



The relationship between academic stress and mental health: Resilience as a moderator

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The prevalence of academic stress among college students necessitates a comprehensive exploration of its detrimental effects on mental health. In this study I investigated the association between academic stress and mental health, while concurrently examining the moderating influence of resilience. The research sample consisted of 303 Chinese college students, who participated in a paper-based survey. I employed hierarchical multiple regression analysis to assess the proposed hypotheses. The findings revealed a negative association between academic stress and mental health, highlighting the significant role of resilience as a protective factor mitigating this adverse impact. By enhancing understanding of the link between academic stress and mental health in college students, this study extends prior research and provides valuable insights into this domain.

Keywords

academic stress, mental health, resilience, psychological resource, college students

Article Highlights

- I investigated the relationships between college students' academic stress, resilience, and mental health.
- Academic stress was found to be negatively associated with college students' mental health.
- Resilience functioned as a protective buffer against the negative effect of academic stress on mental health.

In recent years there has been growing concern around the mental health of university students. Empirical investigations have indicated that college students are particularly vulnerable to experiencing psychological distress and mental disorders (Granieri et al., 2021; Porru et al., 2021; Sharp & Theiler, 2018). These mental health challenges have been strongly linked to an increased risk of suicide attempts and completed suicides (Gili et al., 2019). Across numerous countries, suicidal ideation and behaviors appear to be prevalent among college students (Mortier et al., 2018). Identifying modifiable risk factors associated with these mental health issues can inform the development of targeted public health interventions, with the aim of mitigating their escalating occurrence.

Stearse et al. (2023) identified academic stress as a risk factor for mental health issues among adolescents. When students complete high school and pursue higher education at a university, they are more likely to experience higher levels of stress, particularly during the period of admission examinations (Rabby et al., 2023). This increased stress often leads to a higher incidence of mental health problems (Hicks & Heastie, 2008). Studies have highlighted the detrimental effects of academic stress on the mental health of adolescents (Chyu & Chen, 2022; Zhu et al., 2021). Similarly, college students are susceptible to experiencing heightened levels of stress due to the multitude of changes

and challenges associated with higher education, including increased workload, higher academic expectations, and intense competition (Yikealo et al., 2018). If not properly addressed, these stressors can contribute to anxiety, depression, and other mental health issues (Yikealo et al., 2018). Consequently, researchers have investigated the relationship between academic stress and mental health among college students. For instance, Syed (2021) discovered that academic stress negatively predicted mental health among Indian university students. Barbayannis et al. (2022) conducted a survey of college students in the United States and identified a significant correlation between perceived academic stress and mental health, whereby higher levels of stress were associated with worse health outcomes. Moreover, Green et al. (2022) examined the potential role of emotional support in buffering academic stress and its impact on mental health among Afghan university students. Their findings suggest that moderate-to-high levels of emotional support may protect against the negative effects of heightened academic stress on mental well-being.

Despite these previous studies, there is still a lack of comprehensive understanding of the mechanism underlying the relationship between academic stress and mental health, especially when considering psychological characteristics. In addition, the prevailing trend of intense examination culture in Chinese society places a significant psychological burden on students (Lee & Yin, 2011). Therefore, it is crucial to further investigate the intricate relationship between academic stress and mental health to provide better support for the mental health of Chinese college students.

Resilience, as a psychological characteristic, refers to the positive psychological outcomes that individuals achieve by effectively coping with adverse events (Aburn et al., 2016). Within the field of educational psychology, resilience is recognized as a crucial psychological resource for promoting students' mental health (Brites et al., 2024). Exploring resilience in an educational context, Backmann et al. (2019) examined why some students can adapt, recover, or even thrive in the face of adversity. Furthermore, resilience has been found to act as a protective factor against potential health risks (Blum, 2002). Consequently, I concluded that resilience may serve to alleviate the negative impact of academic stress on the mental health of college students. The research framework is shown in Figure 1.

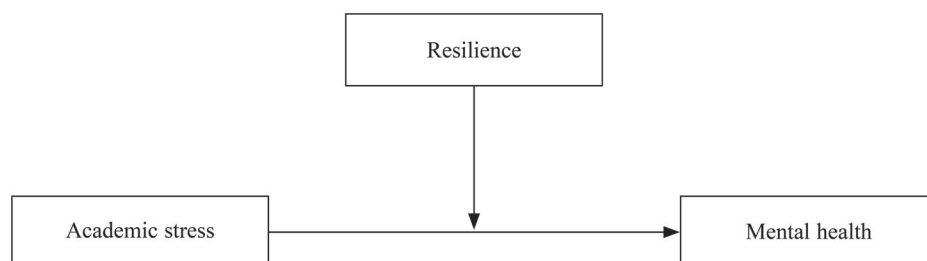


Figure 1. *Research Framework*

The Current Study

Academic stress frequently arises from the elevated academic performance expectations imposed on students (Tan & Yates, 2011). To fulfill these expectations, students commonly encounter substantial academic workloads, time constraints, and the perpetual pursuit of high grades (Bedewy & Gabriel, 2015). These challenges can precipitate various mental health issues, such as anxiety, depression, and feelings of inadequacy (Bhujade, 2017). Previous studies have highlighted the adverse impact of academic stress on mental health (Barbayannis et al., 2022; Chyu & Chen, 2022; Syed, 2021; Zhu et al., 2021).

Resilience is defined as the ability to face and overcome adversity and bounce back from difficulties with positive outcomes (Aburn et al., 2016). It is recognized as a personal resource that facilitates effective adaptation to various forms of significant stressors (Crane & Searle, 2016). This implies that resilience plays a crucial role in promoting the

well-being of individuals and their environment by maintaining good health despite challenging circumstances. In the context of this study, resilience is understood as a personal resource that can enhance students' ability to recognize, comprehend, and respond to stressful situations in a school setting. Luthar (2015) has shown that individuals with high, compared to low, levels of resilience are better able to cope with stress.

On the basis of the aforementioned discussion, it is clear that concepts such as stress, resilience, coping, and mental health are interconnected and possess a complex relationship. Mental health problems often arise as a consequence of academic stress, but resilience may serve as a critical factor that enables individuals to effectively manage stress and enhance their coping abilities. Recent findings have suggested that changes in resilience levels may predict the degree of reduction in stress (B. Smith et al., 2018). Thus, resilience may function as a moderator, wherein individuals with higher (vs. lower) resilience scores exhibit more adaptive responses to adverse situations and experience improved mental health. I hypothesized that resilience would moderate the connection between academic stress and mental health among college students in China.

Method

Participants and Procedure

I used convenience sampling to recruit 303 college students from a public university in Western China. The sample consisted of 171 (56.44%) men and 132 (43.56%) women ($M_{\text{age}} = 20.58$ years, $SD = 1.09$). There were 91 (30.03%) freshmen, 118 (38.94%) sophomores, and 94 (31.03%) juniors. I excluded seniors, who were completing off-campus internships during the survey period.

Data were collected using a paper-based survey. Faculty members of the university distributed the questionnaires to the students. Ethical approval for this study was obtained from the research ethics committee of Xizang Minzu University. Participation in the study was voluntary and anonymous, with no incentives provided. The research objectives and confidentiality protocol for the study were clearly explained to the students. All those who agreed to participate were included in the study, and they were required to complete all items in the survey for their responses to be included in the analysis.

Measures

Two bilingual scholars translated the scales into Chinese using back-translation. Items were rated on a 5-point Likert scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*) for the academic stress and resilience scales, and from 1 (*never*) to 5 (*always*) for the mental health scale.

Academic Stress

I measured academic stress with three items from MacGeorge et al.'s (2005) scale. A sample item is "I am worrying a great deal about the effect this semester's grades will have on my future."

Resilience

I measured resilience with six items from B. W. Smith et al.'s (2008) scale. A sample item is "I tend to bounce back quickly after hard times."

Mental Health

I measured mental health with five items from the Mental Health Inventory (Ware & Sherbourne, 1992). A sample item is "How much of the time in the last month you had felt downhearted."

Results

Preliminary Analysis

Table 1 shows the descriptive statistics, Pearson correlations, and Cronbach's alphas. Academic stress was negatively correlated with both mental health and resilience. As expected, there was a significant positive relationship between resilience and mental health.

Table 1. *Descriptive Statistics, Bivariate Correlations, and Cronbach's Alphas*

Measurement variable	<i>M</i>	<i>SD</i>	α	1	2	3
1. Academic stress	3.24	0.65	.85	—		
2. Resilience	3.88	0.90	.89	-.20**	—	
3. Mental health	3.62	0.86	.80	-.40**	.48**	—

Note. $N = 303$.

** $p < .01$.

Construct Validity

The measurement model for the three factors demonstrated an acceptable fit to the data, $\chi^2/df = 1.76$, normed fit index (NFI) = .96, comparative fit index (CFI) = .98, root-mean-square error of approximation (RMSEA) = .06, with standardized factor loadings greater than .70. Because I used self-reported measures, I also tested a single-factor model. The results indicated a poor fit to the data, $\chi^2/df = 8.32$, NFI = .75, CFI = .79, RMSEA = 1.34, suggesting that common method bias was not a significant concern in this study.

Hypothesis Tests

I conducted a hierarchical multiple regression analysis to test the hypotheses. Table 2 shows there was a negative association between academic stress and mental health, whereas there was a positive association between resilience and mental health. Model 3 showed a significant interaction effect between academic stress and resilience, $\beta = .30$, $p < .01$, indicating that resilience moderated the impact of academic stress on mental health. Therefore, my hypothesis was supported.

Table 2. Results of Hierarchical Multiple Regression Analysis

Variable	Model 1		Model 2		Model 3	
Control variables						
Gender	.08	(0.87)	.08	(0.85)	.08	(1.00)
Age	.10	(1.00)	.05	(0.57)	.13	(1.55)
School year	.22*	(2.27)	.11	(1.22)	.12	(1.39)
Predictors						
Academic stress	−.35**	(−3.68)	−.35**	(−3.92)	−.37**	(−4.48)
Resilience			.38**	(4.24)	.34**	(4.01)
Academic stress × Resilience			.30**	(3.58)		
<i>R</i> ²	.20		.34		.42	
ΔR^2	.20		.13		.09	
<i>F</i>	5.63**		8.95**		10.59**	

Note. Standardized regression coefficients are presented, with t values shown in parentheses.

* $p < .05$. ** $p < .01$.

Moreover, this study examined the moderating effect by plotting the regression of mental health on academic stress. Figure 2 illustrates that the negative effect of academic stress on mental health was more pronounced among students with lower, compared to higher, levels of resilience.

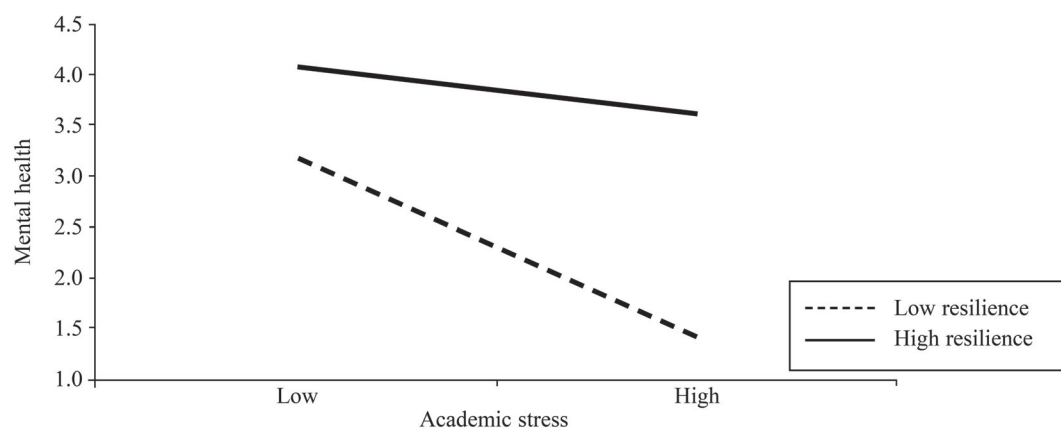


Figure 2. Slope Analysis of the Moderating Effect

Note. Low/high academic stress and low/high resilience were calculated as $M \pm 1$ SD.

Discussion

Utilizing a sample of 303 students enrolled at a university in Western China, I delved into the interconnections among academic stress, resilience, and mental health. Furthermore, I scrutinized the relationship between varying degrees of academic stress and corresponding mental alterations contingent upon fluctuating levels of resilience. The findings indicate that resilience served as a noteworthy moderating variable, functioning as a protective barrier in the relationship between academic stress and mental health.

Theoretical and Practical Implications

I found a negative association between academic stress and mental health among college students in China, which aligns with previous research findings (Barbayannis et al., 2022; Syed, 2021), further substantiating the detrimental impact of academic stress on the mental health of Chinese college students. The Chinese educational system focuses on examinations and testing, which creates a high-pressure environment for students (Lee & Yin, 2011). The rigorous academic environment poses difficulties for students in maintaining a harmonious equilibrium between their academic obligations and other facets of their lives (Mills et al., 2020). This lack of balance has the potential to exacerbate anxiety symptoms, depressive tendencies, and an overall deterioration in mental health (Sprung & Rogers, 2021). Thus, Chinese college students may present with mental health problems when facing high academic stress.

The findings of this study indicate that resilience served as a significant moderator of the relationship between academic stress and mental health, thereby supporting my hypothesis. This suggests that resilience functions as a protective buffer, mitigating the adverse effects of academic stress on mental well-being. This finding elucidates the strategies employed by college students in managing academic stress and underscores the pivotal role that individual characteristics play in the efficacy of these coping mechanisms. Individuals exhibiting higher levels of resilience are more inclined to adopt constructive behaviors or harbor positive self-beliefs to navigate life's challenges. By elucidating the circumstances under which these relationships emerge, this study contributes to filling a theoretical gap in the existing literature.

The findings of this study also hold important practical implications. I urge higher education institutions to identify students exhibiting low levels of resilience and implement targeted interventions to assist them in managing academic stress. Such interventions may encompass the provision of counseling services, resilience-focused workshops, and resources aimed at bolstering their coping mechanisms. Furthermore, fostering the establishment of peer-support systems can offer valuable social support to students with low resilience. The establishment of student-led groups or clubs would provide a platform for students to exchange experiences, offer guidance, and extend emotional support, thereby mitigating the adverse effects of academic stress on mental health. In addition, the integration of resilience-building initiatives holds promise for all students, by fostering the acquisition of vital coping skills essential for navigating academic stressors effectively. These programs may emphasize techniques for stress management, cultivation of problem-solving abilities, and the cultivation of social-support networks.

Limitations and Directions for Future Research

First, my use of a cross-sectional design in this study means I was unable to establish causal relationships between the variables under investigation. Future studies could adopt longitudinal or experimental methodologies to elucidate causality. Second, as the study sample comprised Chinese college students from a single university, I caution against overgeneralizing the results. Future research could replicate the findings with a more diverse sample of Chinese college students. Last, while this study concentrated on resilience as a moderating factor, future research could explore other psychological characteristics, such as grit, to provide a comprehensive understanding of the factors influencing mental health in academic settings.

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