

Psychological *Suzhi* and Academic Burnout among University Students: An Analysis of the Mediating Role of Academic Engagement and the Moderating Role of Peer Support

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Abstract

This study integrates social support theory with the operational sub-mode of psychological *Suzhi* to examine the relationship between psychological *Suzhi* and academic burnout among Chinese university students, as well as the mediating role of academic engagement and the moderating role of peer support. Data were collected via questionnaire surveys from 1098 Chinese university students, using the College Student Psychological *Suzhi* Scale, the Adolescent Student Burnout Inventory, the Utrecht Work Engagement Scale-Student and the Peer Support Scale. The results revealed that: 1) Psychological *Suzhi* significantly and negatively predicted academic burnout; 2) Academic engagement partially mediated the relationship between psychological *Suzhi* and academic burnout; 3) Peer support positively moderated the pathway from psychological *Suzhi* to academic engagement, such that higher levels of peer support strengthened the positive effect of psychological *Suzhi* on academic engagement.

Keywords

Psychological *Suzhi*, Academic Burnout, Academic Engagement, Peer Support, College Students

1. Introduction

Academic burnout, defined as a persistent, negative, and learning-related psychological state arising from prolonged academic pressure [1], has become a significant issue impacting university students' academic development and mental health

[2]. The university stage constitutes a critical transition period from adolescence to adulthood. During this stage, students confront multiple challenges, such as academic competition, future planning, and interpersonal relationships, which can lead to sustained learning fatigue and diminished motivation. Existing research indicates that academic burnout is prevalent among university students and is significantly associated with declining academic performance, depressive symptoms, and an increased risk of dropout [3]. Therefore, a deeper investigation into the mechanisms underlying academic burnout and the identification of protective factors are crucial for advancing the quality of talent cultivation in higher education.

Psychological *Suzhi* may be a crucial predictor of academic burnout. As a localized concept proposed and employed within the Chinese educational context, psychological *Suzhi* refers to an underlying psychological quality, grounded in physiological conditions, that internalizes external stimuli into a stable, fundamental, and implicit disposition. This disposition possesses foundational, derivative, and developmental functions and is closely linked to adaptive and creative behaviors. It encompasses three dimensions: cognition, personality, and adaptability [4]. The operational sub-mode of psychological *Suzhi* emphasizes its role as an endogenous protective factor for mental health, establishing a root-and-symptom relationship between the two. An individual's psychological *Suzhi* level influences their mental health status [5]. During university, psychological *Suzhi* is regarded as a core resource for coping with academic pressure and maintaining mental health [6]. Individuals with higher psychological *Suzhi* not only exhibit better mental health but also report lower levels of academic burnout [7]. They are more adept at regulating emotions, adapting to challenges, and maintaining higher motivation and resilience in academic pursuits.

Research indicates that university students with high psychological *Suzhi* are more adept at employing positive coping strategies, maintaining strong self-regulation and goal persistence when facing academic setbacks. Conversely, those with low psychological *Suzhi* may be more prone to negative emotions such as depression and anxiety, which can exacerbate their academic burnout [8]. Therefore, psychological *Suzhi* serves as a crucial protective factor in preventing academic burnout, highlighting the necessity of investigating the mechanism through which it operates.

Psychological *Suzhi* not only directly and negatively predicts academic burnout but may also indirectly mitigate it by enhancing academic engagement, a key intermediary variable. The functional model of psychological *Suzhi* posits its broad influence on individuals' mental health, academic performance, and behavior [9]. Academic engagement, defined as a positive psychological state characterized by vigor, dedication, and absorption in learning activities [10], serving as a crucial manifestation of academic motivation. Existing research indicates that students with higher academic engagement exhibit lower levels of academic burnout [11]. Therefore, students with higher levels of psychological *Suzhi* are likely to experi-

ence a stronger sense of meaning and control in their academic pursuits, which in turn deepens their academic engagement and, consequently, reduces their risk of burnout. Based on this, the present study hypothesizes that academic engagement mediates the relationship between psychological *Suzhi* and academic burnout.

Concurrently, the role of social support systems—particularly peer support—has become increasingly prominent during the university years [12]. As a key form of social support, its mechanism can be understood through two predominant theoretical models: the facilitation model, which emphasizes the general promotive effect of social support on individuals' psychological and behavioral functioning; and the stress-buffering model, which highlights its protective function in mitigating negative impacts under stressful conditions [13]. Together, these models reveal the core mechanism of peer support: as a crucial external resource, it can supplement, enhance, and safeguard individuals' internal psychological resources, thereby optimizing their psychological functioning and behavioral performance. Building on these theoretical foundations, peer support may be regarded as an important external condition that can strengthen university students' psychological *Suzhi*, helping them better cope with academic challenges [14]. Specifically, within university life, peer support may moderate the effect of psychological *Suzhi* on academic engagement. In environments with high peer support, even students with relatively average psychological *Suzhi* may enhance their academic engagement through peer-provided academic assistance, emotional validation, and companionship. Conversely, a lack of peer support may diminish the promotional effect of psychological *Suzhi* on academic engagement. Particularly in the relatively autonomous environment of university, peer support often becomes a significant external force shaping learning behavior [15]. Based on this, the present study further hypothesizes that peer support moderates the pathway from psychological *Suzhi* to academic engagement.

In summary, this study aims to propose a moderated mediation model to explore the mechanisms through which psychological *Suzhi* influences academic burnout among university students. The model specifically examines the mediating role of academic engagement and the moderating effect of peer support within this pathway (Figure 1), providing theoretical foundations and practical guidance for interventions targeting academic burnout among university students.

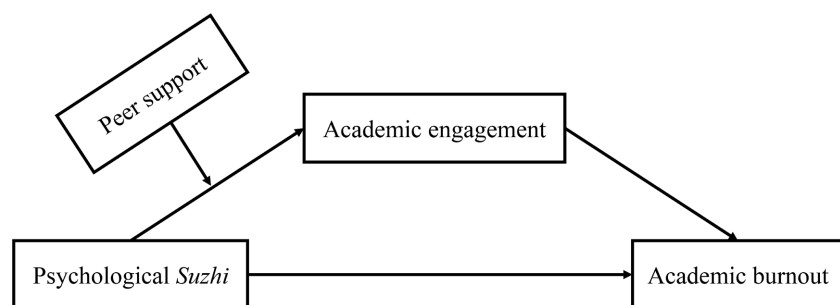


Figure 1. Model of the hypothesized mediation of academic engagement and moderation of peer support in the relationship between psychological *Suzhi* and academic burnout.

2. Method

2.1. Participants

The participants were 1158 university students from China's Jiangxi province, who were randomly sampled using cluster sampling. A total of 1098 questionnaires were collected (recovery rate, 94.82%). The participants ranged in age from 17 to 24 years ($M = 19.99$, $SD = 2.60$), and included 357 males (32.5%) and 741 females (67.5%).

2.2. Measures

2.2.1. Psychological *Suzhi*

The college student psychological *Suzhi* scale (CSPS) was used in this study [16], which consists of 36 items divided among three subscales of cognitive quality, adaptability, and personality quality. The CSPS uses a five-point Likert scale (1 = "strongly disagree" to 5 = "strongly agree"). The summed score of all items corresponds to the level of psychological *Suzhi*. Cronbach's alpha for the total scale was 0.874 in this study.

2.2.2. Academic Burnout

The Adolescent Student Burnout Inventory (ASBI) [17] consists of three subscales: low mood, inappropriate behavior and low sense of accomplishment. The ASBI consists of 20 items that are rated using a five-point Likert scale (1 = "strongly disagree" to 5 = "strongly agree"). The total ASBI score was calculated by summing the scores of all items, which represented the level of academic burnout among the participants. Cronbach's alpha for the total scale was 0.843 in this study.

2.2.3. Academic Engagement

Academic engagement was measured using the Utrecht Work Engagement Scale for Students (UWES-S) [10], which is based on the original work of Schaufeli *et al.* [18]. The UWES-S consists of 17 items rated on a 7-point Likert scale (from 1 = "never" to 7 = "always/daily"). It comprises three subscales: vigor, dedication, and absorption. A higher total score indicates a higher level of academic engagement. Cronbach's alpha for the total scale was 0.934 in this study.

2.2.4. Peer Support

Peer support was assessed using the peer support subscale (PSS) of the Perceived Social Support Scale (PSSS) [19], which was revised by Jiang and colleagues. This widely used instrument evaluates the level of social support an individual subjectively perceives from three sources: family, friends, and significant others. The PSS subscale employed in this study consists of four items rated on a 7-point Likert scale. A higher total score indicates a higher level of perceived peer support. Cronbach's alpha for the total scale was 0.879 in this study.

2.3. Statistical Analysis

SPSS 23.0 software was used to test common method bias and obtain descriptive

statistics and correlations for the collected data. We used the mediation moderator model number 4 and 7 in SPSS-PROCESS 3.0 for data analysis and tested the mediation and moderation effects using a bootstrap method with 5000 replications.

3. Main Results

3.1. Common Method Bias

The Harman single-factor test was employed to examine common method bias. The results revealed 18 factors with eigenvalues greater than 1, with the first factor accounting for 21.134% of the total variance. As this value is below the critical threshold of 40%, serious common method bias is not considered a major issue in this study.

3.2. Descriptive Statistics and Correlation Analysis

Descriptive statistics and correlation analysis for all study variables are presented in **Table 1**. psychological *Suzhi* was significantly negatively correlated with academic burnout, and significantly positively correlated with both academic engagement and peer support. Academic engagement was significantly positively correlated with peer support and significantly negatively correlated with academic burnout. Finally, peer support showed a significant negative correlation with academic burnout.

Table 1. Means, SDs, and correlations among study variables (*r*).

	Mean	SD	Psychological <i>Suzhi</i>	Academic Engagement	Peer Support
Psychological <i>Suzhi</i>	3.428	0.402	1		
Academic Engagement	3.985	0.741	0.485***	1	
Peer Support	5.299	0.980	0.406***	0.230***	1
Academic Burnout	2.963	0.482	-0.608***	-0.700***	-0.272***

Note: SD: standard deviation; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, same applies below.

3.3. Mediation Analyses

Controlling for gender and grade level, the mediating effect of academic engagement on psychological *Suzhi* and academic burnout was examined using the PROCESS procedure (Model 4). Psychological *Suzhi* significantly negatively predicted academic burnout, while it significantly positively predicted academic engagement. Upon incorporating the mediating variable of academic engagement, both psychological *Suzhi* and academic engagement significantly negatively predicted academic burnout, as shown in **Table 2**. The direct effect of psychological *Suzhi* on academic burnout, its total effect, and the mediating effect of academic engagement all yielded 95% confidence intervals that did not include zero. This indicates that academic engagement partially mediates the relationship between psychological *Suzhi* and academic burnout ($p < 0.001$), as shown in **Table 3**.

3.4. Moderated Mediation Analyses

Controlling for gender and grade level, the moderating effect of peer support on the mediating role of psychological *Suzhi* in academic engagement was examined using the PROCESS procedure (Model 7). Results indicated that the interaction term between psychological *Suzhi* and peer support also significantly positively predicted academic engagement ($\beta = 0.108, p = 0.014$), confirming that peer support positively moderated the relationship between psychological *Suzhi* and academic engagement (the first half of the mediation model), as shown in **Table 4**.

Table 2. Mediating effect of academic engagement.

Result Variable	Predictor Variable	R	R ²	F	β	<i>t</i>	95% CI
Academic Burnout	Gender				0.033	1.369	[-0.015, 0.083]
	Grade	0.609	0.371	215.399***	-0.007	-0.304	[-0.031, 0.023]
	Psychological <i>Suzhi</i>				-0.607	-25.325***	[-0.785, -0.672]
Academic Engagement	Gender				-0.038	-1.425	[-0.142, 0.023]
	Grade	0.487	0.237	113.472***	-0.013	-0.496	[-0.057, 0.034]
	Psychological <i>Suzhi</i>				0.484	18.339***	[0.798, 0.989]
Academic Burnout	Gender				0.013	0.662	[-0.026, 0.053]
	Grade				-0.014	-0.728	[-0.030, 0.014]
	Psychological <i>Suzhi</i>	0.765	0.585	384.692***	-0.351	-15.746***	[-0.473, -0.369]
	Academic Engagement				-0.529	-23.696***	[-0.372, -0.315]

Table 3. Testing the mediating effect of academic engagement.

Item	β	(Boot) SE	(Boot) LLCI	(Boot) ULCI
Direct Effect	-0.421	0.027	-0.473	-0.369
Indirect Effect	-0.307	0.024	-0.355	-0.260
Total Effect	-0.728	0.029	-0.785	-0.672

Table 4. Moderating effect of peer support.

Result Variable	Predictor Variable	R ²	F	β	SE	<i>t</i>	95% CI
Academic Engagement	Gender			-0.051	0.043	-1.200	[-0.135, 0.032]
	Grade			-0.011	0.023	-0.480	[-0.056, 0.034]
	Psychological <i>Suzhi</i>	0.242	69.880***	0.865	0.053	16.254***	[0.761, 0.969]
	Peer Support			0.035	0.022	1.542	[-0.009, 0.079]
	Psychological <i>Suzhi</i> × Peer Support			0.108	0.044	2.451*	[0.022, 0.194]

To further elucidate the moderating effect of peer support, a simple slope analysis was conducted, as illustrated in **Figure 2**. Results indicate that when university students peer support levels are low, psychological *Suzhi* exhibits a significant

positive predictive effect on academic engagement ($\beta_{\text{simple}} = 0.759$, $SE = 0.069$, $p < 0.001$). When peer support levels were higher, the positive predictive effect of psychological *Suzhi* on academic engagement further intensified ($\beta_{\text{simple}} = 0.971$, $SE = 0.068$, $p < 0.001$). This indicates that peer support amplifies the positive influence of psychological *Suzhi* on academic engagement. Specifically, among university students possessing comparable levels of psychological *Suzhi*, those receiving greater peer support exhibited higher levels of academic engagement.

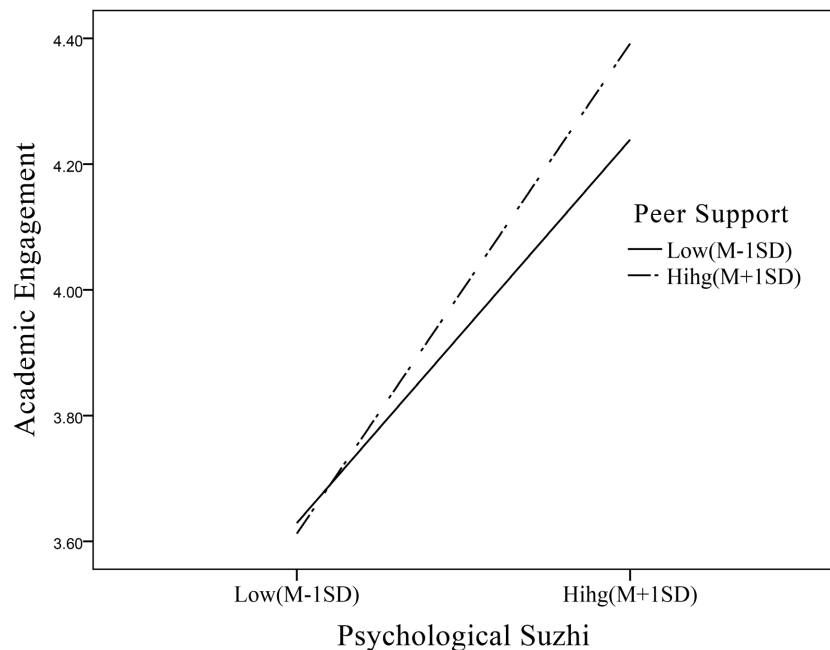


Figure 2. Moderating effect of peer support.

4. Discussion

The results suggested that psychological *Suzhi* influences academic burnout among university students through the partial mediating role of academic engagement. Furthermore, the first half of this mediating pathway (*i.e.*, from psychological *Suzhi* to academic engagement) is moderated by peer support. Specifically, psychological *Suzhi* exerts a stronger positive effect on academic engagement when peer support is high, whereas its impact diminishes as peer support weakens. These results offer an integrated theoretical perspective and practical implications for understanding the formation and intervention of academic burnout among university students.

First, psychological *Suzhi* significantly and negatively predicted academic burnout among university students, which aligns with the view that it constitutes a core psychological resource [9]. As a stable intrinsic trait, psychological *Suzhi* enables individuals to more effectively mobilize cognitive resources, regulate negative emotions, and maintain behavioral resilience when confronting academic pressures and challenges, thereby directly buffering against academic burnout [5].

Secondly, academic engagement partially mediates the relationship between

psychological *Suzhi* and academic burnout. This indicates that psychological *Suzhi* not only directly alleviates academic burnout among university students [20] but also indirectly reduces it by enhancing positive, vigorous, and focused state of academic engagement. On the one hand, according to the theoretical model of the operational sub-mode of psychological *Suzhi*, psychological *Suzhi* serves as the foundation of psychological activity, exerting broad influences on an individual's mental health, academic performance, and behavior [9]. Thus, psychological *Suzhi* may be a key intrinsic driver of academic engagement. Students with higher levels of psychological *Suzhi* typically exhibit greater cognitive flexibility, emotional stability, and adaptability [21]. This enables them to perceive demanding academic tasks as opportunities for growth, which promotes their full engagement in learning and is reflected in higher levels of vigor, dedication, and absorption [22]. On the other hand, academic engagement is a core process variable that links intrinsic resources to academic outcomes and directly inhibits burnout. When students are highly engaged, this positive psychological state effectively counteracts emotional exhaustion and detaches from learning [23]. High levels of absorption and dedication not only enhance learning efficiency but also alleviate stress arising from academic tasks [24], thereby fundamentally weakening the preconditions for burnout. Therefore, these findings imply that interventions aimed at preventing academic burnout among university students should not only focus on enhancing psychological *Suzhi* directly but also on cultivating learning environments that stimulate and sustain high engagement. This approach helps translate intrinsic psychological strengths into the capacity for sustained, proactive learning behaviors, thereby indirectly alleviating academic pressure and burnout.

Finally, peer support moderated the first half of the mediation pathway from psychological *Suzhi* to academic engagement. Specifically, under high levels of peer support, psychological *Suzhi* exerts a stronger positive predictive effect on academic engagement than under low levels of peer support [25]. This finding corroborates the facilitative effect of social support and highlights the critical role of peer groups during the university stage [26]: peer support serves as a crucial external resource by providing academic assistance, emotional companionship, and value affirmation, thereby helping university students maintain or elevate their level of academic engagement [27]. To fully realize the protective effect of psychological *Suzhi* against academic burnout, higher education institutions should intentionally foster highly supportive peer environments. Specifically, they can systematically promote the establishment of learning communities (such as structured study groups and peer mentoring programs) to provide stable peer support. Concurrently, cultivating cohesive and inclusive dormitory and classroom cultures through group activities can solidify the foundation of emotional support among peers. Additionally, offering training in psychological support skills can enhance the quality of peer responses. In the relatively autonomous university setting, building such an immediate and direct peer support network can effectively amplify the positive effect of psychological *Suzhi*, thereby collabora-

tively enhancing its preventive efficacy against academic burnout at a practical level. Consequently, integrating the systematic enhancement of peer support into the university's mental health and academic support framework holds strategic value comparable to improving students' individual psychological *Suzhi*.

This study has several limitations that point to directions for future research. First, the cross-sectional design, while suitable for identifying relationships between variables, limits the ability to draw firm causal conclusions. Longitudinal tracking designs or experimental studies could provide further validation. Second, data collection primarily relied on self-reporting, future research may incorporate peer evaluations, teacher assessments, or objective academic data (such as attendance rates) to mitigate common method bias. Third, the current model focused on peer support as a moderator. Expanding the investigation to include other significant contextual factors—such as school belonging or family socioeconomic status—as potential moderators or mediators would contribute to a more comprehensive ecological model. Furthermore, future studies could examine the distinct roles of the different dimensions of academic engagement (*i.e.*, vigor, dedication, absorption) within the model.

In conclusion, this study found that psychological *Suzhi* significantly and negatively predicted academic burnout among university students, and that this relationship was partially mediated by academic engagement. The first half of this mediation pathway (*i.e.*, from psychological *Suzhi* to academic engagement) was moderated by peer support. Therefore, efforts to enhance academic engagement and mitigate academic burnout should involve strengthening students' intrinsic psychological *Suzhi* through systematic mental health education, while simultaneously fostering supportive peer interaction environments.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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