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Article

A Study on the Mechanisms of Academic Burnout Among Graduate Nursing Students and Pathways to Enhancing Psychological Resilience from the Perspective of Positive Psychology

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Abstract: Objective: To investigate the mediating role of psychological resilience in the relationship between academic stress and academic burnout among master's students in nursing. **Methods:** Using a general demographic questionnaire, the Master's Student Academic Burnout Scale, the Academic Stress Scale, and the Psychological Resilience Scale, a survey was conducted from November to December 2024 among master's students in nursing at four universities in Southwest China. The study aimed to explore the underlying dimensions of academic burnout and the mechanisms by which academic stress influences these dimensions, specifically examining the mediating role of psychological resilience. **Results:** Among 514 master's students in nursing, the scores for academic burnout, academic stress, and psychological resilience were (2.22 ± 0.65), (2.95 ± 0.72), and (3.79 ± 0.71), respectively; Academic burnout among nursing graduate students was classified into the following subtypes: "Good" (34.2%), "Low Sense of Accomplishment" (8.9%), "Go-with-the-Flow" (52.5%), and "Complacent" (4.4%). Academic stress can predict the various categories of academic burnout, while psychological resilience mediates the relationship between academic stress and academic burnout. Specifically, under academic stress, the "optimistic group" exhibits a higher level of academic burnout relative to their own expectations compared to other groups, which in turn mitigates the level of academic burnout induced by academic stress. **Conclusion:** Psychological resilience plays a partial mediating role between academic stress and academic burnout among master's students in nursing. Nursing educators and administrators can focus on adjusting students' learning motivation and managing academic stress to ultimately reduce academic burnout among nursing graduate students.

Keywords: academic stress; academic burnout; psychological resilience; latent profile analysis; mediation analysis

1. Introduction

Positive psychology is a significant movement in psychology that emerged in the West in the late 20th century and represents the latest advancement in contemporary psychology. The movement was initiated by American psychologist Seligman, who defined positive psychology as a science dedicated to studying positive qualities such as human developmental potential and virtues [1]. Positive psychology focuses its research on the positive aspects of the individual, advocating a starting point based on people's actual, latent, and constructive strengths, virtues, and positive traits. It promotes a new interpretation of various psychological phenomena—including psychological problems—through a positive mindset, thereby stimulating people's intrinsic positive strengths and excellent qualities [2–4]. It also utilizes these positive strengths and virtues to help individuals with psychological issues, the general public, or those with particular talents to maximize their potential, achieve professional success, and lead fulfilling lives.

Using positive psychology as a starting point and incorporating its principles into the cultivation of

humanistic qualities among graduate nursing students—while adopting its teaching structures and activity formats—plays a crucial role in enhancing students' positive psychological qualities, thereby promoting their personal growth and strengthening their professional competence [5]. Abuosi points out that nursing is a highly practical discipline in which practical education is indispensable, and the clinical learning environment is a vital component of practical instruction [6]. Research by Sela-Vilensky et al. found that positive experiences and professional encounters can guide nursing students toward choosing nursing as their future career; those with a positive attitude toward the nursing profession are more likely to choose to pursue a career in nursing [7]. Therefore, enhancing nursing students' clinical placement experiences and guiding them to view the nursing profession positively during the clinical internship phase serves as a proactive measure to address the current nursing shortage and ensure the stable development of the nursing workforce. Rajaratnam et al.'s social learning theory posits that human cognition is constrained and influenced by the external environment; the environment serves as a potential force, and when nursing students are in a specific clinical setting, this potential force modulates their behavioral cognition [8]. Consequently, the clinical environment inevitably influences the career cognition of graduate students in nursing.

Against the backdrop of the "Healthy China Strategy," higher demands are being placed on the sustainable development of higher medical education and the training of medical graduate students. Johannessen argues that the clinical learning environment is the sum of various factors influencing nursing students' clinical learning outcomes, including healthcare staff, interns, patients, educational opportunities, and learning resources, and that it can provide students with an authentic healthcare setting [9]. Academic burnout, as a negative academic psychological phenomenon, refers to the negative attitudes and maladaptive behaviors that arise when students feel weary of their studies due to excessive academic pressure or a lack of interest in learning [10].

Academic research on academic burnout began in the late 1980s, yielding extensive findings regarding its nature, structure, and other aspects. For example, a study by Virtanen et al. showed that high academic engagement (low academic burnout) accounted for 40.6%; moderate academic engagement (moderate academic burnout) accounted for 53.9%; and low academic engagement (high academic burnout) accounted for 5.5%. This study indicated that teacher support, family support, and students' academic performance are factors correlated with students' academic engagement and academic burnout [11]. A survey of medical students in India conducted by Vidhukumar and Hamza revealed an overall prevalence rate of academic burnout of 48.5%, with rates of moderate, high, and severe burnout at 44.8%, 3.2%, and 0.5%, respectively; among different year levels, the prevalence rates of academic burnout for second-, third-, and fourth-year students, graduating students, and interns were 52.2%, 47.5%, 38.3%, 45.0%, and 54.4%, respectively [12].

As research on burnout has continued to evolve, scholars have discovered that burnout is not limited to the workplace but is equally prevalent in academic settings. In the late 1980s, scholars abroad began studying the phenomenon of academic burnout among students. For example, Rudman and Gustavsson conducted a three-year prospective follow-up study of 1,702 Swedish nursing students from 26 universities. Their findings showed that during the three years of higher education, the prevalence of academic burnout among nursing students increased from 30.0% to 41.0%, indicating that the development of academic burnout during higher education is a significant issue [13]. Trigueros et al. used the Spanish version of the MBI Academic Burnout Scale to study 3,354 university students across four academic disciplines (education, psychology, natural sciences, and humanities) at two universities; their findings indicated an academic burnout score of 2.67 ± 1.21 [14]. A study by Atalayin et al. on academic burnout among 18- to 24-year-old dental students in Turkey found that approximately 22.3% of students exhibited high levels of emotional exhaustion, 16.7% exhibited high levels of depersonalization, and 17.9% reported high levels of reduced academic efficacy; students with high levels of academic burnout had lower academic satisfaction and academic performance [15]. Wickramasinghe et al. conducted a survey using the MBI-SS among 796 college students from 15 schools in Sri Lanka, and the results showed a prevalence rate of academic burnout of 28.8% [16].

Psychological resilience enables individuals to recover as quickly as possible to their original state—or even experience personal growth—after experiencing stressful threats. Research indicates that psychological resilience can protect individuals through three mechanisms [17]. For example, Peng et al. used Chinese medical students as participants to investigate the effects of the Pennsylvania Resilience Training Program on their positive and negative emotions, emotional regulation strategies, and psychological resilience; The results indicated that PRP training can enhance medical students' psychological resilience and positive emotions, reduce their negative emotions, and help them employ more cognitive-appraisal-based emotion regulation strategies [18]. Based on the essence and characteristics of experiential education, Liu analyzed its impact from dimensions such as situational immersion and multidimensional interaction, finding that experiential education provides a systematic

and sustainable development pathway for college students' psychological education and helps cultivate their psychological resilience [19]. Huang et al. focused on the mechanisms underlying the relationship between professional identity and academic burnout, with a particular emphasis on the mediating role of psychological resilience. They found that professional identity has a significant positive predictive effect on psychological resilience and a significant negative impact on academic burnout, with psychological resilience playing a partial mediating role [20]. Based on the educational philosophy of "promoting the five aspects of education in parallel," Lin et al. integrated digital intelligence technologies—such as big data, artificial intelligence, and cloud computing—to construct a four-dimensional, synergistic psychological resilience cultivation mechanism encompassing "cognition, behavior, environment, and values," which effectively enhanced college students' psychological resilience, academic adaptability, and confidence in career development [21]. A study by Fan et al. found that factors influencing college students' mental health primarily include four aspects: individual demographic factors, positive psychological capital, family resilience, and social support. The study also proposed four strategies to enhance college students' psychological resilience and positive psychological capital [22].

As an important segment of the graduate student population, medical graduate students face greater competition and challenges; however, there is a relative lack of research examining how psychological resilience mediates the relationship between stress and academic burnout. Therefore, this study focused on Master of Nursing students at four universities in Southwest China. Using latent profile analysis, the study examined the different types of academic burnout among these students to understand the individual heterogeneity of their academic burnout and the current status of academic burnout within this population. It also explores the effects of stress and psychological resilience on academic burnout, providing a reference for reducing academic burnout levels among medical graduate students and improving their mental health and quality of life.

2. Objects and Methods

2.1. Study Population

Using convenience sampling, master's students in nursing from four universities in Southwest China were selected as study participants between November and December 2024. Inclusion criteria: currently enrolled master's students in nursing; informed consent; and voluntary participation in this study.

A total of 516 questionnaires were distributed, and 514 valid questionnaires were returned, resulting in a valid response rate of 99.6%. The 514 nursing graduate students were from four provincial medical universities in Southwest China. Their ages ranged from 20 to 43, with a mean age of 24.95 ± 2.22; 402 were female (78.2%) and 112 were male (21.8%); 339 (66.0%) were from rural areas; 341 (66.3%) had monthly living expenses of 1,000–2,000 yuan; 213 (41.4%) were first-year students, 184 (35.8%) were second-year students, and 117 (22.8%) were third-year students; 391 students (76.1%) were in professional degree programs, and 123 (23.9%) were in academic degree programs; 405 students (78.8%) were admitted through the national entrance examination; 405 students (78.8%) had only internship experience; For 253 students (49.2%), their home institution's graduation requirement was to publish a paper in a core journal, while for 191 students (37.2%), the requirement was to publish a paper in a general journal; 366 students (71.2%) attended institutions that distinguished between research types in their graduation requirements; 375 students (73.0%) had published papers during their studies, while 139 students (27.0%) had not yet published any.

2.2. Research Tools

(1) General Information Questionnaire

Developed in-house, this questionnaire includes 11 items: gender, age, place of origin, monthly living expenses, year of graduate study, degree type, admission method, clinical experience, master's degree requirements, whether graduation requirements differ by research type, and whether journal articles were published during graduate studies.

(2) Academic Stress Scale

The Master's Student Academic Stress Scale consists of 25 items divided into 5 dimensions: thesis-related stress (6 items), research-related stress (6 items), external expectations-related stress (5 items), academic coursework-related stress (5 items), and employment prospects-related stress (3 items). The scale uses a 5-point Likert scale, where 1 through 5 represent "no stress," "slight stress," "moderate stress," "significant stress," and "severe stress," scored as 1, 2, 3, 4, and 5 points, respectively. In this study, the internal consistency coefficients (α) for each first-order dimension of the scale ranged from 0.711 to 0.856, with the overall internal consistency coefficient (α) for the scale being 0.925. The internal consistency coefficient for the scale in this study was 0.945. $\chi^2/df = 2.888$, RMSEA = 0.051, CFI = 0.948,

GFI = 0.922, IFI = 0.947, and NFI = 0.921.

(3) Academic Burnout Scale

Based on the Academic Burnout Scale for college students developed by relevant scholars, this study revised the item wording to better reflect the characteristics of master's students [23]. The revised scale consists of 20 items across three dimensions: low mood, inappropriate behavior, and low sense of accomplishment; eight of these items are reverse-scored. The scale employs a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree" and scored from 1 to 5, respectively. Respondents scoring above 60 are classified as experiencing academic burnout, those scoring below 40 are classified as not experiencing academic burnout, and those scoring between 40 and 60 are classified as being in an indeterminate intermediate state. Respondents with an average score above 3 on each dimension are classified as experiencing low mood, inappropriate behavior, or low sense of accomplishment, respectively. The Cronbach's α coefficient for the total scale is 0.848; psychological experts rated the content validity of the scale as ideal; and the correlation coefficients between each dimension and the total score range from 0.715 to 0.859. In this study, the Cronbach's α coefficient for the Academic Burnout Scale was 0.945. The results of confirmatory factor analysis indicated a good fit: $\chi^2/df = 7.975$, RMSEA = 0.098, CFI = 0.904, GFI = 0.926, IFI = 0.905, and NFI = 0.891.

(4) Psychological Resilience Scale

The Psychological Resilience Scale (CD—RIDSC), developed by Connor and Davidson (2003), consists of 25 items and uses a five-point Likert scale, ranging from 1 to 5 to indicate "never," "rarely," "sometimes," "often," and "always" [24]. It comprises three factors: tenacity (13 items), strength (8 items), and optimism (4 items). Higher scores indicate greater psychological resilience. The Chinese version was revised by Xiao Nan and Zhang Jianxin; it has an internal consistency coefficient of 0.91 and demonstrates good external validity. In this study, the internal consistency coefficient for the total Psychological Resilience Scale was 0.926; for the resilience dimension, it was 0.902; for the strength dimension, it was 0.689; and for the optimism dimension, it was 0.688. The results of confirmatory factor analysis indicated a good fit: $\chi^2/df = 2.898$, RMSEA = 0.051, CFI = 0.927, GFI = 0.914, IFI = 0.927, and NFI = 0.893.

2.3. Data Collection Methods

This study employed a questionnaire survey method. At the beginning of the first semester of the 2024–2025 academic year, trained research team members distributed QR codes and URLs for the electronic questionnaire via on-site projection in each classroom on a class-by-class basis. The electronic questionnaire was created using the Wenjuanxing platform. Prior to the survey, a standardized set of instructions was provided to explain the purpose of the survey, how to complete the questionnaire, and important considerations. Participants gave their informed consent to participate in the survey and then completed the online version of the questionnaire. The electronic questionnaire included features such as duplicate response prevention, required fields, and logic checks to ensure data quality. After the questionnaires were collected, those completed in less than 3 minutes and those with answers exhibiting obvious patterns were excluded. A total of 516 questionnaires were collected for this study, of which 514 were valid, resulting in a valid response rate of 99.6%.

2.4. Statistical Methods

An exploratory factor analysis was conducted on all variables using Harman's one-factor test. The results identified 17 factors with eigenvalues greater than 1. The first factor explained 17.02% of the variance, which is below the 40% threshold, indicating that there were no serious common method bias issues. Data were analyzed using SPSS 26.0. Continuous variables that followed a normal distribution were described as mean ± standard deviation, while categorical variables were described using frequencies and percentages. Latent profile analysis was conducted using Mplus 7.4, with scores on the three dimensions of academic burnout serving as manifest variables. The number of latent categories was incrementally increased starting from 1. The model fit indices for the latent profile models are as follows: Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), adjusted BIC (aBIC), Log-Likelihood Ratio Test (LMR), Bootstrap-based Likelihood Ratio Test (BLRT), and information entropy [25]. Among these, lower AIC, BIC, and aBIC values indicate better model fit; a P-value < 0.05 for LMR and BLRT indicates an improvement in model fit compared to the previous model; and an entropy value closer to 1 indicates greater precision in model classification, until the model fit indices reach their optimal values. Finally, the SPSS 26.0 PROCESS procedure was used to test the mediating role of psychological resilience in the relationship between academic stress and the development of different types of academic burnout.

3. Empirical Results and Analysis

3.1. Statistical Analysis of Key Variables

A descriptive statistical analysis was conducted on the academic stress, psychological resilience, and academic burnout levels of the study sample. Table 1 presents the descriptive statistics for each variable.

(1) The overall level of academic burnout among the students in the study sample was relatively low, with a score of 2.22. The score for "low mood" (1.66) was particularly low, indicating that students in the study sample experienced minimal feelings of low mood. This also suggests that students in the study sample maintained relatively positive emotional states under the new curriculum reform. The score for the "low sense of achievement" factor (2.26) was also relatively low, indicating that instances of low achievement motivation due to academic pressures were infrequent and remained within an acceptable range, though there is still significant room for improvement. The "inappropriate behavior" factor (3.04) had the highest score, exceeding the theoretical mean. While the overall level of academic burnout is relatively low, students' burnout is particularly pronounced in the "low sense of efficacy" dimension, reflecting the current state of academic burnout among students under the new curriculum reform. This indicates that nursing graduate students under the new curriculum reform have shortcomings in areas such as study methods, goal setting, planning of academic tasks, and time management.

(2) The mean score for the total Psychological Resilience Scale was 3.79, with mean scores for each subscale ranging from 3.79 to 4.05, indicating that nursing graduate students exhibit generally good psychological resilience from the perspective of positive psychology.

(3) The mean score for the Academic Stress Total Scale was 2.95, which is higher than the theoretical mean. This indicates that nursing graduate students experience a certain degree of academic stress from the perspective of positive psychology. Among the dimensions of academic stress, the lowest score was 2.78 for thesis-related stress, while the scores for the other four dimensions were all around 3 with minimal variation; among them, the highest score was 3.13 for academic coursework-related stress.

Table 1. Descriptive statistics of variables

Scale	Factor	Min	Max	M±SD
Academic burnout	Total burnout	1.00	5.00	2.22±0.65
	In low spirits	1.00	5.00	1.66±0.72
	Misbehave	1.00	5.00	3.05±1.18
	Low achievement	1.00	5.00	2.26±0.66
Academic pressure	Total pressure	1.00	5.00	2.95±0.72
	Graduation paper pressure	1.00	5.00	2.78±0.77
	Research pressure	1.00	5.00	2.95±0.85
	External expected pressure	1.00	5.00	3.01±0.77
	Professional learning pressure	1.00	5.00	3.13±0.77
	Job prospect pressure	1.00	5.00	2.95±0.95
Psychological toughness	Total toughness	1.00	5.00	3.79±0.71
	Tenacity	1.00	5.00	3.79±0.77
	Power	1.00	5.00	3.88±0.87
	Optimism	1.00	5.00	4.05±0.85

3.2. Analysis of Academic Burnout Categories

Latent profile analysis was conducted using Mplus 8.3, with the three dimensions of academic burnout—depression, misbehavior, and low sense of accomplishment—as indicator variables. Latent profile models were established by setting the number of categories sequentially. The model fit indices are shown in Table 2. The results indicate that the AIC, BIC, and aBIC fit indices for all five models decreased as the number of categories increased. The entropy values for Models 3, 4, and 5 were all greater than 0.8. Among them, Model 4 had the highest entropy value at 0.899. The likelihood ratio test (BLRT) revealed that all five models reached the significance level ($P < 0.05$); however, the likelihood ratio test (LMR) value for Model 5 was not significant ($P = 0.812$). This indicates that Model 5 did not explain a higher proportion of variance than Model 4, meaning that the four-category model is superior. Based on a comprehensive evaluation of the fit indices for the latent profile models, the four-category profile model is the optimal model.

Table 2. The potential profile analysis model of academic burnout is simulated

Class	K	Loglikelihood	AIC	BIC	aBIC	Entropy	LMR	BLRT

1	6	-7580.548	15173.102	15194.94	15177.514			
2	10	-7338.091	14696.146	14737.71	14707.678	0.751	<0.0001	<0.0001
3	14	-7184.871	14394.302	14459.963	14409.896	0.847	<0.0001	<0.0001
4	19	-7040.02	14116.335	14201.587	14147.039	0.899	<0.0001	<0.0001
5	25	-6934.064	13915.872	14019.051	13947.979	0.877	0.812	<0.0001

The latent categories of academic burnout among graduate students in nursing are shown in Figure 1. The four latent categories exhibit significant differences across the three dimensions of academic burnout. Based on differences in conditional means, the four categories were named as follows:

Category 1 had low conditional means across all dimensions and was named the "Good Group"; this group accounted for 34.2% of all participants (*n*=176); Category 2 has low conditional means on the "depressed mood" and "inappropriate behavior" dimensions, but the highest conditional mean on the "low sense of accomplishment" dimension. This indicates that individuals in this category rarely experience depressed mood or inappropriate behavior but have a low sense of accomplishment; it is named the "Low Sense of Accomplishment Group," accounting for 8.9% of all participants (*n*=46); Category 3 had moderate conditional means across all dimensions, exhibiting a passive "giving up" state; it was named the "Go-with-the-Flow Group," accounting for 52.5% of all participants (*n*=270); Category 4 had the highest conditional means among the four groups on the low mood and inappropriate behavior dimensions, and the lowest conditional mean on the low sense of accomplishment dimension, indicating that individuals in this category exhibited severe low mood and inappropriate behavior but did not report a low sense of accomplishment. This group was named the "Academic Apathy and Complacency Group," accounting for 4.4% of all participants (*n*=22).

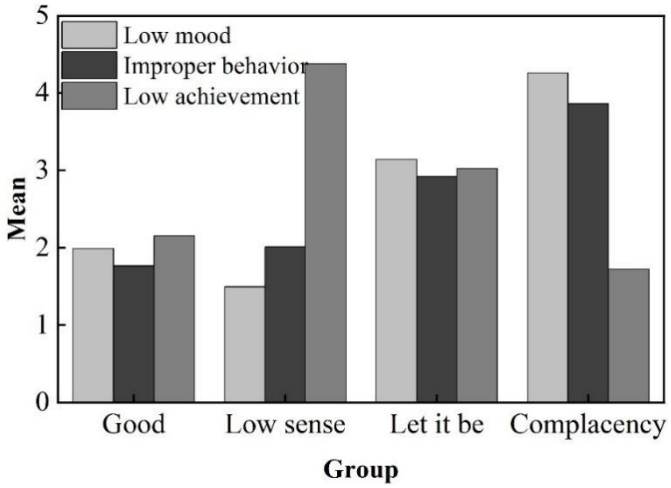

Figure 1. Potential categories for graduate school burnout

3.3. An Analysis of the Mediating Mechanisms of Psychological Resilience

Table 3 presents the correlation analysis of the main variables, with gender, grade level, father's educational attainment, mother's educational attainment, low mood, misbehavior, low sense of accomplishment, academic stress, and psychological resilience labeled 1 through 9, respectively. The results of the Pearson correlation analysis show that gender and mother's educational attainment are significantly correlated with academic stress and psychological resilience. Psychological resilience was significantly negatively correlated with the three dimensions of academic burnout (low mood, misbehavior, and low sense of accomplishment) ($P < 0.001$). Academic stress was significantly positively correlated with the three dimensions of academic burnout (low mood, misbehavior, and low sense of accomplishment) ($P < 0.001$).

Table 3. Correlation analysis of major variables

	1	2	3	4	5	6	7	8	9
1	1	0.21**	0.11**	-0.02	0.17**	0.05	0.15**	0.17**	-0.19**
2	0.21**	1	0.38**	-0.38**	0.17**	0.05	0.15**	0.07	-0.11**
3	0.11**	0.38**	1	-0.35**	0.05	0.08**	0.05	0.76**	-0.09*
4	-0.02	-0.38**	-0.35**	1	-0.11**	-0.11**	-0.16**	-0.13**	0.11**
5	0.17**	0.17**	0.05	-0.11**	1	0.61**	0.37**	0.41**	-0.37**
6	0.05	0.05	0.08**	-0.11**	0.61**	1	0.55**	0.28**	-0.45**
7	0.15**	0.15**	0.05	-0.16**	0.37**	0.55**	1	0.31**	-0.57**
8	0.17**	0.07	0.76**	-0.13**	0.41**	0.28**	0.31**	1	-0.33**
9	-0.19**	-0.11**	-0.09*	0.11**	-0.37**	-0.45**	-0.57**	-0.33**	1

Relevant scholars have pointed out that in mediation analyses where the mediating variable or dependent variable is a categorical variable, logistic regression should be used in place of the usual linear regression, and the scale of the regression coefficients should be converted to a logarithmic scale. For mediation models involving categorical or ordinal dependent variables, continuous mediating variables, and independent variables, the regression coefficient of the mediating variable on the independent variable is not on the same scale as the regression coefficients of the dependent variable on the mediating variable and the dependent variable on the independent variable. Therefore, the methods used to analyze mediation effects for continuous variables cannot be simply applied. For mediation analysis of a model in which the independent and mediating variables are continuous and the dependent variable is a dichotomous variable, the equation is as follows:

$$\mathrm{Y}'=\mathrm{i}_1 + CX + \varepsilon_1 \tag{1}$$

$$M = i_2 + aX + \varepsilon_2 \tag{2}$$

$$\mathrm{Y}'=\mathrm{i}_3 + c'X + bM + e_3 \tag{3}$$

$$\mathrm{Y}'=\log \mathrm{itP(Y=1|X)}=\ln \frac{\mathrm{P(Y=1|X)}}{\mathrm{P(Y=0|X)}} \tag{4}$$

$$\mathrm{Y}'=\log \mathrm{itP(Y=1|M,X)}=\ln \frac{\mathrm{P(Y=1|M,X)}}{\mathrm{P(Y=0|M,X)}} \tag{5}$$

Since the dependent variable is categorical, logistic regression should be used for Equations (1) and (3); since the mediating variable is continuous, linear regression is used for Equation (2). Because the regression equations are not on the same scale, $c-c'$ cannot be used to calculate the magnitude of the mediating effect or to test its significance; it is recommended to assess the significance of the mediating effect by testing the significance of $Z_a \times Z_b$.

The results of the mediational analysis of psychological resilience between academic stress and academic burnout are shown in Table 4. 1 = "Good Group," 2 = "Low Sense of Accomplishment Group," 3 = "Go-with-the-Flow Group," 4 = "Academic Complacency Group." Using the "Good Group" as the reference level, the relative mediating effect of the "Low Sense of Achievement Group" compared to the "Good Group" was significant (a_1 = -0.471, b_{21} = -0.077, a_1b_{21} = 0.036, 95% CI [0.045, 0.094]), indicating that the psychological resilience level of the "Low Sense of Achievement Group" is lower than that of the "Good Group" (b = -0.077). Therefore, students in the "Low Sense of Achievement Group" cope with academic stress less effectively than those in the "Good Group." The relative direct effect was significant ($c_{1'21}$ = 0.088, 95% CI [0.025, 0.035]), and the relative total effect was significant ($C_{1\ 21}$ = 0.124, 95% CI [0.096, 0.213]).

Using the "Good Group" as the reference level, the relative mediating effects of the "Go with the Flow Group" compared to the "Good Group" were significant (a_{14} = -0.471, b_{31} = -0.052, a_1b_{31} = 0.024, 95% CI [0.016, 0.059]), indicating that the psychological resilience level of the "Go-with-the-Flow Group" was lower than that of the "Good Group" (b = -0.052). Therefore, students in the "Go-with-the-Flow Group" were less effective at coping with academic stress than those in the "Good Group." The relative direct effect was significant ($c_{1'31}$ = 0.078, 95% CI [0.014, 0.144]), and the relative total effect was significant ($C_{1\ 31}$ = 0.102, 95% CI [0.055, 0.175]).

Using the "Good Group" as the reference level, the relative mediating effect of "Academic Complacency" compared to the "Good Group" was significant (a_1 = -0.471, b_{41} = -0.062, a_1b_{41} = 0.029, 95% CI [0.036, 0.088]), indicating that the level of psychological resilience in the "academic

complacency" group is lower than that in the "good" group (b = -0.062). Consequently, the "academic complacency" group performs less effectively in coping with academic challenges and exhibits the highest levels of academic burnout. The relative direct effect was not significant ($c_{1'41}$ = 0.033, 95% CI [−0.035, 0.095]), while the relative total effect was significant ($C_{1\ 41}$ = 0.062, 95% CI [0.028, 0.155]). The results of the mediation analysis indicate that psychological resilience mediates the relationship between academic stress and academic burnout, as shown in Figure 2.

Table 4. Analysis of the mediation of psychological toughness

Path	Estimates	S.E.	95%CI	
			Lower 2.5%	Upper 2.5%
Mediation effect:Academic pressure→Psychological toughness→Academic burnout D2_1	0.036	0.011	0.045	0.093
Direct effect:Academic pressure→Academic burnout D2_1	0.088	0.034	0.025	0.035
Total effect:Academic pressure→Psychological toughness→Academic burnout D2_1	0.124	0.031	0.096	0.213
Mediation effect:Academic pressure→Psychological toughness→Academic burnout D3_1	0.024	0.009	0.016	0.059
Direct effect:Academic pressure→Academic burnout D3_1	0.078	0.035	0.014	0.144
Total effect:Academic pressure→Psychological toughness→Academic burnout D3_1	0.102	0.032	0.055	0.175
Mediation effect:Academic pressure→Psychological toughness→Academic burnout D4_1	0.029	0.034	0.036	0.088
Direct effect:Academic pressure→Academic burnout D4_1	0.033	0.009	-0.035	0.095
Total effect:Academic pressure→Psychological toughness→Academic burnout D4_1	0.062	0.037	0.028	0.155

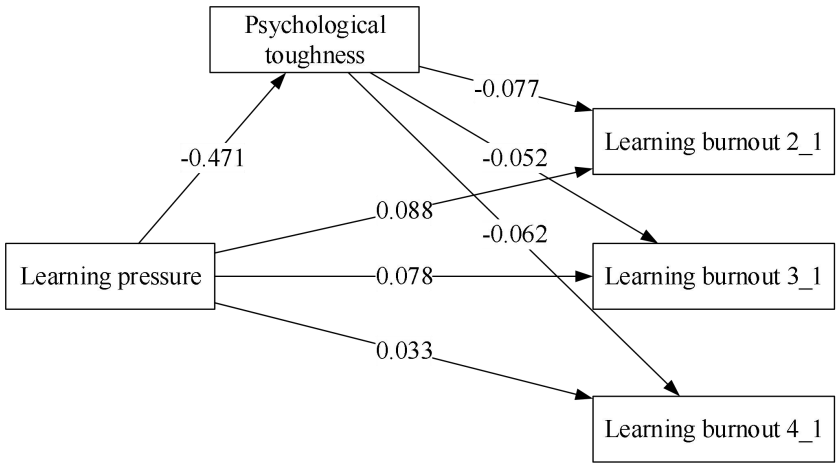

Figure 2. The intermediary effect of psychological resilience and academic burnout

4. Discussion

Students in a state of uncertainty may experience academic burnout due to time-related factors. Those from households with low per capita monthly income have higher rates of academic burnout; this may be because financial pressures have a negative impact on medical students' mental well-being, preventing them from focusing on their studies and leading to academic burnout. Students who communicate infrequently with their advisors also have higher rates of academic burnout. Under the mentor-responsibility system for graduate students, communicating with mentors about academic and personal matters not only helps resolve academic confusion in a timely manner but also allows students to receive support from their mentors, thereby alleviating stress and stimulating motivation to learn. Actively completing relevant research tasks and maintaining a passion for one's field of study are positive factors that can effectively reduce academic burnout among medical graduate students. This suggests that educators should take relevant measures to stimulate students' interest in learning and help medical

graduate students realize their full potential.

The results of this study indicate that stress has a direct positive effect on academic burnout or indirectly influences academic burnout through psychological resilience. Medical graduate students face stress from multiple sources, including their studies, employment, work, and family; if these are not properly balanced, the risk of academic burnout increases. This suggests that, on the one hand, medical graduate students should confront and manage stress appropriately, and on the other hand, society and academic institutions should provide early warnings regarding preventable stressful life events. Psychological resilience, as an important positive psychological trait, has a negative effect on academic burnout and mediates the relationship between stress and academic burnout. The psychological resilience of individuals under stress is affected to some extent; those with high psychological resilience possess positive adaptive abilities, enabling them to effectively cope with stress and thereby reduce the incidence of academic burnout. This suggests that educators at medical schools and relevant departments should place high importance on the positive role of psychological resilience. Through group counseling and course-based education, they should enhance the psychological resilience of medical graduate students, guide them to actively cope with life's stresses and challenges, boost their sense of academic accomplishment, and thereby further reduce levels of academic burnout. In this way, they can safeguard mental health and better realize their personal potential.

5. Conclusion

This study investigated the latent categories of academic burnout among graduate students in nursing from the perspective of positive psychology, as well as its associated factors, and explored the mediating role of psychological resilience. Academic stress was found to predict all categories of academic burnout, and psychological resilience mediated the relationship between academic stress and academic burnout. Specifically, under academic stress, the "High Hope Group" exhibited higher levels of academic burnout relative to the "Low Sense of Accomplishment Group," the "Go-with-the-Flow Group," and the "Complacent Group," yet their higher levels of hope mitigated the academic burnout induced by academic stress. Therefore, parents should provide their children with a harmonious family environment, adopt a positive, encouragement-based parenting style, and enhance their children's ability to manage their own lives. This will enable children to adopt better coping strategies when facing setbacks, learn to handle academic burnout on their own, and maintain their interest in learning. As for schools, since students generally tend to avoid psychological issues and rarely seek counseling on their own initiative, schools and colleges must proactively assess students' psychological well-being, conduct mental health education activities, encourage students to participate in extracurricular club activities, strengthen students' sense of social support, and enhance their psychological resilience—thereby effectively alleviating feelings of school aversion.

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