	1.48 (1.004)	2.00 (2.884)	1.80 (1.751)
Number of bedrooms	3.34 (2.035)	4.52 (2.502)	3.62 (0.973)	2.63 (0.830)	3.48 (0.834)	3.78 (4.200)	3.50 (0.972)
Times of moving home	1.48 (1.700)	0.76 (1.128)	3.80 (2.353)	1.13 (1.128)	1.12 (1.244)	2.15 (2.070)	0.80 (0.919)
Resilience	112.8 (15.92)	116.24 (10.026)	122.15 (14.241)	107.84 (17.359)	116.33 (16.628)	115.50 (15.706)	105.60 (6.275)
Acculturation orientation (%)							
-Assimilation-oriented	41.4	69.6	70.6	31.3	51.6	18.5	22.2
-Separation-oriented	2.9	0.0	0.0	1.5	6.5	7.4	0.0
-Integration-oriented	35.1	17.4	17.6	22.4	41.9	70.4	77.8
-Marginalization-oriented	20.7	13.0	11.8	44.8	0.0	3.7	0.0

*Notes:* Figures in parentheses are standard deviations for continuous variables.

**Table 2** Multivariate regression models predicting youths' mental health

Variables	Model 1	Model 2	Model 3
Male	3.384* (1.492)	2.994* (1.416)	3.052* (1.431)
Age	-0.317 (0.555)	-0.768 (0.514)	-0.820 (0.538)
Living with parents	-1.748 (1.819)	-2.176 (1.790)	-2.101 (1.810)
Number of siblings live with	0.610 (0.478)	0.266 (0.520)	0.257 (0.522)
Number of bedrooms	-0.008 (0.355)	-0.120 (0.460)	-0.169 (0.483)
Times of moving home	0.108 (0.415)	0.291 (0.431)	0.267 (0.438)
Resilience		0.392*** (0.047)	0.389*** (0.048)
<i>Acculturation (reference: integration-oriented)</i>			
Assimilation-oriented		2.077 (1.560)	2.083 (1.566)
Separation-oriented		-3.825 (4.106)	-3.700 (4.137)
Marginalization-oriented		-0.062 (1.980)	0.201 (2.126)
China			-0.639 (1.836)
Constant	57.64*** (8.431)	20.07* (8.957)	21.44* (9.810)
<i>N</i>	167	128	128
<i>R</i> <sup>2</sup>	0.055	0.474	0.475

*Notes:* Figures in parentheses are standard errors

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Table 3** Multivariate regression models predicting youths' resilience

Variables	Model 4	Model 5	Model 6
Male	8.604** (2.620)	8.570** (2.721)	8.912** (2.678)
Age	2.577** (0.967)	2.198* (0.998)	1.395 (1.041)
Living with parents	-3.060 (3.330)	-3.250 (3.585)	-2.138 (3.556)
Number of siblings live with	2.425** (0.904)	2.987** (0.964)	2.733** (0.953)
Number of bedrooms	0.215 (0.600)	-0.548 (0.909)	-1.161 (0.932)
Times of moving home	-0.005 (0.794)	-0.561 (0.852)	-0.853 (0.847)
<i>Acculturation (reference: integration-oriented)</i>			
Assimilation-oriented		-6.305* (3.029)	-5.994* (2.980)
Separation-oriented		5.724 (8.244)	7.065 (8.122)
Marginalization-oriented		-8.123* (3.842)	-4.547 (4.081)
China			-8.138* (3.523)
Constant	70.27*** (14.91)	81.92*** (15.62)	96.93*** (16.66)
<i>N</i>	146	132	132
<i>R</i> <sup>2</sup>	0.136	0.209	0.242

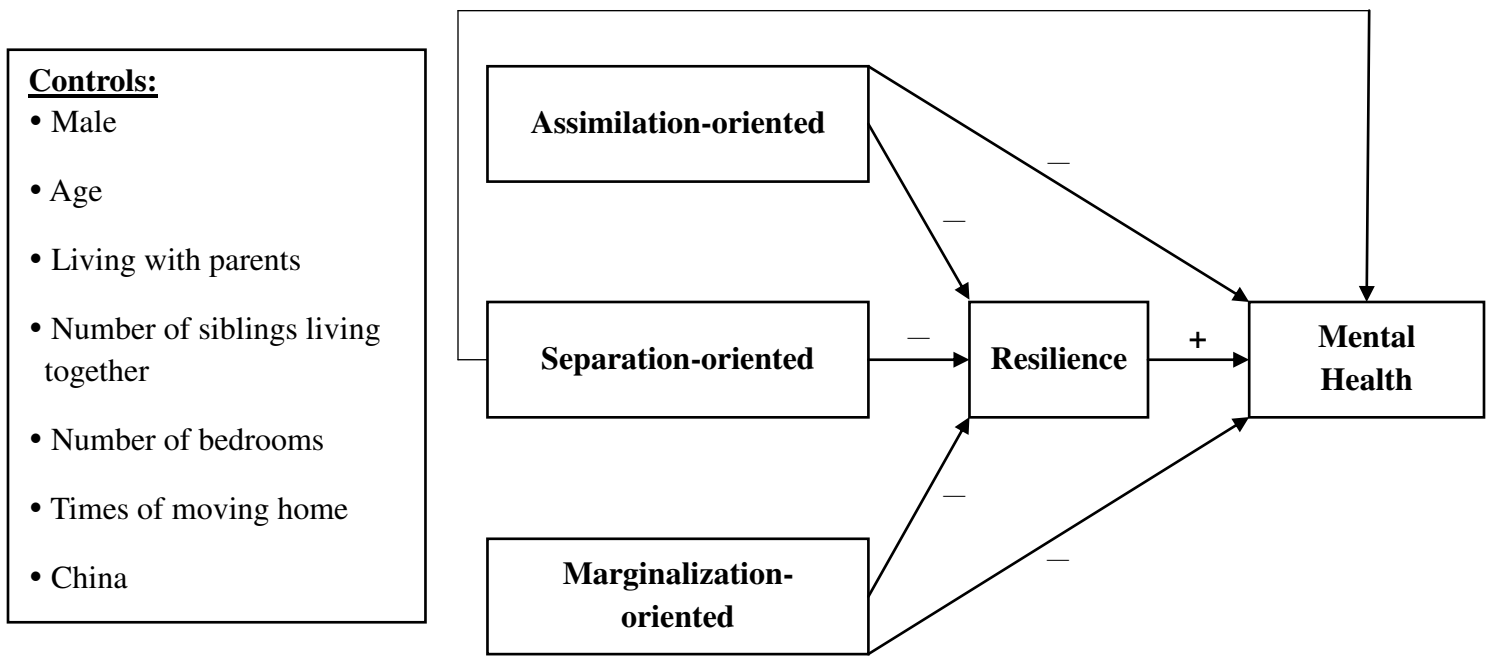
*Notes:* Figures in parentheses are standard errors

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

**Table 4** Standardized direct, indirect and total effects of major predictor variables on youths' mental health

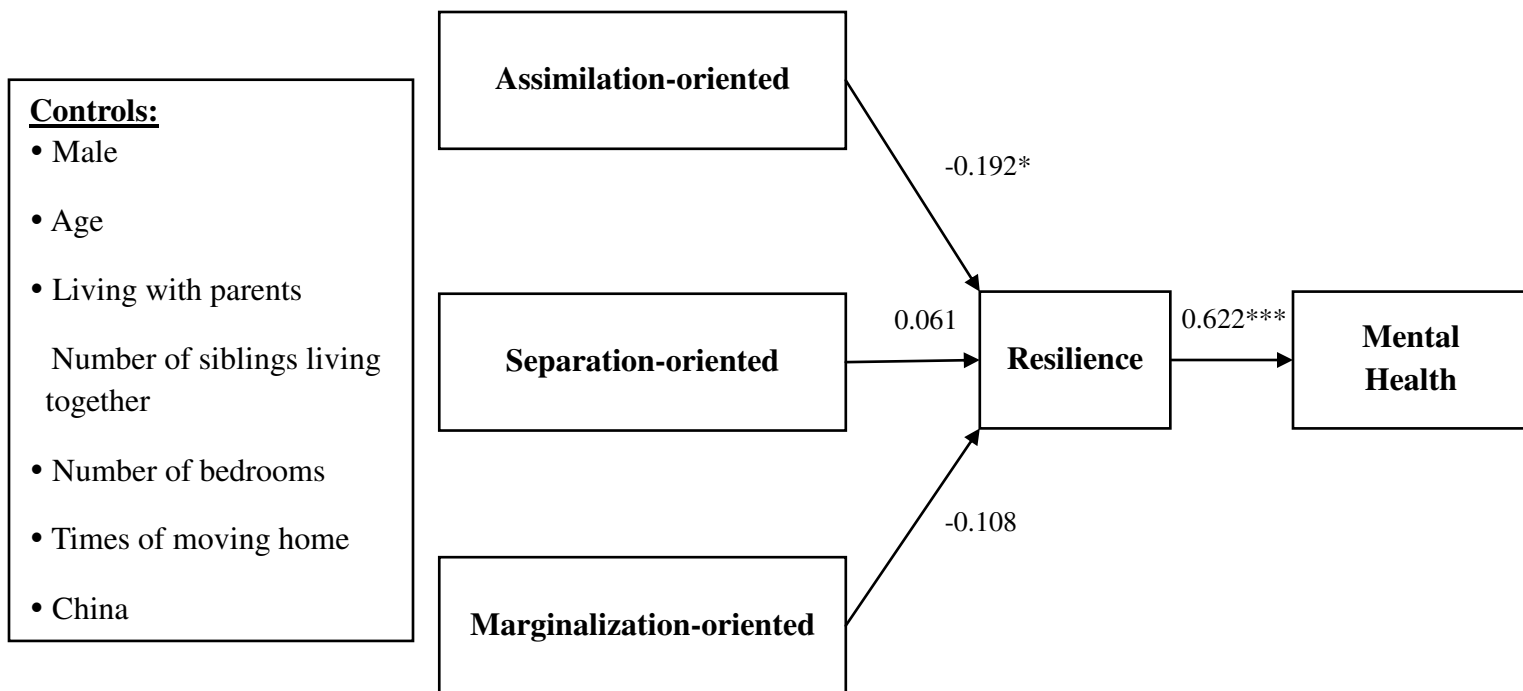
Major predictor variables	Mental health		
	Direct	Indirect	Total
Assimilation-oriented	— —	-0.119*	-0.119
Separation-oriented	— —	0.038	0.038
Marginalization-oriented	— —	-0.067	-0.067
Male	0.085	0.134	0.219
China	-0.039	-0.151*	-0.190

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .



*Note:* Integration-oriented used as the reference group

**Figure 1** Hypothesized model of acculturation, resilience and youths' mental health.



**Figure 2** Standardized solutions for the structural model of acculturation, resilience and mental health

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

## Highlights

- Acculturation is predictive of the mental health of migrant youths, with different acculturation patterns and orientations showing different effects
- Resilience functions as a mediator in the association between acculturation and youths' mental health
- The country context of migration is influential for the resilience and mental health of migrant youths