

## The relationship between childhood trauma and academic burnout in vocational college students: A moderated mediation model



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### ABSTRACT

Academic burnout, marked by emotional exhaustion and disengagement caused by long-term stress, is a serious psychological concern among vocational college students. Although childhood trauma has been recognized as an important risk factor for academic burnout, the mechanisms linking early adverse experiences to academic outcomes remain unclear. This study tested a moderated mediation model among 811 Chinese vocational college students using validated measures of childhood trauma, psychological resilience, perceived teacher support, and academic burnout. The results showed that childhood trauma was significantly and positively associated with academic burnout ( $\beta = 0.564$ ,  $t = 18.558$ ,  $p < 0.001$ ). Psychological resilience partially mediated this relationship, with a significant indirect effect (95% CI = [0.067, 0.137]). In addition, perceived teacher support moderated the direct association between childhood trauma and academic burnout ( $\beta = -0.119$ ,  $t = -3.768$ ,  $p < 0.001$ ), such that higher levels of teacher support weakened the negative impact of childhood trauma. These findings indicate that childhood trauma influences academic burnout both directly and indirectly through reduced resilience, and they highlight the protective role of supportive teacher-student relationships. The study suggests that strengthening students' resilience and fostering supportive educational environments may be effective strategies for reducing academic burnout in vocational higher education.

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### 1. Introduction

The concept of "burnout" originated in early psychological research and was later adapted in educational psychology to describe the negative psychological states students may experience during academic activities (Tang et al., 2021). Academic burnout is primarily characterized by three core dimensions: emotional exhaustion from depleted psychological and physical resources in stressful school situations, depersonalization or cynical attitudes toward one's studies, and a reduced sense of personal accomplishment (Zhang et al., 2021). This state often involves a loss of interest in learning, diminished intrinsic motivation, and pervasive

negative emotions such as frustration and exhaustion.

Within China's distinct educational milieu, there has been a discernible escalation in the prevalence of academic burnout among students in higher vocational colleges. Empirical studies have demonstrated that 73% of students in higher vocational colleges have reached the level of moderate and above academic burnout, according to recent surveys, which is significantly higher than that of students in general undergraduate colleges and universities. The characteristics of academic burnout in vocational college students are multidimensional, reflecting not only negative attitudes and negative emotions at the psychological level, but also avoidance tendency and withdrawal performance at the behavioral level. This situation has been shown to adversely affect students' academic performance in addition to their mental well-being and occupational prospects (Yang and Farn, 2005).

Early traumatic experiences have been identified as significant risk factors for academic burnout

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(McKee-Lopez et al., 2019; Tang et al., 2025). Such experiences, including emotional or physical abuse, sexual assault, and neglect (Georgieva et al., 2021), are linked to difficulties in cognitive functioning and emotion regulation, which in turn may increase an individual's vulnerability to academic burnout (McKee-Lopez et al., 2019). However, the relationship between childhood trauma and burnout is complex, suggesting that other factors mediate and moderate this link. Psychological resilience, an individual's capacity for positive adaptation in the face of adversity, is a likely mediator in this association (Benner et al., 2023). Furthermore, external resources, such as teacher support, are associated with greater psychological resilience and lower levels of burnout (Wen et al., 2023; Shao et al., 2025). According to the Conservation of Resources (COR) theory, acquiring new resources (e.g., teacher support) can help offset the negative consequences of initial resource loss (e.g., resulting from childhood trauma), providing a robust theoretical framework for this study.

### 1.1. The relationship between childhood trauma and academic burnout

When examining academic burnout from the perspective of distal risk factors, traumatic experiences during childhood are a critical consideration. Childhood trauma is defined as multidimensional adverse events encountered before adulthood, including direct injuries such as physical abuse, neglect, and sexual assault, as well as persistent environmental dysfunctions (Kuzminskaite et al., 2021). Such experiences can trigger immediate post-traumatic stress responses, and their long-term consequences may be associated with neurocognitive developmental trajectories, potentially contributing to systemic difficulties in academic adjustment, stress management, and social relationship building (Thumfart et al., 2022).

According to COR theory, individuals utilize limited psychological and social resources to cope with stress, including that from childhood trauma. Early-life stress is linked to a substantial depletion of these resources, leaving an individual's reserves at a chronically low level (Wang et al., 2022). In higher vocational institutions, students must balance experiential learning with theoretical studies, manage the adaptive pressures of transitioning to higher education, and face uncertainty about future employment. This process demands a significant investment of personal resources. Vocational college students with a history of childhood trauma may be more vulnerable to resource depletion when facing these multiple pressures, due to insufficient initial reserves. This vulnerability may leave them more susceptible to core symptoms of academic burnout, such as emotional exhaustion, diminished interest in learning, and decreased self-efficacy.

Research indicates that adverse childhood experiences are strongly linked to individuals' capacity for emotion management and academic

engagement. These experiences are associated with impaired emotion regulation and cognitive functioning (e.g., reduced self-efficacy), which in turn are related to academic burnout. Several empirical analyses have demonstrated a positive correlation between childhood trauma and academic burnout. This link was further substantiated by Tang et al. (2025), who found that individuals with a history of trauma were more prone to emotional exhaustion and interpersonal detachment in academic settings. Furthermore, these early traumas may be associated with reduced quality of interactions with teachers and peers, contributing to greater social isolation and tension in teacher-student relationships (Armstrong et al., 2017).

It is imperative to underscore the multifaceted nature of the association between childhood trauma and academic burnout. This relationship may be influenced by multiple mediating and moderating factors, including psychological resilience, self-efficacy, and social support networks (Roy et al., 2011; Cohrdes and Mauz, 2020; Angelakis and Gooding, 2022). Although extant studies have begun to reveal the interactions among these variables, there remains a paucity of research on higher vocational student populations, with a particular scarcity of studies exploring these mediating and moderating mechanisms in depth. The present study aims to investigate how childhood trauma relates to academic burnout through the lenses of resource depletion and developmental barriers, integrating COR theory and positive youth development perspectives, to generate correlational evidence and discuss possible implications for mental health support in higher education settings.

### 1.2. The mediating role of psychological resilience

Psychological resilience is a positive psychological attribute defined as an individual's capacity to maintain well-being and adapt effectively when facing significant adversity, trauma, or stress. Within the protection-risk framework and COR theory, psychological resilience is considered an "internal resource" that can buffer against the erosion of well-being by external risk factors. When individuals experience childhood trauma, these events are associated with a significant drain on their psychological resources, which is linked to persistent high loads on cognitive, emotional, and physiological systems (Banford Witting and Busby, 2019). Individuals with higher levels of psychological resilience may be better equipped to mitigate the negative consequences of trauma and are often associated with more positive academic and health outcomes (Park et al., 2023).

Psychological resilience has been identified as a pivotal protective factor, potentially mediating the relationship between early adversity and subsequent maladjustment. For example, empirical analysis by Chang et al. (2021) found that psychological resilience mediated the relationship between

childhood maltreatment and psychological maladjustment in college students. Similarly, research in educational psychology suggests that students with higher levels of psychological resilience are more adept at coping with academic stress and report lower levels of academic burnout (Gong et al., 2023). However, the role of psychological resilience among higher vocational students, particularly as a mechanism in the link between childhood trauma and academic burnout, remains significantly understudied.

From the perspective of a mediation model, psychological resilience can help elucidate the pathway linking childhood trauma to burnout. COR theory posits that when individuals lack sufficient internal resources (e.g., positive emotions, self-efficacy) to respond to adversity, they are more susceptible to a spiral of resource loss, which is often associated with the emergence of burnout symptoms (Allen, 2025). Supporting this, Jeong and Shin (2023) found that psychological resilience indicators mediated the relationship between trauma exposure and emotional exhaustion. Furthermore, Milne et al. (2024) proposed that psychological resilience can function as both a mediator and a buffer in the association between adverse childhood experiences and burnout among carers.

In recent years, the concept of psychological resilience as a potential intervening mechanism has been applied to education to examine its pathway between childhood trauma and academic maladjustment. The findings of Hu et al. (2024) suggest that psychological resilience partially mediated the association between childhood trauma and psychiatric disorders in adulthood, which can include symptoms of burnout. Furthermore, a study by Zheng et al. (2022) on Chinese college students demonstrated a significant mediating function of psychological resilience in the relationship between childhood trauma and depressive symptoms. These findings suggest that the relationship between childhood trauma and academic burnout may be indirect. Specifically, they point to a pathway where childhood trauma is associated with lower psychological resilience, and this lower resilience is, in turn, linked to a greater risk of academic burnout.

### 1.3. The moderating role of perceived teacher support (PTS)

Factors related to academic burnout are multidimensional, involving both internal psychological resources and external support systems (Rehman et al., 2020). PTS is a pivotal component of social support in educational settings, defined as students' subjective perceptions of teachers' caring behaviors, including emotional support, academic guidance, and autonomy empowerment (Tao et al., 2022). Within the COR theory framework, where childhood trauma is linked to academic burnout through resource depletion, PTS, as a key environmental resource, is hypothesized to moderate this relationship through

multiple pathways. For instance, higher levels of PTS have been found to be associated with lower academic burnout (Wen et al., 2023) and may also weaken the negative association between early trauma and academic outcomes by being linked to greater psychological resilience (Lackova Rebicova et al., 2021). The exploration of this regulatory mechanism provides a theoretical basis for educational interventions to optimize students' psychological resource management from the dimension of environmental support.

However, existing studies present varied findings on the precise way PTS moderates the "childhood trauma–psychological resilience–academic burnout" pathway. The literature suggests three potential mechanisms. First, PTS may directly buffer the link between trauma and burnout. By providing emotional support (e.g., understanding, trust) and instrumental support (e.g., academic guidance), PTS could compensate for psychological resources lost due to trauma, thereby weakening the direct positive association between trauma and burnout (Zhao et al., 2024; Wang and Ma, 2025). Second, PTS might buffer the link between trauma and resilience. Supportive teacher-student relationships and structured guidance could be associated with improved self-regulation, which in turn may weaken the negative association between trauma and the development of psychological resilience (Berger et al., 2021). Third, PTS may moderate the link between resilience and burnout. Higher levels of PTS could help individuals more effectively utilize their existing resilience, thereby strengthening the protective association of resilience with academic burnout (Romano et al., 2020).

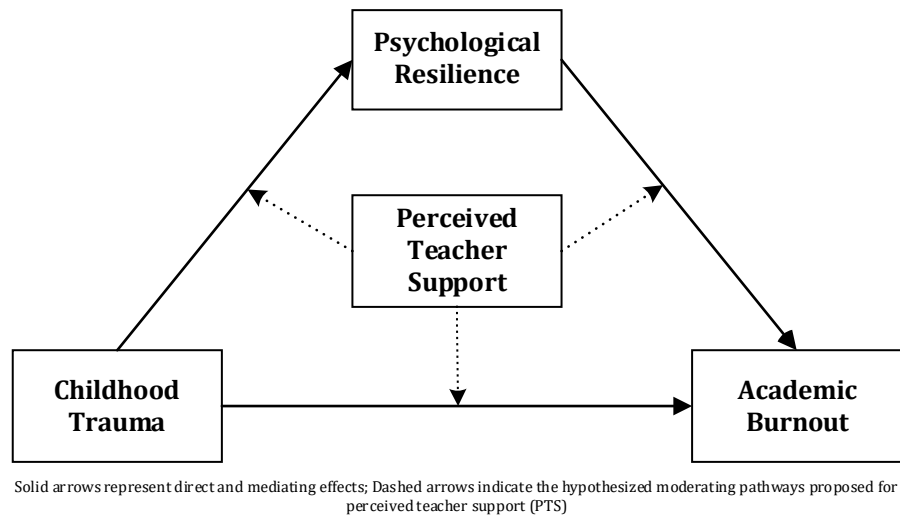
In summary, the literature suggests that PTS may have a multifaceted moderating function in the trauma-burnout relationship. It may buffer the direct association between childhood trauma and academic burnout. Additionally, it could play a moderating role in the indirect pathway involving psychological resilience, potentially by supporting its development or enhancing its protective function. This study will empirically test these distinct moderating possibilities.

### 1.4. Current study

The present study proposes and evaluates a moderate mediation model (Fig. 1) to investigate the relationship between childhood trauma and academic burnout among higher vocational college students. We hypothesize that psychological resilience mediates this relationship. Furthermore, this study systematically investigates the potential moderating role of PTS across three distinct pathways: (1) the direct link between childhood trauma and academic burnout; (2) the link between childhood trauma and psychological resilience (the first stage of mediation); and (3) the link between psychological resilience and academic burnout (the second stage of mediation). The goal is to clarify the specific pathways through which PTS may buffer

against negative outcomes. The model aims to elucidate how adverse childhood experiences are associated with the academic adjustment and psychological well-being of vocational college students, considering the interplay of an internal resource (psychological resilience) and an external support system (teacher support). Within this framework, psychological resilience is conceptualized as an internal resource that may weaken the negative association between childhood trauma and burnout. PTS, as an external environmental resource, is hypothesized to moderate key paths in the model, potentially by being associated with enhanced coping skills or by

directly buffering the link between traumatic experiences and burnout. The overarching goal of this research is to clarify the mechanisms associated with the link between childhood trauma and academic burnout in the higher vocational education context. Through an in-depth analysis of these relationships, this study aims to provide a theoretical basis and empirical support for psychological interventions for vocational college students. Specifically, findings may offer practical guidance for addressing academic burnout and promoting learning adjustment by highlighting the importance of fostering psychological resilience and constructing supportive teacher-student relationships.



**Fig. 1:** The hypothesized moderated mediation model

## 1.5. Research hypotheses

**H1:** Childhood trauma will be positively associated with academic burnout in higher vocational students.

**H2:** Psychological resilience will mediate the relationship between childhood trauma and academic burnout.

**H3:** PTS will moderate the pathways in the model. Specifically:

**H3a:** PTS will moderate the direct association between childhood trauma and academic burnout, such that this association will be weaker for students with higher PTS.

**H3b:** PTS will moderate the association between childhood trauma and psychological resilience, such that the negative association will be weaker for students with higher PTS.

**H3c:** PTS will moderate the association between psychological resilience and academic burnout, such that the protective association of resilience will be stronger for students with higher PTS.

## 2. Methodology

This study was approved by the Ethics Committee of Huanggang Normal University. Data were collected from March 13 to 30, 2025, from students at four higher vocational institutions in

China's Hubei and Shandong provinces. Participants were recruited through convenience and snowball sampling. After providing informed consent, they completed an anonymous online questionnaire. A total of 896 questionnaires were initially collected. After removing 85 incomplete or invalid responses, a final sample of 811 valid questionnaires was retained for analysis (retention rate: 90.5%). The sample included 375 females (46.2%) and 436 males (53.8%). Participants were distributed across academic years: 285 first-year (35.1%), 247 second-year (30.5%), and 279 third-year (34.4%) students. Regarding residence, 402 respondents (49.6%) were from urban areas, and 409 (50.4%) were from rural areas.

### 2.1. Measures

#### 2.1.1. Childhood trauma questionnaire-short form (CTQ-SF)

Childhood trauma was measured using the Chinese version of the CTQ-SF (Bernstein et al., 1994). This 28-item scale includes 25 items assessing five dimensions: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. A sample item is, "I was punished with a belt, paddle, cord, or other hard object." The scale also contains three validity items, which were used for



screening but not included in the total score. Items are rated on a 5-point Likert scale (1 = “never true” to 5 = “very often true”). Higher scores indicate more severe childhood trauma. The Cronbach’s  $\alpha$  for the total scale was 0.81, with subscale alphas ranging from 0.61 to 0.84 (Jiang et al., 2018).

### 2.1.2. Academic burnout scale

Academic burnout was assessed using the Academic Burnout Scale for College Students (Lian et al., 2005). This 20-item scale measures three dimensions: low mood (e.g., “I often doze off while studying”), inappropriate behavior (e.g., “I only read for exams”), and low sense of achievement (e.g., “interested in my major”). Responses are given on a 5-point Likert scale, with higher scores indicating greater academic burnout. The Cronbach’s  $\alpha$  for the total scale was 0.865.

### 2.1.3. Perceived teacher support scale

Perceived teacher support was measured using a 6-item scale adapted from Standage et al. (2005). The scale is composed of three dimensions: perceived autonomy (e.g., “During the learning process, my teacher answered my questions adequately and carefully”), perceived relationships (e.g., “My teacher was very supportive”), and perceived competence (e.g., “My teacher made me feel that I was very gifted in my studies”). Items are rated on a 5-point Likert scale, with higher scores reflecting greater perceived teacher support. The Cronbach’s  $\alpha$  for this scale was 0.96 (Standage et al., 2005).

### 2.1.4. 10-item Connor Davidson resilience scale (CD-RISC-10)

Psychological resilience was measured using the Chinese version of the 10-item Connor-Davidson Resilience Scale (CD-RISC-10; Campbell-Sills and Stein, 2007). This 10-item scale assesses an individual’s ability to cope with adversity (e.g., “I am able to adapt when changes occur”). Responses are provided on a 5-point Likert scale, with higher scores indicating greater psychological resilience. The Cronbach’s  $\alpha$  for this scale was 0.851.

## 2.2. Statistical analysis

All statistical analyses were conducted using SPSS 27.0 and the PROCESS macro (v. 3.5) for SPSS. First, descriptive statistics and Pearson correlation analyses were performed to examine the characteristics of the sample and the relationships between variables. Second, to test the hypothesized moderated mediation model (Fig. 1), we used Model 14 of the PROCESS macro (Hayes, 2018). This model simultaneously tests the mediating role of psychological resilience and the moderating role of PTS on all three pathways. The significance of the

indirect and conditional effects was evaluated using bootstrapping with 5,000 resamples and their 95% confidence intervals (CIs). An effect is considered statistically significant if its 95% CI does not contain zero.

## 3. Results

### 3.1. Common method bias test

This study utilized self-report questionnaires as the primary data collection method. To minimize the effect of common method bias, several control measures were implemented during the administration process, such as ensuring anonymous responses and setting some reverse questions. In addition, to enhance the veracity of the findings, the presence of common method bias was assessed using the Harman one-way test. The results of the analysis indicated that a total of 10 factors with eigenvalues greater than 1 were extracted, among which the first factor accounted for 26.046% of the total variance, which was significantly lower than the critical value of 40% (Cham et al., 2022). Therefore, the data in this study were not significantly influenced by common method bias.

### 3.2. Descriptive statistics and correlation analysis

As shown in Table 1, childhood trauma was significantly negatively correlated with psychological resilience ( $r = -0.534$ ,  $p < 0.01$ ), significantly positively correlated with academic burnout ( $r = 0.660$ ,  $p < 0.01$ ), and significantly negatively correlated with PTS ( $r = -0.439$ ,  $p < 0.01$ ). Psychological resilience was significantly negatively correlated with academic burnout ( $r = -0.493$ ,  $p < 0.01$ ) and significantly positively correlated with PTS ( $r = 0.319$ ,  $p < 0.01$ ). PTS was significantly negatively correlated with academic burnout ( $r = -0.572$ ,  $p < 0.01$ ). Gender was significantly negatively correlated with academic burnout ( $r = -0.109$ ,  $p < 0.01$ ). Previous studies have found significant gender differences in childhood trauma levels (Wei et al., 2021; Quan et al., 2025); therefore, it is necessary to control for gender, grade, and other relevant variables in subsequent analyses.

### 3.3. Moderated mediation model tests

According to Hayes (2022) and Wen and Ye (2014), this study first employed Model 4 of the SPSS macro PROCESS to examine the mediating role of psychological resilience in the relationship between childhood trauma and academic burnout. After controlling for gender, grade, and place of origin, the results showed that childhood trauma significantly predicted psychological resilience ( $\beta = -0.533$ ,  $t = -17.759$ ,  $p < 0.001$ ). When both childhood trauma and psychological resilience were entered into the regression model simultaneously, childhood trauma

significantly predicted academic burnout ( $\beta = 0.564$ ,  $t = 18.558$ ,  $p < 0.001$ ), and psychological resilience also significantly predicted academic burnout ( $\beta = -0.189$ ,  $t = -6.266$ ,  $p < 0.001$ ). The bias-corrected percentile bootstrap method indicated that the

indirect effect was significant, with an effect value of 0.101 (Boot SE = 0.018, 95% CI [0.067, 0.137]). In summary, psychological resilience played a partial mediating role in the relationship between childhood trauma and academic burnout.

**Table 1:** Results of descriptive statistics and correlation analysis

	M	SD	1	2	3	4	5
1. Gender	1.460	0.499	1				
2. CT	2.434	0.705	-0.065	1			
3. PR	3.164	1.216	0.077*	-0.534**	1		
4. AB	2.466	0.757	-0.109**	0.660**	-0.493**	1	
5. PTS	3.082	1.274	0.067	-0.439**	0.319**	-0.572**	1

CT: Childhood trauma; PR: Psychological resilience; AB: Academic burnout; PTS: Perceived teacher support; \*:  $p < 0.05$ ; \*\*:  $p < 0.01$

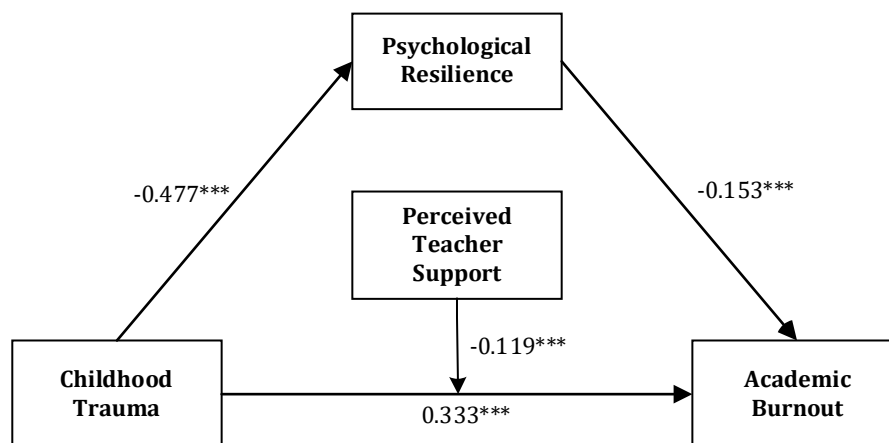
Subsequently, Model 59 of the SPSS macro PROCESS was used to examine the moderating role of PTS. As shown in Table 2, after controlling for gender, grade, and place of origin, in Model 1, both childhood trauma ( $\beta = -0.477$ ,  $t = -10.667$ ,  $p < 0.001$ ) and PTS ( $\beta = 0.106$ ,  $t = 2.990$ ,  $p < 0.01$ ) significantly predicted psychological resilience, while their interaction did not significantly predict psychological resilience ( $\beta = 0.013$ ,  $t = 0.355$ ,  $p = 0.723$ ). In Model 2, with psychological resilience included as a mediating variable, childhood trauma ( $\beta = 0.333$ ,  $t = 8.883$ ,  $p < 0.001$ ), psychological resilience ( $\beta = -0.153$ ,  $t = -5.522$ ,  $p < 0.001$ ), and PTS

( $\beta = -0.368$ ,  $t = -13.223$ ,  $p < 0.001$ ) all significantly predicted academic burnout. Notably, the interaction between childhood trauma and PTS significantly predicted academic burnout ( $\beta = -0.119$ ,  $t = -3.768$ ,  $p < 0.001$ ), whereas the interaction between psychological resilience and PTS did not have a significant predictive effect ( $\beta = 0.021$ ,  $t = 0.782$ ,  $p = 0.434$ ). These findings suggest that PTS moderates the direct pathway from childhood trauma to academic burnout (the c' path). The specific path of the moderated mediation model is illustrated in Fig. 2.

**Table 2:** Tests of moderated mediation effects of childhood trauma on academic burnout (N=811)

Variables	Model 1 (dependent variable: PR)			Model 2 (dependent variable: AB)		
	$\beta$	t	95% CI	$\beta$	t	95% CI
Gender	0.075	1.264	[-0.042, 0.192]	-0.085	-1.820	[-0.177, 0.007]
Place of origin	-0.036	-0.603	[-0.152, 0.081]	0.089	1.924	[-0.002, 0.180]
Grade	-0.013	-0.362	[-0.084, 0.058]	0.058	2.048*	[0.002, 0.113]
CT	-0.477	-10.667***	[-0.565, -0.389]	0.333	8.883***	[0.259, 0.406]
PTS	0.106	2.990**	[0.036, 0.175]	-0.368	-13.223***	[-0.423, -0.313]
PR				-0.153	-5.522***	[-0.207, -0.099]
CT×PTS	0.013	0.355	[-0.059, 0.084]	-0.119	-3.768***	[-0.180, -0.057]
PR×PTS				0.021	0.782	[-0.032, 0.074]
R <sup>2</sup>		0.296			0.570	
F		56.354***			132.922***	

+:  $p < 0.05$ ; \*\*:  $p < 0.01$ ; \*\*\*:  $p < 0.001$



Solid arrows denote statistically significant direct and indirect effects through PR, as well as the moderating effects of PTS. All coefficients are standardized; non-significant paths are omitted for clarity

**Fig. 2:** Relationship between childhood trauma and academic burnout: moderated mediation model

To better illustrate how PTS moderates the relationship between childhood trauma and academic burnout, a simple slope analysis was conducted. The interaction was plotted at high and low levels of PTS (one standard deviation above and

below the mean). The results are shown in Fig. 3. In the low PTS group, childhood trauma significantly positively predicted academic burnout (simple slope = 0.451,  $t = 13.530$ ,  $p < 0.001$ ). In the high PTS group, childhood trauma also significantly positively

predicted academic burnout (simple slope = 0.214,  $t = 3.530$ ,  $p < 0.001$ ). However, the effect was weaker. These results suggested that higher levels of PTS can

buffer the negative impact of childhood trauma on academic burnout, serving a protective role.

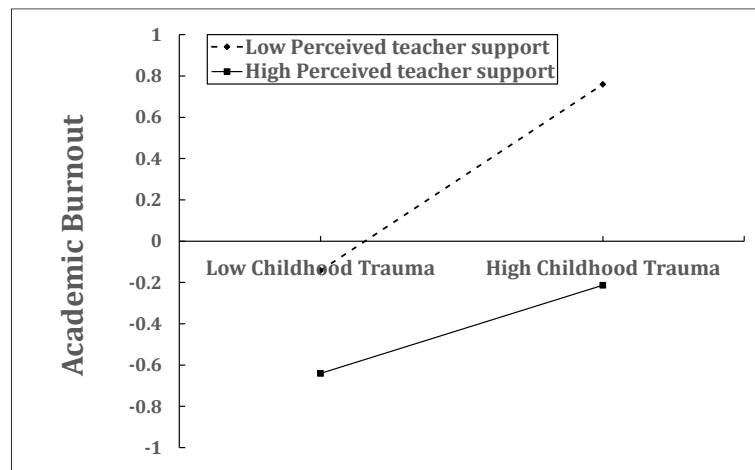


Fig. 3: Moderating role of perceived teacher support between childhood trauma and academic burnout

## 4. Discussion

### 4.1. Overview of findings

Grounded in Conservation of Resources (COR) theory and the Positive Youth Development framework, this study examined how childhood trauma (CT) relates to academic burnout (AB) in vocational college students, with psychological resilience (PR) serving as a mediator and perceived teacher support (PTS) as a moderator. As hypothesized, CT showed a significant positive association with AB, partially mediated by reduced PR. PTS moderated the direct CT–AB relationship but did not significantly influence the indirect pathways involving PR. These results extend prior work by demonstrating that external support can have pathway-specific effects, with a stronger influence on immediate stress outcomes than on long-term resilience capacities.

### 4.2. Childhood trauma and academic burnout

The association between greater CT and increased AB is consistent with previous findings (McKee-Lopez et al., 2019), supporting the theoretical proposition that early-life adversity erodes foundational psychological resources. COR theory posits that CT depletes early developed assets, such as emotional security, trust, and self-efficacy, which are critical for coping with subsequent challenges. In vocational higher education contexts, students with trauma histories face skill acquisition pressures, uncertain career trajectories, and transition stress, all of which can accelerate resource loss and contribute to emotional exhaustion, depersonalization, and diminished achievement, which constitute the core dimensions of AB (Halbesleben et al., 2014; Su et al., 2024).

Rather than merely restating statistical outcomes, we interpret these patterns as evidence of a “resource deficit trajectory.” Trauma-related

depletion fosters maladaptive cognitive schemas, heightened negative effects, and lower academic self-efficacy. Combined, these factors diminish help-seeking behaviors toward teachers, exacerbating disengagement and burnout. This cyclical interplay between CT and AB underlines the urgent need for interventions that can interrupt resource loss spirals.

### 4.3. Mediating role of psychological resilience

PR partially mediated the CT–AB relationship, in line with the conditional model of resilience (Garmezy et al., 1984). Resilience acts as an internal resource enabling adaptive functioning, emotional regulation, and resource recovery (Liu, 2024). CT disrupts these processes by impairing regulatory capacities, weakening social bonds, and limiting problem-solving (Vieira et al., 2020).

Students with lower PR may perceive academic demands as overwhelming, adopt avoidance coping strategies, and disengage from academic interactions, forming patterns that compound burnout risk. Although PR provides buffering effects against adverse academic outcomes (Ross et al., 2020), this protection was partial, suggesting that severe trauma imposes lasting constraints on resilience-based coping.

From a practical perspective, interventions aiming to strengthen PR must go beyond enhancing generic coping skills. Addressing trauma-related cognitive distortions and rebuilding interpersonal trust may be prerequisites to resilience restoration.

### 4.4. Moderating role of perceived teacher support

The most distinctive finding was that PTS moderated only the direct CT–AB pathway, not the resilience-related indirect paths. From the COR perspective, this implies that external, situational resources, such as teacher support, may be most

effective at buffering acute distress rather than reconstructing more stable, internal traits. Emotional warmth and academic guidance from teachers can directly replenish depleted resources, lowering perceived academic threat and mitigating burnout risk (Kim et al., 2018). However, the absence of moderation in the CT-PR and PR-AB pathways suggests the presence of deeper underlying mechanisms. Building on extended interpretive reasoning, we propose several potential explanations:

1. Trait-like stability of resilience: PR is shaped largely in formative years, influenced by foundational caregiver relationships and early attachment quality (Rasmussen et al., 2019). Teacher support, while valuable, may lack the intensity and duration necessary to alter these entrenched traits.
2. Type-of-support mismatch: In many vocational programs, teachers' support often centers on instrumental assistance (skills, task completion) rather than sustained emotional bonding. While instrumental support helps attenuate current stress, it may not address the deep-seated emotional wounds and regulatory deficits rooted in CT.
3. Functional distinction between resource types: external resources like PTS might serve as "first-aid buffers" for immediate stress symptoms (burnout), whereas building internal resilience requires long-term, targeted developmental interventions, potentially involving therapy, peer networks, or family support systems.

This multi-factor explanation clarifies why PTS significantly eases direct stress outcomes but is less effective in altering the resilience pathway. It reinforces the importance of differentiating resource supplementation from resource development in COR theory applications. This multi-factor explanation clarifies why PTS significantly eases direct stress outcomes but is less effective in altering the resilience pathway. It reinforces the importance of differentiating resource supplementation from resource development in COR theory applications.

#### 4.5. Theoretical and practical implications

Theoretically, this study advances COR theory by demonstrating domain-specific functions of resources. External support appears to buffer acute stress-outcome links, whereas internal resilience mechanisms mediate longer-term vulnerability adaptation. This distinction calls for multi-component models of student support, recognizing the need for both immediate alleviation and foundational capacity building. Practically, for vocational colleges, the findings advocate a dual-pronged strategy:

1. Immediate relief: enhance PTS via trauma-informed teaching, empathetic communication,

and proactive guidance to counteract burnout in trauma-exposed students.

2. Long-term adaptation: implement resilience-building programs such as emotion regulation training, cognitive restructuring workshops, and peer-led engagement groups designed to repair core coping capacities.

#### 4.6. Limitations and future directions

Several limitations must be acknowledged. Cross-sectional design prevents causal inference; longitudinal designs could reveal temporal sequencing between CT, PR, PTS, and AB. The sample, drawn from vocational students in two provinces, may limit generalizability; replication in broader and cross-cultural contexts is essential. All measures were self-reported, raising common method bias concerns despite procedural controls. Future research should incorporate teacher ratings and objective performance indicators.

Finally, our moderated mediation model is not exhaustive; factors such as peer relationships, family support, and individual coping strategies are likely to contribute to burnout in trauma-affected students. Integrating these into broader ecological models may yield more comprehensive intervention frameworks.

#### 5. Conclusions

This study revealed a specific moderated mediation mechanism explaining the link between childhood trauma (CT) and academic burnout (AB) among vocational college students. The findings indicate that psychological resilience (PR) is a key pathway mediating the detrimental impact of trauma. More importantly, perceived teacher support (PTS) functions as a crucial yet highly specific buffer, mitigating the direct association between trauma and burnout without substantially altering the development or function of resilience itself. This pattern underscores a dual imperative for educators: to foster supportive teacher-student relationships for immediate stress buffering while also providing dedicated programs to cultivate students' enduring psychological resilience. By differentiating the roles of external (e.g., PTS) and internal (e.g., PR) resources, these results refine the application of the Conservation of Resources theory and offer a practical, evidence-based framework adaptable to diverse vocational higher education contexts for mitigating burnout in trauma-exposed learners.

#### List of abbreviations

AB	Academic burnout
CD-RISC-10	10-item Connor-Davidson Resilience Scale
CI	Confidence interval
COR	Conservation of resources theory
CT	Childhood trauma
CTQ-SF	Childhood Trauma Questionnaire-Short



	Form
CT×PTS	Interaction between childhood trauma and perceived teacher support
M	Mean
N	Sample size
PR	Psychological resilience
PROCESS	PROCESS macro for SPSS
PR×PTS	Interaction between psychological resilience and perceived teacher support
PTS	Perceived teacher support
SD	Standard deviation
SPSS	Statistical Package for the Social Sciences
p	Probability value
t	t-statistic
β	Standardized regression coefficient

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## Compliance with ethical standards

### Ethical considerations

This study was approved by the Ethics Committee of Huanggang Normal University and was conducted in accordance with the ethical principles of the Declaration of Helsinki. Before the questionnaire survey, we informed the participants of the purpose of the study, the participation process, data storage and use, and the right to withdraw, and obtained the participants' informed consent.

### Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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