



Research paper

Moderating and mediating effects of resilience between childhood trauma and depressive symptoms in Chinese children



Huisi Ding^a, Juan Han^{a,*}, Minli Zhang^a, Kaiqiao Wang^b, Jiangling Gong^c, Senbei Yang^a

^a Department of Child and Woman Health Care, School of Public Health, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China

^b Department of Education, Culture and Sports, East Lake New Technology Development Zone, Wuhan, China

^c Center for Mental Health, Institute of Education and Development, East Lake New Technology Development Zone, Wuhan, China

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ABSTRACT

Background: Childhood trauma has been regarded as a risk factor for adolescent depression. Resilience has been found to be a protective factor for adolescent mental health. However, it is not clear about the role of resilience in the relationship between childhood trauma and depression.

Methods: School attending adolescents (n=6406) aged 9–17 years were drawn from five primary schools, three middle schools and two high schools in Wuhan city of China in 2015. The participants were invited to complete self-report questionnaires, including demographics, childhood trauma, resilience and depressive symptoms.

Results: Resilience played a partially mediating role in the relationship between childhood trauma and depressive symptoms. Resilience also moderated the association of childhood trauma with depressive symptoms.

Limitation: The limitations of this study include cross-sectional study and self-reported instruments.

Conclusions: We conclude that resilience may play an important role in the relationship between childhood trauma and depressive symptoms. Our results suggest that enhancing resilience may provide new possibilities for prevention and intervention of depression in adolescents.

1. Introduction

Depression is an important public issue. It is estimated that 350 million people worldwide are affected by depression (Xia and Yao, 2015). The prevalence of depression in the United States based on the parent report of a diagnosis among children aged 4–17 years in 2006 was 3.0% (Perou et al., 2013). The overall prevalence of DSM-IV disorders (Diagnostic and Statistical Manual of Mental Disorders) in Northeast China among 6–17 years old children and adolescents in 2008 was 9.49% and depression 1.32% (Yang et al., 2014). Depression in adolescents is a risk factor for multiple negative outcomes. It not only increases the risk of major depression, anxiety disorder and illicit substance abuse/dependence in later life (McLeod et al., 2016), but also is related to increased risk of PTSD (Posttraumatic Stress Disorder) response to adult trauma (Breslau et al., 2014) and suicide attempt (Korczak and Goldstein, 2009).

Many studies revealed that childhood trauma increased the risk for depression (Shanahan et al., 2011; Agorastos et al., 2014), and emotional abuse and neglect showed a stronger association with depression compared with other kinds of trauma (Infurna et al.,

2016). Consistent with Post's stress sensitization theory (Post, 1992), which the first episode of depression might heighten sensitivity to proximal stress, childhood adversity might lower an individual's threshold of stress needed to trigger depression responses (La Rocque et al., 2014). Meanwhile, previous research indicated that the experience of early adversity sometimes reduced sensitivity to later stress, so-called "steeling" effect (Rutter, 2006).

While, many victims of childhood trauma showed little or no psychological long-term damage despite of their history of adversity (Schulz et al., 2014). Resilience might play an important role among them. Resilience is regarded as a dynamic course in which individuals exhibited effective adaptation even with previous history of adversity or trauma, containing two structures: exposure to adversity and positive adaptation (Lutha and Cicchetti, 2000). Researchers view resilience as a defense mechanism, which can drive a person to grow in the face of adversity (Davydov et al., 2010). Accordingly, resilience is thought to be a protective factor in the relationship between childhood trauma and depression. Prior researches have revealed that resilience was negatively related to depression (Edwards et al., 2014) and childhood trauma (Schulz et al., 2014; Arslan, 2016).

* Corresponding author.

E-mail address: hjtj1994@mail.hust.edu.cn (J. Han).

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Several studies have examined the moderating effect of resilience in the relationship between childhood trauma and depression. Wingo et al. (2010) demonstrated that resilience moderated depressive symptom severity in African Americans with a history of exposure to childhood abuse or other traumas. Schulz et al. (2014) reported that childhood maltreatment was positively associated with MDD (Major Depressive Disorder) in later life while resilience buffered the detrimental effect of childhood maltreatment in a community based Caucasian sample. The similar protective effect of resilience was also found in studies assessing depressive symptoms in university students, emerging adults transitioning out of child welfare, postpartum women and HIV-positive and at-risk women following childhood trauma (Campbell-Sills et al., 2006; Goldstein et al., 2013; Dale et al., 2015; Sexton et al., 2015). To our knowledge, there is only one study that assessed the mediating effect of resilience on depressive symptoms following childhood trauma. A cross-sectional study of 937 adolescents in Turkey found that resilience played a mediating role in relationships between psychological abuse in adolescence and emotional and behavioral problems (Arslan, 2016). These studies provide valuable information to understand the role of resilience in the relationship between childhood trauma and depression. However, most of the studies focus on adult psychology, and studies concerning the effects of resilience on depression in adolescence with exposure of childhood trauma are still lacking.

So we conducted a cross-sectional study to understand the role of resilience in the relationship between childhood trauma and depressive symptoms in Chinese adolescents. We hypothesized that resilience mediated the relationship between childhood trauma and depressive symptoms, and also moderated the association of childhood trauma with depressive symptoms.

2. Methods

2.1. Sample

Participants in this cross-sectional study (N=6406) were recruited from five primary schools (grades 5–6), three middle schools (grades 7–9) and two high schools (grade 10) in Wuhan, Hubei of China in 2015. The samples by cluster sampling were composed of 3308 males and 3098 females, with ages ranging from 9 to 17 years old (mean=12.55, SD=1.66). Participants were invited to finish a self-report questionnaire in the class with the guidance of well-trained investigators. Questions included demographics, childhood trauma, resilience and depressive symptoms. Before the survey, we got informed consents from all of the participants and their schools and parents. The study was approved by the Human Research Ethics Committee, Huazhong University of science and technology.

2.2. Measures

Childhood trauma. The short form of Childhood Trauma Questionnaire (CTQ) was used to evaluate childhood trauma. CTQ-SF is a 28-item (25 clinical and 3 validity items) retrospective self-report quantitative measure, including five subscales: emotional neglect, physical neglect, emotional abuse, physical abuse and sexual abuse (Bernstein et al., 2003). Items are rated on a 5-point Likert scale ranging from “never true” (=1) to “very often true” (=5). Internal consistency for this study was 0.791.

Resilience. Resilience was evaluated by the Connor-Davidson Resilience Scale (CD-RISC) (Connor and Davidson, 2003). CD-RISC is a 25-item questionnaire measuring the stress-coping ability. Items are rated on a 5-point Likert scale ranging from “not true at all” (=0) to “true nearly all the time” (=4). Higher scores reflect greater levels of resilience. Yu et al. made translations and back-translations of CD-RISC (Yu and Zhang, 2007). Internal reliability for this study was 0.930.

Depressive symptoms. CES-D (The Center for Epidemiological Studies Depression Scale) is a 20-item self-report measure assessing the depressive symptoms in the past week (Radloff, 1977). CES-D consists of four subscales: depressive mood, somatic symptoms, interpersonal relations and positive affect. Items are rated on a 4-point Likert scale ranging from “never or few” (=0) to “usually” (=3). Higher scores indicate more depressive symptoms. CES-D scores 16 or higher were categorized as depressive. The Chinese version of the CES-D has been used to identify depressive symptoms in adolescence and presents good reliability and validity (Wang et al., 2013). Internal reliability for this study was 0.913.

2.3. Data analysis

The data was analyzed with SPSS 21.0 and AMOS 17.0 software packages. Characteristics between students with depressive symptoms and without depressive symptoms were compared using Chi-square tests and independent *t*-tests. Cohen's *d* values were calculated to estimate effect sizes of group differences in continuous variables (Cohen, 1988). Cramer's *V* values were calculated to evaluate the correlation between two categorical variables. Spearman correlation analyses were conducted to preliminarily describe the correlations among childhood trauma, resilience and depressive symptoms. Path analyses were conducted in AMOS 17.0 to test the mediating effect of resilience on the relationship between childhood trauma and depressive symptoms. Maximum likelihood method was employed for parameter estimation. The significance of the indirect effect was tested using bootstrapping method. 95% bias-corrected confidence intervals were generated by bootstrapping with 5000 re-samples. If the 95% bias-corrected confidence interval excluded zero, then the indirect effect was significant. Since the Chi-square was highly affected by sample size, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker-Lewis fit index (TLI), the goodness-of-fit index (GFI) and the adjusted goodness-of-fit statistic (AGFI) were used to evaluate the goodness-of-fit of the model. When the CFI, TLI, GFI and AGFI values were above 0.9, and the RMSEA value was below 0.08, the fit of the model was considered acceptable (Hu and Bentler, 1999). The multiple group analyses of SEM (structural equation model) were conducted to examine the moderating effect of resilience on the relationship between childhood trauma and depressive symptoms. The sample was divided into the high resilience group (1 SD above the mean), the moderate resilience group (mean \pm 1 SD) and the low resilience group (1 SD below the mean), according to their scores on resilience. Statistical significance was evaluated with 2-tailed tests, $P < 0.05$ was regarded as statistically significant.

3. Results

3.1. Participant characteristics

Among the 6406 students, 3308 (51.6%) were males, 3098 (48.4%) were females. The mean (\pm SD) age of the sample was 12.55 (\pm 1.66) years. Of 6406 students, 1041 (16.3%) were primarily assessed with depressive symptoms. The mean (\pm SD) depression score of the sample was 8.39 (\pm 8.88), male 8.09 (\pm 8.62), female 8.71 (\pm 9.15), $P < 0.01$.

3.2. Associated risk and protective factors with depressive symptoms: univariate analysis

Table 1 summarizes demographic, childhood trauma and CD-RISC by depressive symptoms. In univariate analyses, older age, female, higher grade, lower monthly income per person, family history of depression, childhood trauma, lower resilience were associated with increased risk of depressive symptoms.

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