

# Emotional Abuse and Neglect, Depression: A Moderated Mediation Model of Neuroticism and Psychological Resilience

Yueyang Hu<sup>1</sup>, Junsong Fei<sup>2</sup>, Jingyi Yue<sup>2</sup>, Ren Gao<sup>2</sup>, Qianqian Song<sup>2</sup>, Xixi Zhao<sup>2</sup>, and Songli Mei<sup>2</sup> ✉

<sup>1</sup>Department of Epidemiology, School of Public Health, Baotou Medical College, Baotou, China

<sup>2</sup>Department of Social Medicine and Health Management, School of Public Health of Jilin University, Changchun, China

**Objective** There were associations between emotional abuse and neglect (EAN) and depression, but few studies had tested potential mechanisms underlying these relationships. We aimed to provide insights on how (the mediation role of neuroticism), and under what conditions (the moderator role of psychological resilience), led to a higher level of depression.

**Methods** This study was a cross-sectional study that used a random cluster sampling method. We randomly selected 3,993 participants from four junior middle schools in northern city of China. Participants were asked to complete four self-reported questionnaires, including the Childhood Trauma Questionnaire, Children Depression Inventory-Short Form, Chinese Big Five Personality Inventory Brief Version, and Chinese Resilience Scale.

**Results** The results showed that neuroticism mediated the associations between EAN and depression. In addition, the mediating effect of neuroticism was moderated by psychological resilience ( $p < 0.05$ ).

**Conclusion** EAN and neuroticism could have an adverse impact on depression, and psychological resilience could alleviate these negative effects as a moderator. Our model suggested psychological resilience could be a particularly effective intervention point for victims of EAN.

**Psychiatry Investig 2025;22(4):389-396**

**Keywords** Emotional abuse and neglect; Depression; Neuroticism; Psychological resilience; A moderated mediation model.

## INTRODUCTION

Depression was the leading cause of disability worldwide. Existing research showed that depression originated in adolescence.<sup>1</sup> Lifetime prevalence of depression among adolescents (13–18 years old) was reported to be almost 11%.<sup>2,3</sup> Depression was more pervasive in adolescents as the sub-clinical stage of depressive disorder. A report from 2018 showed that more than 20% of adolescents in China aged 10–15 years old suffered from depression.<sup>4</sup> Therefore, studying depression was especially necessary to explore the pathogenesis, prevention, and intervention of depression among early adolescents.

Childhood maltreatment was a critical risk factor for depression.<sup>5,6</sup> Previous studies had shown that childhood maltreatment throughout childhood could lead to increase risk

of developing depression.<sup>7,8</sup> Moreover, types of childhood maltreatment were identified to have different impact on depression. A recent systematic review found that 26.6% of Chinese children had suffered physical abuse, 19.6% had experienced emotional abuse, 26.0% had experienced emotional neglect and 8.7% had suffered sexual abuse.<sup>9</sup> Emotional abuse consisted of behaviors towards children such as rejection, isolation, terrorization, ignorance, corruption, verbal assault, and over-pressuring behavior.<sup>10</sup> Emotional neglect implied a failure of the parents or caregivers to provide a child with the emotional and psychological nurturing that was required for normal development.<sup>11</sup> There had been relatively less research attention on emotional abuse and neglect (EAN), compared with physical or sexual abuse and physical neglect.<sup>12</sup> In addition, among the four sub-types of childhood maltreatment, the influences of EAN in childhood were becoming stronger and increased the risk of depression with age.<sup>13</sup> However, only a limited number of researches investigated the effects of EAN, and less was known about the continued effects of EAN during adolescence. Furthermore, there were various mediating variables (cognitive, emotional, and relational factors)<sup>14</sup> in the relationships between EAN and depression and need to

**Received:** March 27, 2024 **Revised:** June 20, 2024

**Accepted:** January 24, 2025

✉ **Correspondence:** Songli Mei, PhD

Department of Social Medicine and Health Management, School of Public Health of Jilin University, No. 1163 Xinmin Street, Changchun 130021, China  
Tel: +86-431-85619454, E-mail: meisongli@sina.com

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

explore potential mechanisms underlying these relationships.

This study used attachment theory<sup>15</sup> as theoretical frameworks for understanding the developmental psychopathology associated with EAN.<sup>16</sup> Attachment theory proposed that individual characteristics were more likely to develop within the context of a secure parent-child attachment.<sup>17</sup> Specifically, experiences of parental sensitivity were encoded by children into an internal working model encompassing views of the self, others, and the nature of relationships that influenced developmental adaptation.<sup>18</sup> EAN likely interfered with the development of a secure attachment bond, and the consequent insecure attachment patterns could help to explain the associations between EAN and mental health. EAN destroyed a child's sense of self and personal security,<sup>19</sup> which was hypothesized to provide the foundation for later individual differences in personality development. Thus, attachment theory claimed that early attachment security could influence individual characteristics (e.g., temperament) and predicted more optimal socioemotional outcomes.

Neuroticism, one of the major temperamental basic personality traits, implied negative affectivity or negative emotionality.<sup>20</sup> The empirical evidence regarding EAN increased the risk of developing maladaptive personality traits had been documented in previous research.<sup>21</sup> Research had shown that EAN was consistently associated with high neuroticism.<sup>22</sup> Neuroticism was significantly correlated with higher levels in depression and appeared to be the most powerful predictor of depression.<sup>23</sup> These studies above consistently revealed that the neuroticism could be a mediating factor between EAN and depression.

But not all individuals who experienced unpleasant events in childhood would become troubled adolescents. Some protective factors may have worked in helping prevent EAN from developing into depression. Resilience as the protective factors played an important role in those relationships. Resilience was an interactive concept that referred to a relative resistance to environmental risk experiences or the overcoming of stress or adversity.<sup>24</sup> Based on "kindling" hypothesis<sup>25</sup> and sensitizing effect<sup>26</sup> of resilience, EAN set up a heightened sensitivity to adversities or negative events in the future, such that minor events may evoke a depressive response.<sup>27</sup> However, not all EAN led to depression. "Steeling" effect<sup>24</sup> and stress inoculation theory<sup>28</sup> hold that an individual's psychological and physiological ability would be strengthened when they were exposed to moderate levels of stress. Certain individual and contextual factors may ameliorate the relationships between risk factors and mental health status of adolescents.<sup>29,30</sup> Given previous research, perhaps resilience played a crucial role in the relationships between personality traits and depression. However, considering that neuroticism was the risk factor for

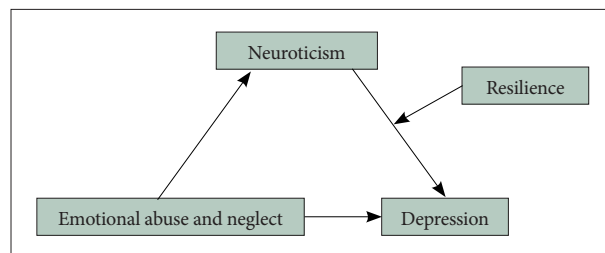
depression, psychological resilience may be the protective factor for depression. Combined with the theory of the buffering effect of psychological resilience,<sup>31</sup> this study hypothesized that psychological resilience could play a moderating role between neuroticism and depression, more specifically, psychological resilience could reduce the risks of depression among highly neurotic individuals. Currently, few studies had explored these relationships in adolescents, and the effects of personality traits and psychological resilience on depression onset were unclear. Thus, this study would provide a new perspective on prevention and intervention of adolescent depression (The hypotheses and effects were explained in detail in the Supplementary Material).

To sum up, based on the relationships between EAN and depression, this study hypothesized a moderated mediation model (Figure 1). We aimed to provide insights on how (the mediation role of neuroticism), and under what conditions (the moderator role of psychological resilience), leads to a higher level of depression.

## METHODS

### Participants

This study was a cross-sectional study that used a random cluster sampling method. We randomly selected four junior middle schools from four different districts in northern city of China in June, 2021. These districts covered various education and socioeconomic developmental levels. Each district was selected one junior middle school. Then the method of cluster sampling was used to invite all of the students of the junior high schools grading 7, 8, and 9 in each junior middle school. In total, 4,166 adolescents responded to the survey, yielding a participation rate of 96.9%. For the present study, adolescents with missing information on the variables assessing EAN, neuroticism, psychological resilience, and depression were removed from the sample (168 adolescents). To ensure the quality of data, adolescents also were removed if they reported that they were older when the event happened than their actual age at the time of the survey (5 adolescents). The final sample size for the present study was 3,993.



**Figure 1.** The conceptual framework of the moderated mediation model.

## Procedure

The study was approved by the School of Public Health Institutional Review Board of the Jilin University and was conducted in accordance with the protocol of the Declaration of Helsinki (ethical approval number: 2021-06-06). One week prior to the survey assessment, school, parents, and students were informed regarding the topic and purpose of the research, and emphasized that students were voluntary and anonymous, and given the right to withdraw from the survey at any point, even after it had started. All participants received information regarding accessing mental health support if they experienced any emotional distress during or after the study. After giving a briefing about study purpose and procedures to each junior high school, consents were obtained from guardians of students. Before the formal survey, the researchers conducted a pre-survey to ensure level of understanding of the participants. The questionnaires were administered in paper-and-pencil format. Participating adolescents took about 30 minutes to complete a series of self-reported questionnaires during their mental health class. To encourage honest responses, all students participated in the study voluntarily, with anonymity and they were informed that their personal information would be strictly confidential.

## Measures

EAN was assessed by the Childhood Trauma Questionnaire (CTQ),<sup>32</sup> which was divided into five sub-scales: emotional neglect, emotional abuse, physical neglect, physical abuse, and sexual abuse. The CTQ was 28-item retrospective measure of different types of abuse and neglect for individuals aged 12 or older. Each item was answered with one of five responses (never, rarely, sometimes, often, and very often). Higher scores mean a stronger degree of childhood maltreatment. This study used sub-scales (emotional neglect and emotional abuse) of CTQ, a version adapted to the Chinese cultural context,<sup>33</sup> to evaluate the degree of EAN of participants. The Chinese version had been proven to have both high reliability and validity in the Chinese population.<sup>34</sup> In this study, the Cronbach's alpha of the scale was 0.815 and construct validity was acceptable.

Depression was assessed using the Children Depression Inventory-Short Form (CDI-SF)<sup>35</sup> which was a commonly used to assess the severity of depression between 7 and 17 years old in adolescents. This scale was widely used to investigate the mental health of Chinese adolescents.<sup>36</sup> This self-report scale consisted of 10 items. Each item was presented as a series of three phrases, and respondents were asked to select the phrase that best represents how their feeling. Higher scores indicated more severe depression. The total score ranged from 10 to 30. Depression was defined as a score greater than or equal to 17.<sup>37</sup> In this study, the Cronbach's alpha of the scale was 0.808 and construct validity was acceptable.

Neuroticism was measured by using the sub-scales of Chinese Big Five Personality Inventory Brief Version (CBF-PI-B).<sup>38</sup> The CBF-PI-B was developed to assess personality traits of the Chinese population and had been shown to have good psychometric properties for Chinese adolescents.<sup>39</sup> The sub-scales with neuroticism had eight items and each item was answered on a six-point. High scores indicated higher levels of the neuroticism. In this study, the Cronbach's alpha of the scale was 0.815 and construct validity was acceptable.

Adolescent psychological resilience was measured by the 27-item resilience scale for Chinese adolescents.<sup>40</sup> Participants rated each statement on a 5-point scale ranging from 1=completely disagree to 5=completely agree. Adequate test-retest reliability and construct validity had been reported for this measure.<sup>41</sup> In this study, the Cronbach's alpha of the scale was 0.864 and construct validity was acceptable.

Self-assessment of family economic status was measured by an item. The item was "What do you perceive as your family economic status?" The degree of family economic status was assessed using a three-point scale (1=good, 2=fair, 3=poor). Although there was only one item, it was widely used to measure family economic status.<sup>42</sup>

## Statistical analyses

The analyses were performed using IBM SPSS 24.0 software (IBM Corp.). The differences of the score of depression, EAN, and neuroticism in different demographic characteristics were examined by t-test and one-way analysis of variance. Pearson correlation was used to evaluate the bivariate relationships among EAN, depression, neuroticism, and resilience. The mediation model (Model 4) and the moderated mediation model (Model 14) were tested using the PROCESS macro.<sup>43</sup> The indirect effects were tested with bias-corrected bootstrapping ( $n=5,000$ ) and 95% confidence intervals (CI) for the indices. When a 95% bootstrapped CI did not include zero, it indicated the parameter was statistically significant.

## RESULTS

The demographics of subjects and their effects on depression were displayed in Table 1. The prevalence of depression in the overall sample was 41.5%. The final sample ( $n=3,993$ ) comprised 48.4% female and 51.6% male. In univariate analyses, female and poor family economic status were associated with increased risk of depression ( $p<0.05$ ). Grade and family economic status were associated with EAN ( $p<0.05$ ). There were significant differences ( $p<0.05$ ) among different groups of sex, grader, family economic, and one-child with neuroticism.

Descriptive statistics and correlation analysis were carried out on EAN, neuroticism, depression, and psychological re-

silience. EAN was positively related to neuroticism ( $r=0.363$ ,  $p<0.001$ ) and depression ( $r=0.442$ ,  $p<0.001$ ). EAN ( $r=-0.439$ ,  $p<0.001$ ), neuroticism ( $r=-0.572$ ,  $p<0.001$ ), and depression ( $r=-0.667$ ,  $p<0.001$ ) were all negatively associated with psychological resilience (Table 2).

As shown in Table 3, the effect of EAN on depression was positively significant ( $\beta=0.44$ ,  $p<0.001$ ). EAN showed a significantly indirect effect on depression through neuroticism, which suggested a partial mediation of neuroticism. In addition, the proportion of neuroticism's mediation was 41.7% in

**Table 1.** Demographics of subjects and their effect on study variables

Variable	N (%)	Depression		EAN		Neuroticism	
		Mean $\pm$ SD	F/t	Mean $\pm$ SD	F/t	Mean $\pm$ SD	F/t
Sex			5.454***		1.961		9.792***
Male	2,059 (51.6)	15.95 $\pm$ 3.58		16.71 $\pm$ 7.35		26.33 $\pm$ 8.04	
Female	1,934 (48.4)	16.59 $\pm$ 3.88		16.25 $\pm$ 7.45		28.88 $\pm$ 8.37	
Grade			2.704		16.736***		10.579***
One	1,800 (45.1)	16.23 $\pm$ 3.78		16.73 $\pm$ 7.37 <sup>†§</sup>		27.71 $\pm$ 8.52 <sup>†§</sup>	
Two	1,578 (39.5)	16.40 $\pm$ 3.78		16.82 $\pm$ 7.47 <sup>†§</sup>		27.94 $\pm$ 8.28 <sup>†§</sup>	
Three	615 (15.4)	15.99 $\pm$ 3.50		14.90 $\pm$ 7.08		26.17 $\pm$ 7.51	
Family economic status			85.869***		42.723***		35.557***
Good	1,505 (37.7)	15.55 $\pm$ 3.62 <sup>†‡</sup>		15.70 $\pm$ 7.17 <sup>†‡</sup>		26.51 $\pm$ 8.52 <sup>†‡</sup>	
Fair	2,119 (53.1)	16.42 $\pm$ 3.63 <sup>†§</sup>		16.50 $\pm$ 7.25 <sup>†§</sup>		27.82 $\pm$ 8.07 <sup>†§</sup>	
Poor	369 (9.2)	18.28 $\pm$ 4.05 <sup>†§</sup>		19.64 $\pm$ 8.30 <sup>†§</sup>		30.42 $\pm$ 7.89 <sup>†§</sup>	
One-child status			2.029		1.306		3.108**
Yes	2,359 (59.1)	16.16 $\pm$ 3.71		16.36 $\pm$ 7.34		27.23 $\pm$ 8.31	
No	1,634 (40.9)	16.41 $\pm$ 3.79		16.67 $\pm$ 7.48		28.06 $\pm$ 8.26	

Degrees of freedom=2. \*\* $p<0.01$ ; \*\*\* $p<0.001$ ; <sup>†</sup>significant group A; <sup>‡</sup>significant group B; <sup>§</sup>significant group C; <sup>†‡</sup>significant difference between group A and group B; <sup>†§</sup>indicate statistically significant differences between groups, post hoc analyses were used by least significant difference. EAN, emotional abuse and neglect; SD, standard deviation

**Table 2.** Descriptive statistics and correlations among variables

Variables	Mean $\pm$ SD	1	2	3	4
1. EAN	16.49 $\pm$ 7.40	1			
2. Neuroticism	27.57 $\pm$ 8.30	0.363***	1		
3. Depression	16.26 $\pm$ 3.74	0.442***	0.590***	1	
4. Resilience	87.57 $\pm$ 16.14	-0.439***	-0.572***	-0.667***	1

Adjusted for sex, grade, family economic status, only-child status. \*\*\* $p<0.001$ . SD, standard deviation; EAN, emotional abuse and neglect

**Table 3.** Mediation analysis of EAN on depression

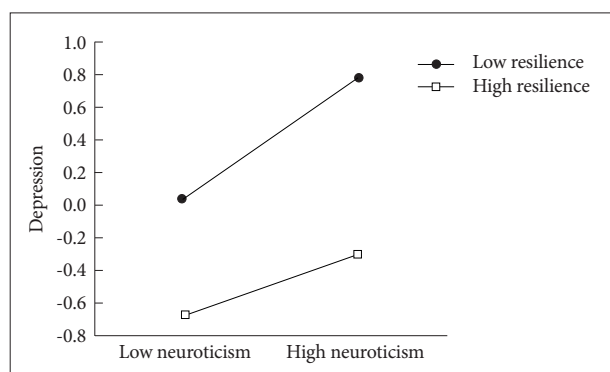
Independent variables	Model 1 (Depression)		Model 2 (Neuroticism)		Model 3 (Depression)	
	$\beta$	t	$\beta$	t	$\beta$	t
EAN	0.44	30.48***	0.39	26.27***		
Neuroticism					0.50	37.32***
R <sup>2</sup>	0.190		0.149		0.40	
F	928.851***		691.457***		1321.79***	
Model effect	Effect		SE		t	
Total effect	0.12		0.0041		30.41**	
Direct effect	0.07		0.0038		18.23**	
Indirect effect	0.05		0.0027		95% CI (0.18–0.21)	

Adjusted for sex, grade, family economic status, only-child status. \*\* $p<0.01$ ; \*\*\* $p<0.001$ . EAN, emotional abuse and neglect; SE, standard error; CI, confidence interval

**Table 4.** Testing the moderated mediation effect of EAN on depression

Independent variables	Model 1 (Depression)			Model 2 (Neuroticism)			Model 3 (Depression)		
	$\beta$	SE	t	$\beta$	SE	t	$\beta$	SE	t
EAN	0.44	0.01	30.48***	0.39	0.01	26.26***	0.12	0.01	8.83***
Neuroticism							0.28	0.01	46.73***
Psychological resilience							-0.45	0.01	-5.06***
Neuroticism $\times$ Psychological resilience							0.09	0.01	2.99**
R <sup>2</sup>	0.190			0.149			0.533		
F	928.851***			691.457***			1096.825***		

Adjusted for sex, grade, family economic status, only-child status. \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . EAN, emotional abuse and neglect; SE, standard error

**Figure 2.** Psychological resilience moderates the effect of neuroticism on depression.

the total effect of EAN on depression. We calculated 95% CI based on a 5,000 bootstrap resampling. The indirect effects of EAN on depression through neuroticism (95% CI, 0.18–0.21) were significant, as zero was not contained in the 95% CI.

The results of the moderated mediation model were presented in Table 4. First, the Model 14 test in the application process of this study tested the theoretical hypothesis model. Model 3 was significant ( $F=1,096.825$ ,  $p < 0.001$ ,  $R^2=0.533$ ). The interaction term between neuroticism and psychological resilience was related to depression, indicating that psychological resilience moderated the relationships between neuroticism and depression.

As the degree of neuroticism increased, the severity of depression also increased. Figure 2 has further revealed that neuroticism was more strongly related to depression at a low level of psychological resilience compared to a high level of psychological resilience ( $\beta_{\text{low}}=0.36$ ,  $\beta_{\text{high}}=0.19$ ).

## DISCUSSION

Our study reported that the prevalence of depression was 41.5% in adolescents in China, which was higher than that of previous studies. For example, a recent meta-analysis showed that the overall detection rate of depression among Chinese

adolescents was 28.4%,<sup>44</sup> and the detection rate of adolescent depression worldwide was reported as 37%.<sup>45</sup> These discrepancies in the prevalence of depressive symptoms might partly be due to differences in the ethnic background, age, and sample size of the study participants or assessment scales and cut-off values for depression. Apart from these, our study found that the proportion of Chinese adolescents with depression has demonstrated a rising trend, which may be attributed to the outbreak of the COVID-19 pandemic. Second, our study offered new directions for exploring potential mechanisms underlying the relationships between EAN and depression of adolescents. As expected, the results confirmed the mediating effect of neuroticism in the link between EAN and depression, and this association was moderated by the resilience.

### Mediation role of neuroticism

Findings from this study supported our hypothesis, and revealed that neuroticism was partial mediators in the relationships between EAN and depression, and the mediation effect accounted for 41.7% of the total effect of EAN on depression. These results suggested that EAN had considerable effects on neuroticism which could lead adolescents to depression, which was consistent with previous studies.<sup>46,47</sup>

To be specific, individuals who reported more severe EAN also reported with more severe depression during early puberty, which supported the theories of attachment, sensitizing effect and “kindling hypothesis” mentioned in the introduction section. This theory indicated that EAN made neuroendocrine overly sensitive to stress response, and increased sensitivity to proximal stressors, while reducing the threshold of stress that an individual need to develop depression, which eventually could lead to a higher probability of developing depression.<sup>48</sup> Consistent with those theories, cross-sectional studies,<sup>49</sup> longitudinal studies,<sup>50</sup> and meta-analyses<sup>51</sup> all had found that EAN increased the risk of developing depression. At the same time, EAN impaired the emotional and cognitive developments of individuals, which caused individuals to have experienced more negative emotions and de-



velop neuroticism personality traits.<sup>52</sup> Neuroticism was a tendency to cope poorly with stress and experience negative feelings of sadness, anxiety, and irritability.<sup>53</sup> It was tempting to speculate that because responsive relationships between children and caregivers are developmentally expected and biologically essential, their absence would activate the body's stress response systems,<sup>54</sup> impede brain development<sup>55</sup> and eventually lead to a maladaptive personality development. These may lead to high neuroticism which corresponds to the defensive domain and negative emotion, further inducing the occurrence of depression in early adolescence.

### Moderator role of resilience

In addition, results suggested that neuroticism contributed to the severity of depression while psychological resilience mitigated it, namely, psychological resilience could act as a protective factor against various psychological problems. As a component of positive psychology, psychological resilience was an indication of positive mental health. Psychological resilience was broadly defined as the capacity of individuals exposed to negative events to remain healthy<sup>56</sup> and to cope flexibly with challenges in life.<sup>57</sup> Therefore, a resilient individual might have a broader mindset and a more flexible cognitive process, which could be helpful with improving emotional stability and weakening the negative emotions caused by neuroticism.<sup>58</sup> According to the Broaden-and-Build theory, the experiences of positive emotions might broaden individual's instantaneous thought-action repertoires and build lasting personal resources such as physical, intellectual, and social resources to manage future threats.<sup>59</sup> High levels of psychological resilience might enable adolescents to take full advantage of personal positive resources<sup>60</sup> and adapt successfully to adversities.<sup>24</sup> Individuals who could better cope with adversities or stressful events exhibited fewer psychological and behavioral problems.<sup>61</sup> Therefore, a psychologically resilient individual might have a broader mindset and a more flexible cognitive process, which could be helpful with improving emotional stability and weakening negative emotions caused by neuroticism.<sup>62</sup> In other words, psychological resilience may ameliorate the associations of personality traits with depression by exerting the influence of positive emotions.

### Policy and prevention

The present study provides insights into how and under what conditions, EAN can cause more severe depression, which enables several practical implications for reducing the risk of developing depression among adolescent students. Adolescence represents a sensitive neuron developmental period for the fostering of lifelong positive mental health.<sup>63</sup> Young people are still in environments where schemas are being shaped and

maintained. Prevention could include education to schools and families on positive parenting patterns identified as meeting core needs and associated with positive mental health outcomes.<sup>64</sup> Strengthen family-school communication and promote mutual understanding. Schools can nurture adolescents' resilience through knowledge and experiential programs involving self-awareness, interpersonal communication, emotion management, and frustration coping. In addition, intensive therapeutic and counseling interventions may be helpful to minimize the effect of abuse on emotional/behavioral problems for children who have suffered previous abusive experiences. Our findings highlight the necessity of implementing targeted prevention interventions customized to individuals with varying resilience states. The family, school, and society should pay more attention to teenagers with maladaptive personality traits and lower psychological resilience. Improving psychological resilience and developing adaptive personality traits may not only contribute to adolescents' mental health status, preventing them from developing depression but also have lasting effects after they enter adulthood.

### Strength and limitations

Strengths of this study included the inclusion and combination of both active (i.e., emotional abuse) and passive (i.e., emotional neglect) forms of emotional maltreatment, exploring the potential mechanisms underlying relationships between EAN and depression, and the use of a largely representative sample. There were several limitations of the study to be considered. First, our study was a cross-sectional design. Mediation analysis was more acceptable for prospective studies than cross-sectional studies, and our results could not determine a definite causal relationship among EAN, neuroticism, and depression. The results should be interpreted in a cautious manner. Lastly, future studies must proactively enquire about the protective factors that might promote resilience in the face of childhood emotional abuse/neglect.

### Conclusions

The present study tested a moderated mediation model and found that neuroticism mediated the relationships between EAN and depression. Furthermore, psychological resilience moderated the effect of neuroticism on depression. This study indicated that EAN could lead to depression through neuroticism, and psychological resilience could buffer the negative effect of neuroticism and act as a protective factor against depression. These findings may provide important information related to possible intervention programs with adolescents to help them cope with crises, adversity, and unexpected life changes, such as those associated with the EAN.

## Supplementary Materials

The Supplement is available with this article at <https://doi.org/10.30773/pi.2024.0108>.

## Availability of Data and Material

The datasets generated or analyzed during the study are available from the corresponding author on reasonable request.

## Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

## Author Contributions

Conceptualization: Yueyang Hu, Songli Mei. Data curation: Yueyang Hu, Junsong Fei, Jingyi Yue, Ren Gao, Qianqian Song, Xixi Zhao. Funding acquisition: Yueyang Hu. Investigation: Yueyang Hu, Junsong Fei, Jingyi Yue, Ren Gao, Qianqian Song, Xixi Zhao. Methodology: Yueyang Hu, Junsong Fei. Writing—original draft: Yueyang Hu, Junsong Fei, Jingyi Yue, Ren Gao, Qianqian Song, Xixi Zhao. Writing—review & editing: all authors

## ORCID iDs

Yueyang Hu	<a href="https://orcid.org/0000-0001-9535-8889">https://orcid.org/0000-0001-9535-8889</a>
Junsong Fei	<a href="https://orcid.org/0000-0002-3926-7832">https://orcid.org/0000-0002-3926-7832</a>
Jingyi Yue	<a href="https://orcid.org/0000-0003-0286-8877">https://orcid.org/0000-0003-0286-8877</a>
Ren Gao	<a href="https://orcid.org/0009-0006-7323-7780">https://orcid.org/0009-0006-7323-7780</a>
Qianqian Song	<a href="https://orcid.org/0009-0007-8578-9694">https://orcid.org/0009-0007-8578-9694</a>
Xixi Zhao	<a href="https://orcid.org/0009-0003-8808-4834">https://orcid.org/0009-0003-8808-4834</a>
Songli Mei	<a href="https://orcid.org/0000-0003-1815-8255">https://orcid.org/0000-0003-1815-8255</a>

## Funding Statement

This research was funded by Humanities and Social Sciences Fund of the Ministry of Education of China (23YJAZH100), Social Science Fund of Jilin Province in 2023 (2023W9), The project of the National Social Science Foundation of China (24BSH122). High-Level Talent Research Fund of Baotou Medical College (BYJJ-GCC 202505).

## Acknowledgments

We would like to express our warmly appreciate to participants.

## REFERENCES

- Copeland WE, Alaie I, Jonsson U, Shanahan L. Associations of childhood and adolescent depression with adult psychiatric and functional outcomes. *J Am Acad Child Adolesc Psychiatry* 2021;60:604-611.
- Avenevoli S, Swendsen J, He JP, Burstein M, Merikangas KR. Major depression in the national comorbidity survey-adolescent supplement: prevalence, correlates, and treatment. *J Am Acad Child Adolesc Psychiatry* 2015;54:37-44.e2.
- Merikangas KR, He JP, Burstein M, Swanson SA, Avenevoli S, Cui L, et al. Lifetime prevalence of mental disorders in U.S. adolescents: results from the National Comorbidity Survey Replication--Adolescent Supplement (NCS-A). *J Am Acad Child Adolesc Psychiatry* 2010;49:980-989.
- Huang L, Sun X, Zhou M. Depressive symptoms in Chinese laborers: Prevalence and correlated factors among subgroups. *J Affect Disord* 2020;268:141-149.
- Ding H, Han J, Zhang M, Wang K, Gong J, Yang S. Moderating and mediating effects of resilience between childhood trauma and depressive symptoms in Chinese children. *J Affect Disord* 2017;211:130-135.
- Poole JC, Dobson KS, Pusch D. Childhood adversity and adult depression: the protective role of psychological resilience. *Child Abuse Negl* 2017;64:89-100.
- van Harmelen AL, de Jong PJ, Glashouwer KA, Spinhoven P, Penninx BW, Elzinga BM. Child abuse and negative explicit and automatic self-associations: the cognitive scars of emotional maltreatment. *Behav Res Ther* 2010;48:486-494.
- Wright MOD. The long-term impact of emotional abuse in childhood: identifying mediating and moderating processes. *Journal of Emotional Abuse* 2007;7:1-8.
- Fang X, Fry DA, Ji K, Finkelhor D, Chen J, Lannen P, et al. The burden of child maltreatment in China: a systematic review. *Bull World Health Organ* 2015;93:176-185C.
- Hammarman S, Bernet W. Evaluating and reporting emotional abuse in children: parent-based, action-based focus aids in clinical decision-making. *J Am Acad Child Adolesc Psychiatry* 2000;39:928-930.
- Egeland B, Sroufe LA, Erickson M. The developmental consequence of different patterns of maltreatment. *Child Abuse Negl* 1983;7:459-469.
- Kumari V. Emotional abuse and neglect: time to focus on prevention and mental health consequences. *Br J Psychiatry* 2020;217:597-599.
- Vallati M, Cunningham S, Mazurka R, Stewart JG, Larocque C, Milev RV, et al. Childhood maltreatment and the clinical characteristics of major depressive disorder in adolescence and adulthood. *J Abnorm Psychol* 2020;129:469-479.
- Oh I, Song J. Mediating effect of emotional/behavioral problems and academic competence between parental abuse/neglect and school adjustment. *Child Abuse Negl* 2018;86:393-402.
- Bowlby J. Attachment and loss: Vol. 1. New York: Basic Books; 1983.
- Sidebotham P, Heron J; ALSPAC Study Team. Child maltreatment in the "children of the nineties": a cohort study of risk factors. *Child Abuse Negl* 2006;30:497-522.
- Gillath O, Karantzas GC, Fraley RC. Adult attachment: a concise introduction to theory and research. San Diego: Academic Press; 2016.
- Bowlby J. Attachment and loss. *Educational Psychology in Practice*. New York: Basic Books; 1973.
- Taillieu TL, Brownridge DA, Sareen J, Afifi TO. Childhood emotional maltreatment and mental disorders: results from a nationally representative adult sample from the United States. *Child Abuse Negl* 2016;59:1-12.
- Watson D, Gamez W, Simms LJ. Basic dimensions of temperament and their relation to anxiety and depression: a symptom-based perspective. *Journal of Research in Personality* 2005;39:46-66.
- Hengartner MP, Cohen LJ, Rodgers S, Müller M, Rössler W, Ajdacic-Gross V. Association between childhood maltreatment and normal adult personality traits: exploration of an understudied field. *J Pers Disord* 2015;29:1-14.
- Hovens JGFM, Giltay EJ, van Hemert AM, Penninx BWJH. Childhood maltreatment and the course of depressive and anxiety disorders: the contribution of personality characteristics. *Depress Anxiety* 2016;33:27-34.
- Pereira-Morales, AJ, Adan A, Forero DA. Perceived stress as a mediator of the relationship between neuroticism and depression and anxiety symptoms. *Curr Psychol* 2019;38:66-74.
- Rutter M. Implications of resilience concepts for scientific understanding. *Ann N Y Acad Sci* 2006;1094:1-12.
- Monroe SM, Harkness KL. Life stress, the "kindling" hypothesis, and the recurrence of depression: considerations from a life stress perspective. *Psychol Rev* 2005;112:417-445.
- Rutter M. Resilience as a dynamic concept. *Dev Psychopathol* 2012;24:335-344.
- Rauschenberg C, van Os J, Cremers D, Goedhart M, Schieveland JNM, Reininghaus U. Stress sensitivity as a putative mechanism linking childhood trauma and psychopathology in youth's daily life. *Acta Psychiatr Scand* 2017;136:373-388.
- Rutter M. Psychosocial resilience and protective mechanisms. *Am J Orthopsychiatry* 1987;57:316-331.
- Zimmerman MA, Stoddard SA, Eisman AB, Caldwell CH, Aiyer SM, Miller A. Adolescent resilience: promotive factors that inform prevention. *Child Dev Perspect* 2013;7:215-220.
- Masten AS. Ordinary magic: resilience processes in development. *Am Psychol* 2001;56:227-238.

31. Sheerin CM, Lind MJ, Brown EA, Gardner CO, Kendler KS, Amstadter AB. The impact of resilience and subsequent stressful life events on MDD and GAD. *Depress Anxiety* 2018;35:140-147.
32. Bernstein DP, Ahluvalia T, Pogge D, Handelsman L. Validity of the Childhood Trauma Questionnaire in an adolescent psychiatric population. *J Am Acad Child Adolesc Psychiatry* 1997;36:340-308.
33. Xiang Y, Wang W, Guan F. The relationship between child maltreatment and dispositional envy and the mediating effect of self-esteem and social support in young adults. *Front Psychol* 2018;9:1054.
34. Zhao J, Peng X, Chao X, Xiang Y. Childhood maltreatment influences mental symptoms: the mediating roles of emotional intelligence and social support. *Front Psychiatry* 2019;10:415.
35. Kovacs M. The children's depression, inventory (CDI). *Psychopharmacol Bull* 1985;21:995-998.
36. Liang Y, Wang L, Rui G. Depression among left-behind children in China. *J Health Psychol* 2017;22:1897-1905.
37. Guo J, Chen L, Wang X, Liu Y, Chui CH, He H, et al. The relationship between Internet addiction and depression among migrant children and left-behind children in China. *Cyberpsychol Behav Soc Netw* 2012;15:585-590.
38. Wang MC, Dai XY, Yao SQ. Development of the Chinese Big Five Personality Inventory (CBF-PI) III: psychometric properties of CBF-PI brief version. *Chinese Journal of Clinical Psychology* 2011;19:454-457.
39. Sun Y, Yang J, Li M, Liu T. The association between neuroticism and nomophobia: chain mediating effect of attachment and loneliness. *Int J Ment Health Addiction* 2024;22:685-702.
40. Hu YQ, Gan YQ. Development and psychometric validity of the Resilience Scale for Chinese Adolescents. *Acta Psychologica Sinica* 2008;40:902-912.
41. Wang XQ, Zhang DJ. The change of junior middle school students' Life satisfaction and the prospective effect of resilience: a two year longitudinal study. *Psychological Development and Education* 2012;28:91-98.
42. Jeon GS, Ha Y, Choi E. Effects of objective and subjective socioeconomic status on self-rated health, depressive symptoms, and suicidal ideation in adolescents. *Child Ind Res* 2013;6:479-492.
43. Hayes AF. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York: The Guilford Press; 2013.
44. Liu FR SX, Shang XP, Wu MF, Sui ML. A meta-analysis of detection rate of depression symptoms among middle school students. *Chinese Mental Health Journal* 2020;34:123-128. Chinese
45. Shorey S, Ng ED, Wong CHJ. Global prevalence of depression and elevated depressive symptoms among adolescents: a systematic review and meta-analysis. *Br J Clin Psychol* 2022;61:287-305.
46. Lee MA, Song R. Childhood abuse, personality traits, and depressive symptoms in adulthood. *Child Abuse Negl* 2017;65:194-203.
47. Zhang M, Han J, Shi J, Ding H, Wang K, Kang C, et al. Personality traits as possible mediators in the relationship between childhood trauma and depressive symptoms in Chinese adolescents. *J Psychiatr Res* 2018;103:150-155.
48. Agorastos A, Pervanidou P, Chrousos GP, Kolaitis G. Early life stress and trauma: developmental neuroendocrine aspects of prolonged stress system dysregulation. *Hormones (Athens)* 2018;17:507-520.
49. Reis DL, Ribeiro MG, Couto I, Maia N, Bonavides D, Botelho AC, et al. Correlations between childhood maltreatment, anxiety and depressive symptoms, and risk behaviors in adolescent schoolchildren. *Trends Psychiatry Psychother* 2024;46:e20210456.
50. Li S, Wang R, Thomas E, Jiang Z, Jin Z, Li R, et al. Patterns of adverse childhood experiences and depressive symptom trajectories in young adults: a longitudinal study of college students in China. *Front Psychiatry*. 2022;13:918092.
51. Humphreys KL, LeMoult J, Wear JG, Piersiak HA, Lee A, Gotlib IH. Child maltreatment and depression: a meta-analysis of studies using the Childhood Trauma Questionnaire. *Child Abuse Negl* 2020;102:104361.
52. Cicchetti D. Socioemotional, personality, and biological development: illustrations from a multilevel developmental psychopathology perspective on child maltreatment. *Annu Rev Psychol* 2016;67:187-211.
53. Ormel J, Jeronimus BF, Kotov R, Riese H, Bos EH, Hankin B, et al. Neuroticism and common mental disorders: meaning and utility of a complex relationship. *Clin Psychol Rev* 2013;33:686-697.
54. Heim C, Shugart M, Craighead WE, Nemeroff CB. Neurobiological and psychiatric consequences of child abuse and neglect. *Dev Psychobiol* 2010;52:671-690.
55. van Harmelen AL, van Tol MJ, Demenescu LR, van der Wee NJ, Veltman DJ, Aleman A, et al. Enhanced amygdala reactivity to emotional faces in adults reporting childhood emotional maltreatment. *Soc Cogn Affect Neurosci* 2013;8:362-369.
56. Bonanno GA. Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events? *Am Psychol* 2004;59:20-28.
57. McMahon BJ. Resilience Factors and Processes: No Longer at Risk. *Alberta Journal of Educational Research*. 2007.
58. Gong Y, Shi J, Ding H, Zhang M, Kang C, Wang K, et al. Personality traits and depressive symptoms: the moderating and mediating effects of resilience in Chinese adolescents. *J Affect Disord* 2020;265:611-617.
59. Fredrickson BL. The role of positive emotions in positive psychology. The broaden-and-build theory of positive emotions. *Am Psychol* 2001;56:218-226.
60. Ruiz P. Resilience and mental health: challenges across the lifespan. *The Journal of Nervous and Mental Disease* 2012;200:734.
61. Arslan G. Psychological maltreatment, emotional and behavioral problems in adolescents: the mediating role of resilience and self-esteem. *Child Abuse Negl* 2016;52:200-209.
62. Echezarra A, Fernández-González L, Calvete E. *Journal of Research in Personality* 2021;95:104155.
63. Marco EM, Macrí S, Laviola G. Critical age windows for neurodevelopmental psychiatric disorders: evidence from animal models. *Neurotox Res* 2011;19:286-307.
64. Louis JP, Davidson AT, Lockwood G, Wood A. Positive perceptions of parenting and their links to theorized core emotional needs. *J Child Fam Stud* 2020;29:3342-3356.