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# The Effects of Childhood Trauma on College Students' Depressive Symptoms: The Mediation Role of Subjective Well-Being and the Moderation Role of Resilience

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## ABSTRACT

**Background:** The enduring and detrimental impact of childhood trauma on later health and well-being is now well established. However, research on the relationship between childhood trauma and depressive symptoms, along with the potential risk and protective factors, is insufficient in the context of Chinese college student population. **Methods:** Data on childhood trauma, depressive symptoms, resilience, and subjective well-being were collected through surveys conducted with 367 Chinese university students. The data collected in this study were analyzed using SPSS 26.0 and PROCESS 3.5. **Results:** The results revealed that subjective well-being mediated the relationship between childhood trauma and depressive symptoms among college students, with direct and indirect effects accounting for 59.46% and 40.54% of the total effect, respectively. The pathway process between subjective well-being and depressive symptoms was moderated by resilience, whereby an increase in resilience levels corresponded to a gradual escalation in the predictive power of subjective well-being on depressive symptoms. **Conclusion:** The study indicates that childhood trauma significantly and positively predicts depressive symptoms among college students, and it can also directly predict depressive symptoms through the mediating effect of subjective well-being. Elevating levels of psychological resilience and subjective well-being among college students can mitigate depression and promote psychological well-being. From the perspective of positive psychology, the present study provides a new perspective for the prevention and intervention of depressive symptoms among college students.

## KEYWORDS

Childhood trauma; depressive symptoms; subjective well-being; resilience

## Introduction

Depression as the most prevalent mood disorder [1], stands as a significant risk factor influencing the holistic well-being of individuals and has emerged as the second leading cause of disability worldwide [2]. Depression is projected to become the leading cause of disease burden and mortality worldwide by 2030 [3]. Typically, in the early adulthood stage ranging from 18 to 25 years old, college students, due to their

ongoing physical and psychological development, often experience inner conflicts when confronted with various academic and life stressors, which can lead to the onset of adverse emotional states such as depression [4]. Research indicates that college students constitute a high-risk group for depression, with incidence rates steadily increasing [5,6]. Prolonged depression among college students can result in difficulties in interpersonal relationships, impaired cognitive functions, sleep disturbances [7], academic maladjustment,



leading to negative outcomes such as retention or dropping out [8], and may even culminate in suicidal ideation and behavior, posing a threat to life safety [9,10].

Influenced by academic pressures, interpersonal dynamics, emotional factors, and employment prospects, the detection rate of depression among Chinese university students exceeds that of the general population or non-university student cohorts [11,12]. Moreover, according to findings from the “China National Mental Health Development Report (2019–2020)”, 18.5% of university students exhibit depressive tendencies, with 4.2% displaying a high risk of depression [13], a trend that is showing a yearly increase [14,15]. Without appropriate intervention and guidance during this period, depressive tendencies can escalate into more severe depressive disorders. Previous studies indicate that both the occurrence and duration of trauma during childhood significantly impact individual psychological well-being [16], with research confirming childhood trauma as a crucial risk factor for depression [17,18]. Individuals with early trauma experiences are 2.03 times more likely to develop depression compared to those without such experiences [19]. Childhood trauma, therefore, acts as a latent “time bomb” within some college students, posing a potential threat to their mental health. Given the high prevalence of depression among college students and its severe consequences, further exploration of the influencing factors and developmental mechanisms underlying depression in this population is of paramount importance, providing valuable theoretical support for the prevention and intervention of psychological issues among college students.

#### *Childhood trauma and depression*

Childhood trauma, as a significant factor impacting the physical and mental health development of children, has garnered increasing attention in recent years [20]. Childhood trauma refers to one or more experiences of exposure to trauma, neglect, dysfunctional family dynamics, or other adverse circumstances before the age of 18 [21]. Existing research indicates that childhood trauma can have profound and enduring effects on the physical and mental health of children, persisting into adulthood and throughout life. Compared to individuals without traumatic experiences, children who experience trauma are more susceptible to mental health disorders such as depression [22,23], bipolar disorder [24,25], anxiety disorders [26,27], as well as alcohol and substance trauma [28–30].

Beyond genetic and biological factors, childhood trauma, as a negative stress experienced in early life, has been substantiated by multiple studies as a predictive factor for depression in adulthood [31,32]. Research indicates that exposure to a greater number of childhood trauma experiences is associated with a higher occurrence of depressive symptoms [33]. According to the perspective of emotion regulation theory, children who have experienced childhood trauma find it more challenging to control their negative thoughts when faced with negative events, thereby increasing susceptibility to depression [34,35]. Furthermore, previous studies have shown a significant correlation between childhood trauma and depressive symptoms.

Moreover, research indicates that the longer and more frequent the duration of trauma, the greater the likelihood of elevated levels of depression [36,37].

#### *The mediating role of subjective well-being*

Subjective well-being, as a crucial positive emotional experience, entails individuals’ overall evaluation of their life quality based on certain external or internal standards [38]. Serving as a positive psychological experience for individuals, subjective well-being significantly positively predicts levels of mental health [39]. Moreover, higher levels of subjective well-being can enhance individuals’ positive resources and serve as a protective factor in reducing the incidence of depression [40]. For instance, Corcoran and McNulty observed that childhood adversities indirectly diminished subjective well-being through attachment mechanisms among university students [41]. Additionally, Zhang found a significant negative correlation between subjective well-being and depression in a study examining the relationship between subjective well-being and depression among 348 teacher trainees [42]. Research on childhood trauma and subjective well-being also indicates that children who experience childhood trauma lack a sense of security, leading to long-term emotional downturns and reduced subjective well-being, consequently resulting in various emotional symptoms and psychological distress [43,44]. Greger study results demonstrate that childhood trauma can negatively predict adolescents’ subjective well-being [45]. Similarly, Oshio et al. indicated that childhood trauma significantly reduced subjective well-being during adulthood [46]. The neurobiological perspective emphasizes that childhood trauma over-activates brain structures responsible for emotion-laden memories while disrupting neutral memories [47,48].

#### *Moderating role of resilience*

While a substantial body of research indicates that childhood maltreatment is a risk factor for depressive symptoms among college students, not all individuals who experience childhood trauma ultimately develop depression or poor psychological states [49]. One important protective factor against the toxic stress of childhood trauma is resilience [50]. Resilience refers to an individual’s ability to maintain an optimistic, confident, positive, and adaptive psychological state in the face of adversity, pressure, and setbacks, which can assist individuals in better adapting to life’s changes and challenges [51,52]. Individuals with higher level of resilience have better well-being and a lower risk of developing psychopathology [53].

Resilience as a protective factor against childhood maltreatment, not only reduces the impact of childhood trauma on adult depression [54] but also lowers the risk of developing mental illness and enhances subjective well-being [55]. For individuals with childhood trauma, resilience can mitigate the effects of trauma [56] and regulate the impact of negative life events on depression [57]. However, most previous studies have not explored the cumulative effect of childhood trauma on subjective well-being and the underlying mediating factors (both risk and protective) in university students.

### The present study

In summary, the relationships between childhood trauma, depression, resilience, and subjective well-being are complex and may involve bidirectional causality [58]. With the global rise in common mental health issues among young people [59,60], childhood trauma emerges as a potential threat factor for adolescent depression, potentially leading to harmful lifelong effects on their development. As university students represent the future talent pool for national development, their psychological well-being is crucial. However, childhood trauma, like a time bomb hidden in some students' minds, poses a potential threat to their psychological health. This study constructed a moderated mediation model (conceptual model depicted in Fig. 1) to examine whether subjective well-being mediates the relationship between childhood maltreatment and depression symptoms in university students, and whether psychological resilience moderates this mediated model. Specifically, drawing from the literature mentioned above, the following hypotheses were proposed: (1) Childhood trauma significantly predicts depression symptoms in university students; (2) Subjective well-being mediates the relationship between childhood trauma and depression symptoms in university students; (3) Resilience moderates the impact of childhood trauma and subjective well-being on depression symptoms.

### Method

#### Participants

This study focused on undergraduate students at a medical college in Kunming, Yunnan Province, China. All data were automatically collected using Questionnaire Star. The participants did not receive any incentive. Before collecting data, informed consent was obtained from all the university students. The principles of voluntary participation and confidentiality of the responses were emphasized. The study design was approved by Yunnan University of Chinese Medicine (IRB number: XXLW-2024-002) ethics review board.

The study employed convenience sampling, distributing a total of 367 questionnaires and obtaining 339 valid responses, resulting in a response rate of 92.4%. The participants' ages ranged from 17 to 24 years old (mean age =  $20.10 \pm 1.90$ ). Among them, there were 155 freshmen, 62 sophomores, 35 juniors, 22 seniors, and 65 fifth-year students. Regarding the participants' backgrounds, 69 were from large or medium-sized cities (20.4%), while 270 were from rural areas or small towns (79.6%).

#### Measures

##### Childhood trauma questionnaire

The study utilized a shortened version of the Childhood Trauma Questionnaire (CTQ) developed by Bernstein et al. [61] and revised by Zhao et al. [62]. This version consists of 28 items, categorized into five dimensions: sexual trauma, emotional neglect, emotional trauma, physical neglect, and physical trauma. Responses were scored on a Likert 5-point scale (1–5). The questionnaire has been previously employed with Chinese participants and demonstrated good reliability

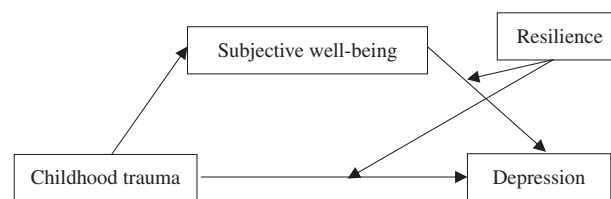


FIGURE 1. The proposed moderated mediation model.

and validity [63]. In the present study, the Cronbach's  $\alpha$  coefficient for this scale was calculated to be 0.853, indicating good internal consistency.

#### Subjective well-being scale

The subjective well-being Scale used in this study is the Index of well-being developed by Campbell et al. [64]. This scale is concise, user-friendly, and capable of reflecting the overall condition of subjective well-being. Comprising 9 items, questions 1 to 8 belong to the overall emotional index section, while question 9 pertains to the life satisfaction section [65]. The calculation method for subjective well-being is as follows: (average score of questions 1 to 8) + (score of question 9)  $\times$  1.1. The scale yields scores ranging from 2.1 to 14.7, with higher scores indicating stronger subjective well-being. In this study, the Cronbach's  $\alpha$  coefficient for this scale was determined to be 0.917, demonstrating robust internal consistency.

#### Center for epidemiologic studies depression

The Center for Epidemiologic Studies Depression Scale (CES-D), developed by Radloff et al., was employed in this study. This scale consists of 20 items, encompassing four factors: depression and positive emotions, interpersonal factors, as well as physical and activity-related symptoms. The total score on the scale ranges from 0 to 60, with a commonly used cutoff point of 16 to indicate a tendency toward depression—scores below 16 are considered normal, while scores equal to or greater than 16 suggest a tendency toward depression. Higher scores indicate more severe depressive symptoms. The CES-D has demonstrated good reliability and validity and is applicable to Chinese university students [66,67]. In this study, the Cronbach's  $\alpha$  coefficient for the scale was calculated to be 0.86, indicating strong internal consistency.

#### Resilience scale

The Psychological Resilience Scale, revised by Singh et al. [68], was utilized in this study. This scale comprises three dimensions: resilience, fortitude, and optimism, totaling 25 items. Responses are scored on a 5-point Likert scale, where higher scores indicate a higher level of psychological resilience. The scale has demonstrated good reliability and validity in research involving domestic university student populations [69]. In this study, the Cronbach's  $\alpha$  coefficient for the scale was calculated to be 0.930, indicating excellent internal consistency.

#### Statistical analysis

The data collected in this study were analyzed using SPSS 26.0 and PROCESS 3.5. First, Harman's one-way test was conducted to prevent potential common method bias. Next,

descriptive statistics were examined, and correlation analyses were performed to explore the relationships between variables. Finally, Model 14 of the PROCESS macro was used to test the moderated mediation model of childhood trauma and college students' depressive symptoms, followed by a simple slope analysis. To test the mediation and moderated mediation effects, a bias-corrected bootstrapping procedure (n = 5000) was applied, and 95% confidence intervals (CI) were calculated. Effects were considered significant when the confidence intervals did not contain zero. A threshold *p*-value of 0.05 was used to determine statistical significance.

**Results**

*Common method bias*

The exploratory factor analysis of all items from the four questionnaires was conducted using Harman's single-factor method. The results revealed 18 eigenvalues greater than 1, indicating the presence of common factors. The first common factor accounted for 24.93% of the total variance. Although this percentage falls below the critical threshold of 40%, suggesting that there is no severe issue of common method bias in this study.

*Descriptive statistical analysis*

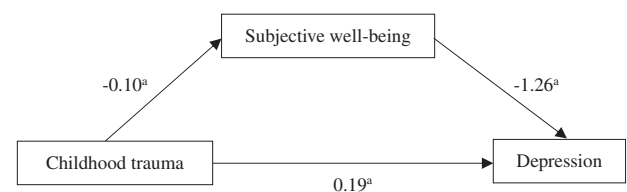
The mean values, standard deviations, and correlation coefficients among variables are presented in Table 1. The results indicate that Childhood Trauma is negatively correlated with subjective well-being and psychological resilience, while positively correlated with depression. Subjective well-being exhibits a positive correlation with psychological resilience and a negative correlation with depression. Psychological resilience is negatively correlated with depression. Furthermore, grade level was significantly correlated with subjective well-being and depression. Gender did not show significant correlations with the study variables. Therefore, grade level will be treated as a control variable in subsequent analyses.

*Childhood trauma and depression: moderated mediation model*

Utilizing Model 15 from the PROCESS macro, a simple mediation model was employed to examine the relationship among college students' depressive symptoms (dependent

variable), childhood trauma (independent variable), and subjective well-being (mediating variable). The results indicated that childhood trauma positively predicted depressive symptoms among college students ( $\beta = 0.37, p < 0.001, 95\% \text{ CI: } [0.28, 0.46]$ ). Even after including subjective well-being in the regression equation, childhood trauma still significantly predicted depressive symptoms among college students ( $\beta = 0.19, p < 0.001, 95\% \text{ CI: } [0.09, 0.29]$ ). Additionally, childhood trauma negatively predicted subjective well-being ( $\beta = -0.10, p < 0.001, 95\% \text{ CI: } [-0.12, -0.07]$ ), and subjective well-being negatively predicted depressive symptoms among college students ( $\beta = -1.26, p < 0.001, 95\% \text{ CI } [-1.67, -0.85]$ ). These findings suggest that subjective well-being partially mediates the relationship between childhood trauma and depressive symptoms among college students, with direct effects (effect size = 0.19) and mediating effects (effect size = 0.13) accounting for 60.13% and 39.87% of the total effect (effect size = 0.32), respectively. Refer to Fig. 2 for visualization.

Using Model 15 from the PROCESS macro for analysis, with college students' depressive symptoms as the dependent variable, childhood trauma as the independent variable, subjective well-being as the mediating variable, and psychological resilience as the moderating variable, the results revealed significant predictive effects of the interaction term between childhood trauma and psychological resilience ( $\beta = 0.01, p = 0.02, 95\% \text{ CI } [0.00, 0.01]$ ), as well as the interaction term between subjective well-being and psychological resilience ( $\beta = 0.06, p < 0.001, 95\% \text{ CI } [0.03, 0.09]$ ) on college students' depressive symptoms. These findings suggest that psychological resilience moderates the relationship between childhood trauma and depressive symptoms among college students, as well as the relationship between subjective well-being and depressive symptoms among college students. Refer to Table 2 for details.



**FIGURE 2.** The mediating effect of subjective well-being on the relationship between childhood trauma and depression (<sup>a</sup>*p* < 0.01).

**TABLE 1**

**Descriptive statistics of the study variables**

Variables	M	SD	1	2	3	4	5	6
1. Gender	1.81	0.39	1					
2. Grade	2.35	1.56	-0.03	1				
3. Childhood trauma	41.63	9.77	0.10	0.00	1			
4. Subjective well-being	10.28	2.28	-0.01	-0.18**	-0.41**	1		
5. Resilience	56.51	13.89	-0.11	0.00	-0.38**	0.44**	1	
6. Depression	10.65	9.28	0.05	0.12*	0.39**	-0.47**	-0.48**	1

Note: M = mean; SD = standard deviation; \**p* < 0.05, \*\**p* < 0.01.

TABLE 2

## Tests for moderated mediation model

Variables	Subjective well-being			Depression		
	$\beta$	95% CI	$t$	$\beta$	95% CI	$t$
Childhood trauma	-0.10	[-0.12, -0.07]	-8.31***	0.19	[0.09, 0.29]	3.69***
Subjective well-being				-1.26	[-1.67, -0.85]	-6.02***
Resilience				-0.15	[-0.22, -0.08]	-4.42***
Childhood trauma* Resilience				0.01	[0.00, 0.01]	2.26**
Subjective well-being* Resilience				0.06	[0.03, 0.09]	4.59***
$R^2$		0.17			0.37	
$F$		69.05***			39.24***	

Note: CI = confidence interval; \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

To elucidate how psychological resilience moderates the relationship between subjective well-being and depressive symptoms, simple slope tests were conducted by categorizing psychological resilience into high and low groups based on one standard deviation above and below the mean. Refer to Fig. 3 for visualization. The results revealed that when psychological resilience was relatively low, the negative predictive effect of subjective well-being on depressive symptoms was not significant ( $\beta = -0.38$ ,  $p > 0.05$ , 95% CI [-0.89, 0.14]); however, when psychological resilience was relatively high, subjective well-being significantly negatively predicted depressive symptoms ( $\beta = -2.02$ ,  $p < 0.001$ , 95% CI [-2.58, -1.46]). This suggests that as individual psychological resilience increases, the predictive effect of subjective well-being on depressive symptoms gradually increases.

To further elucidate how psychological resilience moderates the relationship between childhood maltreatment and depressive symptoms, simple slope tests were conducted by categorizing psychological resilience into high and low groups based on one standard deviation above and below the mean. Refer to Fig. 4 for visualization. The results indicated that when psychological resilience was relatively low, childhood trauma did not significantly predict depressive symptoms ( $\beta = 0.09$ ,  $p > 0.05$ , 95% CI [-0.01, 0.19]); however, when psychological resilience was relatively high, childhood trauma significantly predicted depressive symptoms positively ( $\beta = 0.30$ ,  $p < 0.001$ , 95% CI [0.13, 0.46]). This suggests that as individual psychological

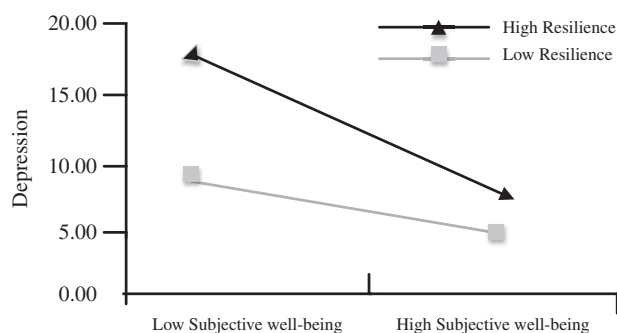


FIGURE 3. The moderating effect of mental resilience on subjective well-being and depression.

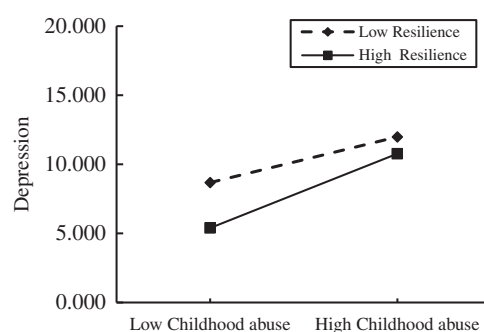


FIGURE 4. The moderating effect of mental resilience on childhood trauma and depression.

resilience increases, the predictive effect of childhood maltreatment on depressive symptoms shows a gradual decrease.

## Discussion

### *The association between childhood trauma and depressive symptoms*

The research findings reveal that childhood trauma significantly and positively predicts depressive symptoms in college students, aligning with previous study outcomes [70]. This may be attributed to the heightened sensitivity of brain circuits involved in stress and emotional regulation (such as the hypothalamic-pituitary-adrenal axis, amygdala, and hippocampus) during active brain development in childhood [71]. The potential neurobiological effects of these adverse experiences and prolonged toxic stress make individuals highly sensitive, vigilant, and prone to exaggerated responses to threatening stimuli later in life [72]. Childhood trauma not only alters the neurobiological systems but also disrupts other epigenetic and socio-psychological stress pathways, leading to lowered stress thresholds and compromised coping mechanisms [73], thereby increasing the risk of developing depression. Individuals with adverse experiences in childhood may encounter challenges in regulating emotions and establishing positive interpersonal relationships, significantly impacting their mental well-being [74]. Additionally, based

on the positive psychology perspective on depression, this study introduces subjective well-being and psychological resilience to further explore the impact of childhood trauma on depressive symptoms in college students. The research outcomes hold crucial implications for guiding interventions aimed at improving the mental health levels of college students.

Childhood trauma experiences can lead to the development of negative cognitive styles, thereby triggering depression. Research by Rose et al., among others, also suggests that childhood trauma may contribute to the development of negative cognitive styles [75]. Childhood neglect often results in a lack of confidence and feelings of insecurity in children, making them susceptible to cognitive distortions and negative self-beliefs, thereby increasing the risk of developing depressive symptoms. Therefore, in the context of school mental health education, it is crucial to pay special attention to individuals who have experienced childhood trauma, as the negative schema as formed during their development make them more vulnerable to the effects of traumatic experiences. Additionally, for those students who have suffered from childhood maltreatment, leading to heightened depressive symptoms and a lack of self-healing abilities, schools should, under the premise of ensuring their safety, provide psychological counseling services, mental health education courses, and psychological support groups to help them alleviate their emotions and reduce depressive symptoms.

#### *The mediating role of subjective well-being*

Children grow through interactions with their surrounding environment, and adverse experiences during childhood can have profound and lasting effects on their psychological development throughout life [76]. They may be prone to experiencing more pessimistic and anxious negative emotions, with a higher likelihood of developing depressive symptoms [77]. The results of the mediating analysis indicate that subjective well-being plays a mediating role between childhood trauma and depressive symptoms in college students. Subjective well-being significantly negatively predicts depressive symptoms, and enhancing subjective well-being contributes to a reduction in the occurrence of depressive symptoms, aligning with the explanation from positive psychology [78]. Research has found that positive psychological interventions effectively enhance subjective well-being [79]. Subjective well-being, as a crucial assessment indicator, decreasingly correlates with the occurrence of depression [80]. The reason childhood trauma can impact the occurrence of depressive symptoms in college students through subjective well-being is that individuals with a history of childhood trauma may reduce their subjective well-being through early-onset depression and other health-harming behaviors [81]. Subjective well-being as a significant positive emotional state, is associated with increased individual positive resources and serves as a protective factor in reducing the incidence of depression [82].

Positive psychology posits that depression arises not merely as a consequence of negative cognition but rather due to a lack of positive resources. Children who have experienced trauma may struggle to form a sense of

psychological safety, leading to a decrease in subjective well-being. As a crucial positive resource, low levels of subjective well-being contribute to the onset of depression [83]. Therefore, this study posits that enhancing the subjective well-being of college students can reduce the occurrence and progression of depression. Universities can incorporate courses in mental health education, focusing on emotional regulation, stress management, and the cultivation of positive mindsets, to help students enhance their awareness of mental health and develop relevant skills. Additionally, fostering the establishment of robust social support networks among students, including interactions with peers, educators, and family members, as well as engagement in extracurricular activities and volunteering, is imperative. Furthermore, encouraging students to maintain regular sleep patterns, healthy dietary habits, and moderate exercise routines is essential for promoting a balanced mind-body health equilibrium. Finally, providing opportunities for students to participate in diverse activities to cultivate their interests, skills, and potentials can enhance their self-esteem and sense of fulfillment.

The discovery of this mediating mechanism, exploring the developmental process through which childhood trauma influences the occurrence of depressive symptoms via subjective well-being from a positive psychology perspective, provides theoretical support.

#### *The regulatory role of psychological resilience*

The results of this study reveal a significant moderating effect of psychological resilience on the pathway from childhood trauma to subjective well-being to depressive symptoms. Specifically, the interactive effect between subjective well-being and psychological resilience significantly predicts depressive symptoms. The path process from subjective well-being to depressive symptoms is influenced by the moderation of psychological resilience, showing a gradual increase in the predictive effect of subjective well-being on depressive symptoms with an elevation in psychological resilience levels. There is a negative correlation between psychological resilience and both childhood trauma and depressive symptoms, while a positive correlation exists between psychological resilience and subjective well-being. These findings align with previous research conclusions, highlighting the role of psychological resilience in enhancing happiness and reducing depressive symptoms through positive emotions and cognitive reappraisal [84,85]. Numerous studies confirm that individuals with higher levels of psychological resilience demonstrate greater resilience in the face of adversity, employing a positive mindset to cope with stress and crises, enabling them to adeptly handle life's challenges [86,87].

Psychological resilience as a relatively stable yet cultivable trait, can be enhanced through targeted educational campaigns, psychological counseling activities, and initiatives such as offering specialized courses on resilience and organizing student support groups. These efforts aim to elevate students' levels of psychological resilience. Furthermore, research findings indicate that metacognitive intervention techniques are efficient and stable in enhancing resilience. Metacognitive intervention

can continuously reinforce individuals' positive emotions, allowing their psychological state to enter a virtuous cycle. Through continuous reinforcement and consolidation in daily life, individuals can become more optimistic and confident, thereby significantly enhancing their psychological resilience [88].

Childhood is the most distinctive developmental stage in one's life. For children who have experienced childhood trauma, they lack the ability to choose their birth and upbringing environment and cannot alter their family of origin or parents' parenting styles. However, it is essential to recognize that individuals in such circumstances are not limited to a path of self-destruction. This study, grounded in positive psychology, offers a novel perspective on inhibiting the occurrence and development of depression in college students. Childhood trauma can positively predict depressive symptoms in college students, and this prediction can also occur indirectly through the mediating role of subjective well-being. This implies that subjective well-being is a crucial factor influencing depressive symptoms in college students. Therefore, effectively enhancing the level of subjective well-being in college students can contribute to reducing depressive symptoms. While childhood trauma is an unchangeable factor, subjective well-being, as a cognitive and emotional element, can be improved through self-regulation or external interventions (such as implementing altruistic behaviors, expressing gratitude, and setting personal goals) to modify the occurrence and development of depressive symptoms in college students. Future research could explore positive psychological intervention techniques to address depression issues in college students at the source.

### Limitations and Future Research Implications

There are also some limitations in this study, which need to be improved upon in future research. First, this study was cross-sectional by design, so the results of the study cannot extrapolate causality. Future research should employ longitudinal designs or experimental methods and utilize data analysis approaches such as correlation design with intercross-lag group or hierarchical linear models to further investigate the causal relationship between childhood trauma and depression. Second, this study is a retrospective survey research, and it is important to acknowledge the potential presence of recall bias among students during the questionnaire completion process. Participants may experience memory biases, and there is a possibility of information bias, especially in relation to sensitive items. Finally, the limited sample size of our study, comprising solely Chinese college students, limits the cross-cultural validity of our findings. Therefore, future research should replicate the study using a more diverse and expansive sample.

### Conclusions

Childhood trauma significantly and positively predicts depressive symptoms in college students. Moreover, it can directly predict depressive symptoms through the mediating effect of subjective well-being. Enhancing psychological resilience and levels of subjective well-being in college

students can reduce depressive symptoms and promote psychological well-being. This research, approached from the perspective of positive psychology, offers a novel outlook for the prevention and intervention of depressive symptoms in college students.

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**Author Contributions:** The authors confirm their contribution to the paper as follows: study conception and design: Fuhua Yang, Keli Yin; data collection: Fuhua Yang, Rong Chen, Maoying Cui; analysis and interpretation of results: Jiacy Lin, Chunlin Gao; draft manuscript preparation: Fuhua Yang, Jiacy Lin, Keli Yin. All authors reviewed the results and approved the final version of the manuscript.

**Availability of Data and Materials:** Due to institutional ethical specifications, the data used in this study is not publicly available. On reasonable request, data will be made available by the corresponding author.

**Ethics Approval:** Before collecting data, informed consent was obtained from all the university students. The principles of voluntary participation and confidentiality of the responses were emphasized. The study design was approved by Yunnan University of Chinese Medicine (IRB number: XXLW-2024-002) Ethics Review Board.

**Conflicts of Interest:** This study was carried in the absence of any personal, professional, or financial relationships that could potentially be constructed as a conflict of interest.

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