

Parental support as a moderating variable in the relationship of academic resilience and academic stress to academic burnout in medical clerkship students

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Abstract

Academic burnout, manifested through psychological exhaustion, cynical attitudes, and perceptions of helplessness, is a common phenomenon among medical education students. This quantitative study aims to examine the relationship between academic resilience and academic stress with academic burnout, as well as to investigate the moderating role of parental support. Data were collected using the Maslach Burnout Inventory-Student Survey, the Academic Resilience Scale (ARS-30), the Student Life Stress Inventory, and The Social Provisions Scale. Data analysis techniques employed moderated regression analysis and interaction effects, utilizing data transformation (centering) and the PROCESS macro-Hayes Model (Model 1). Based on findings from 112 participants selected through purposive sampling, moderation regression analysis (PROCESS Model 1 Hayes) revealed that academic resilience had a significant negative effect ($\beta = -0.245$; $p < 0.001$), while academic stress had a significant positive effect ($\beta = 0.346$; $p < 0.001$) on academic burnout. Parental support was found to significantly moderate both relationships. Parental support acted as an effective buffer by weakening the positive relationship between academic stress and academic burnout (interaction $\beta = -0.0111$; $p < 0.001$; $\Delta R^2 = 6.70\%$). However, parental support weakened the negative relationship between academic resilience and academic burnout (interaction $\beta = 0.0354$; $p < 0.001$; $\Delta R^2 = 9.65\%$), and at high levels of support, academic resilience was no longer a significant predictor. This indicates that excessive support has the potential to hinder the development of students' internal capacities. The research model explained 68.8% of the variance in academic burnout, implying the need for a balanced approach that simultaneously strengthens external support and develops internal resilience.

Keywords: academic burnout; academic resilience; academic stress; parental support; medical clerkship student

INTRODUCTION

Law Number 20 of 2013 outlines the regulation of medical education in Indonesia, aiming to produce competent, technically skilled, and integral medical personnel through two sequential phases: undergraduate medical education (S.Ked) and the medical clerkship students (dr.), which are conducted by accredited universities in collaboration with teaching hospitals (KKI, 2012). A critical stage in professional education is the clinical clerkship program, divided into



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two phases, during which students undergo comprehensive clinical rotations in hospitals and community health centers, with direct involvement in clinical practice, case observation, and patient interaction under supervision (Hudan, 2022; Rusli, 2021). Clinical Clerkship I lasts for 53 weeks in semesters 8–9, carrying a load of 26 credits for clinical rotations and 1 credit for an Effective Block, whereas Clinical Clerkship II is conducted over 49 weeks in semesters 10–11, with a load of 24 credits for clinical rotations and 1 credit for an Effective Block (Hudan, 2022). Successful completion of each phase requires a minimum GPA of 3.0, completion of all courses and the Effective Block, with an obligation to repeat half of the rotation period if the requirements are not met. As a final requirement for graduation from professional education, students must produce a final paper in the form of research, a literature review, or a case report, and take a comprehensive examination after completing the entire series of clerkships (Hudan, 2022).

The implementation of a dense and intensive medical curriculum renders medical clerkship students vulnerable to academic burnout, a condition of chronic physical and mental exhaustion characterized by the emergence of negative affect, decreased motivation, and declining academic performance (Kloping et al., 2021). The prevalence of this phenomenon is relatively high, as demonstrated by a study conducted by Tjhin et al. (2025), which found that 95.2% of respondents experienced burnout, with 32.7% of them at a moderate-to-severe level. Other studies have also reported significant prevalence rates, such as 65% moderate burnout among pre-clinical phase students (Rahmawati, 2024) and 10.5% high-level burnout among medical students at UIN Syarif Hidayatullah Jakarta (Dayanti, 2019).

In the interviews conducted in this study, all three respondents experienced academic burnout during their clinical clerkship, triggered by a heavy workload, limited time, and stringent graduation targets. The three respondents reported symptoms including academic fatigue, temporary loss of motivation, and feelings of hopelessness. Acute academic stress emerged particularly in practical situations, such as during patient visits or in the operating theatre, when lecturers or residents gave sudden tasks or asked abrupt questions regarding diseases and procedures. An inability to answer often led to reprimands or punishments, which added to the pressure and even triggered a desire to be absent. The respondents affirmed that medical education differs from other fields due to its long duration, intensity of tasks, and direct interaction with patients, all of which collectively induce significant levels of academic stress (Zhang, 2012).

Academic stress is one significant determinant of academic burnout, representing a multidimensional response to academic pressure (Gadzella & Masten, 2005). Among medical clerkship students, this stress primarily originates from the demands of a high-intensity curriculum, tight deadlines, standards of perfectionism, and the complexity of clinical rotations requiring both technical competence and communication skills. This pressure has the potential to trigger anxiety, mental exhaustion, and feelings of hopelessness, which drive academic burnout. The level of fatigue among medical students is consistently reported to be higher, with more complex symptoms (such as stress, anxiety, and depression), compared to students in

other disciplines (Frajerma et al., 2019). Research by Hendri et al. (2024) and Rabuka et al. (2023) has also confirmed a positive correlation between academic stress and academic burnout among medical students. Academic stress directly affects the cognitive, emotional, and behavioral aspects of academic burnout, creating dynamics that can exacerbate its severity (Gao, 2023).

Students' responses to academic stress that can trigger academic burnout are heterogeneous, and it is here that academic resilience plays a crucial role. Academic resilience is an individual's capacity to face, overcome, and adapt to various challenges and difficulties in the learning process, thereby enabling the optimal completion of academic obligations. More broadly, resilience is conceptualized as the ability to cope with disruption adaptively, to maintain health and energy under sustained pressure, and to possess the capacity to recover and bounce back from setbacks (Siebert, 2005).

Optimal academic resilience capacity enables students to regulate and mitigate academic burnout, thereby allowing them to maintain good academic performance (Tjhin et al., 2025). Research findings, such as the study by Simatupang and Simarmata (2024), demonstrate a significant effect of resilience on academic burnout among medical students, with a predictive contribution of 51.3%. This aligns with the research conducted by Redityani and Susilawati (2021), which confirms the protective role of resilience in reducing the level of academic burnout among medical students.

According to the Conservation of Resources Theory (Hobfoll, 1989), internal resources such as academic resilience are limited and can become depleted in a continuously demanding environment, such as the medical clerkship students. Therefore, strengthening external resources, such as parental social support, becomes very important. Research by Cecilia and Suryadi (2024) indicates that parental support has a positive and significant relationship with academic resilience, contributing 54.8%. This confirms that emotional, informational, and instrumental support from parents constitutes a crucial factor in shaping students' ability to persevere and achieve in the face of academic stress.

Social support, particularly from parents, serves as an essential external resource that can slow the depletion of internal resources, facilitate the acquisition of new resources, and provide psychological protection. This role is crucial in helping students cope with academic stress and academic burnout, while simultaneously strengthening academic resilience. Therefore, parental support can function as a moderating variable that influences the relationship between academic resilience and academic stress in relation to the phenomenon of academic burnout among medical clerkship students.

The multidimensional forms of parental support, encompassing emotional, financial, and moral aspects, can create a sense of psychological safety and comfort for students. This support, in the form of attention, encouragement, and motivation, functions as a protective mechanism that strengthens academic resilience, helps students manage academic stress, and reduces the impact of academic burnout. Thus, parental support constitutes a significant psychological

resource in facing academic difficulties (Swartz et al., 2011).

Empirical findings confirm the contribution of social support, particularly from parents, in reducing academic burnout among medical students. A study by Halim et al. (2022) showed that parental support contributed 12% to the variance in burnout, while research by Alverina (2022) found a significant negative correlation between social support and the level of academic burnout, meaning that higher support is associated with lower levels of burnout. Furthermore, social support is also positively correlated with resilience. Thus, parental support not only plays a direct role in alleviating academic burnout but also does so indirectly by strengthening resilience as a protective factor that helps students adapt to and recover from academic pressure.

According to Lu (1997), social support, particularly from parents, can moderate the effects of stress by directing emotions towards a more positive state. Academic stress emerges and depletes students' internal resources; however, parental support functions as an external resource that replenishes those reserves, thereby weakening the development of academic burnout (Hobfoll, 2002).

According to the Buffering Model (Cohen & Wills, 1985), social support, such as that from parents, is most effective as a buffer when stressors are high, by altering the cognitive appraisal of academic stressors and facilitating adaptive coping. The theory of stress and coping (Lazarus & Folkman, 1984) asserts that the ability to cope with pressure depends on the availability of adjustment resources, in which parental support serves as a crucial resource for medical clerkship students facing intense stressors. Consequently, the relationship between academic stress and academic burnout will be weaker among students with strong parental support. Vygotsky's theory (1978) of scaffolding explains that young adults' independence is formed gradually through external support. In the context of complex medical education, parents act as a primary scaffold, providing emotional and psychological stability amidst academic pressure and clinical uncertainty.

A study by Kim et al. (2018) explains that social support has a buffering effect between academic stress and burnout, acting as a protector when individuals face pressure. This view aligns with the research of Halbesleben (2006), which is based on the Conservation of Resources (COR) theory, as well as the study by Kusumawati and Prastiti (2023), which found that high levels of parental support can serve as a protective factor by helping students manage their perception of academic stress and contributing to better psychological well-being. Thus, social support, including that from parents, can protect individuals from the negative impact of stressful events such as academic stress (Lu, 1997).

Although medical clerkship students (aged 22–28 years) are, by age, in the phase of emerging adulthood, which emphasizes independence and identity exploration (Arnett, 2000), the realities of medical education demands — such as high academic workload, clinical responsibilities, long working hours, and moral pressure — mean that these individuals still require parental support in various aspects. This dynamic illustrates the complexity of the

transition, in which students strive to demonstrate their independence as future doctors yet, practically speaking, are not entirely free from the need for external support, particularly from their parents.

This period is often referred to as extended emerging adulthood, during which the transition towards full independence is delayed due to the demands of higher education as a long-term investment. In this context, parental support is not viewed as pathological dependence but rather as strategic dependence, which allows students to concentrate fully on mastering professional competencies without being burdened by financial or emotional pressures that could interfere with their learning (Furstenberg et al., 2004; Cote, 2014). Therefore, the role of parental support remains very important in helping students navigate challenging training, demonstrating that the journey towards complete independence in the medical field still often requires reliance on the family.

Various studies have confirmed the bivariate relationships between academic stress, resilience, parental support, and academic burnout among medical students; however, most research remains partial and has not integrated all four variables within a single, unified analytical framework. In particular, the moderating mechanism that explains the role of parental support in influencing the strength of the relationships between resilience and academic stress on academic burnout among medical clerkship students has rarely been explored, even though this understanding is crucial for designing more effective interventions. To address this gap, the present study aims to examine the role of parental support as a moderating variable in the relationships between academic resilience and academic stress on academic burnout. The novelty of this study lies in the development of an integrated moderation model, which is expected to enrich the Conservation of Resources (COR) theory and the buffering hypothesis, while also providing practical implications for educational institutions and families in efforts to mitigate academic burnout among future doctors.

Although the relationships between academic stress and academic burnout, as well as between academic resilience and academic burnout, among medical students have been extensively demonstrated in previous research, the primary contribution of this study lies in testing the role of parental support as a moderating variable. Theoretically, this moderating function can be explained through several perspectives. According to the Conservation of Resources (COR) theory (Hobfoll, 2002), academic resilience is an internal resource that helps students withstand pressure, while parental support acts as an external resource that can strengthen the protective effect of resilience against academic burnout. The synergistic interaction between these two resources allows parental support to strengthen the negative relationship between academic resilience and academic burnout. Furthermore, the buffering hypothesis (Cohen & Wills, 1985) states that social support functions as a buffer that weakens the negative impact of stress on psychological well-being, particularly when individuals are under stressful conditions. In this context, parental support is hypothesized to reduce students' perception of academic stressors, thereby preventing academic stress from easily escalating into severe academic burnout. This argument is reinforced by empirical findings from Teng et

al. (2025), which show that stress level moderates the protective function of resilience, where the effect of resilience in reducing academic burnout weakens under high-stress conditions. These findings indicate the need for external factors, such as parental support, to stabilize and optimize the function of resilience. Thus, testing parental support as a moderating variable is significant for understanding the boundary conditions that can strengthen or weaken the influence of resilience and academic stress on academic burnout among medical clerkship students. The hypotheses of this study are as follows: (1) there is a significant negative relationship between academic resilience and academic burnout among Medical clerkship students, whereby the higher the students' resilience, the lower the level of academic burnout experienced; (2) there is a significant positive relationship between academic stress and academic burnout among medical clerkship students, whereby the higher the level of academic stress experienced by students, the higher the level of academic burnout perceived; (3) parental support functions as a moderating variable in the relationship between academic resilience and academic burnout among medical clerkship students, whereby parental support can moderate the relationship between high resilience and a decrease in the level of academic burnout; (4) parental support functions as a moderating variable in the relationship between academic stress and academic burnout among medical clerkship students, whereby parental support can moderate the relationship between academic stress and the level of academic burnout.

METHODS

This study employs a quantitative approach, implementing a survey method to collect data through digital questionnaires from a sample that meets the inclusion criteria. This research examines the effects of academic resilience (X_1) and academic stress (X_2) on academic burnout (Y), with parental support (Z) as a moderating variable. The inclusion of this moderating variable aims to test the extent to which parental support can strengthen or weaken the impact of resilience and academic stress on the level of academic burnout experienced by individuals.

The population of this study consists of all active medical clerkship students in Indonesia who are currently undergoing clinical clerkships, the exact number of which is not accurately known. To determine a representative sample, random sampling techniques were employed to ensure that every member of the population had an equal chance of being selected. According to Sugiyono (2016), this technique provides an equal opportunity for every population member to be selected as a sample through a purely random selection process without researcher intervention. This aims to obtain a representative sample to avoid bias and to allow the research findings to be generalized to the entire population. Using G*Power software with parameters of effect size $f^2 = 0.15$, significance level (α) = 0.05, and statistical power ($1-\beta$) = 0.95, the minimum required sample size was calculated to be 89 respondents through a t-test for multiple linear regression with four predictors.

The data collection technique in this study employed five questionnaires distributed online via the Lime Survey platform. The first questionnaire collected demographic data, while the other four questionnaires measured the research variables, namely academic resilience,

academic stress, academic burnout, and parental support, using a Likert scale. Online data collection was chosen due to its time efficiency, minimal data entry errors, and ability to reach a wide and difficult-to-access population.

Four measuring instruments were used in this study. The first employed the academic burnout scale, measured using the Maslach Burnout Inventory-Student Survey (MBI-SS) as adapted by Dayanti (2019), which consists of 15 items across three dimensions (exhaustion, cynicism, and inefficacy), measured on a 4-point Likert scale. This is based on the theory of Maslach et al. (2001), which defines academic burnout through three main dimensions. Exhaustion refers to a condition of chronic tension and anxiety resulting from excessive workload, triggering maladaptive coping mechanisms in the form of emotional withdrawal. Cynicism is a manifestation of disengagement, characterized by a loss of interest and intrinsic motivation towards academic responsibilities. Inefficacy, meanwhile, refers to a perceived decline in self-competence and stagnation in achievement. Construct validity testing in the adaptation study indicated good goodness-of-fit indices ($\chi^2 = 55.51$; $df = 40$; $p = 0.05233$; $RMSEA = 0.044$), and validity testing in the present study yielded significant correlation coefficients ($p < 0.05$) ranging from 0.479 to 0.832, with 8 items showing very high validity ($r \geq 0.70$), 5 items high validity ($0.60 \leq r < 0.70$), and 2 items moderate validity ($0.50 \leq r < 0.60$). All items were retained, and this instrument had a Cronbach's Alpha reliability coefficient of 0.913, confirming its validity and reliability for the study.

Second, the academic resilience scale employed the Academic Resilience Scale adapted by Dwiastuti (2024) into the ARS-23, consisting of 23 items across three dimensions (perseverance, reflecting and help-seeking, and negative affect and emotional response), measured on a 4-point Likert scale. This is based on the theory of Cassidy (2016), which encompasses three dimensions. Perseverance refers to an individual's persistence in solution-oriented thinking, maintaining focus on achievement targets, and implementing constructive feedback when facing obstacles. Reflecting and adaptive help-seeking describes the capacity to engage in critical reflection on one's own strengths and weaknesses, to identify effective learning strategies, and to access social support and extrinsic motivation. Meanwhile, negative affect and emotional response relate to the ability to minimize anxiety through the regulation of negative emotions and the application of positive thinking patterns when responding to academic obstacles. Construct validity testing in the adaptation study indicated good goodness-of-fit indices ($RMSEA = 0.062$; $CFI = 0.97$; $SRMR = 0.053$), and validity testing in the present study yielded significant correlation coefficients ($p < 0.05$) ranging from 0.362 to 0.815, with 8 items showing very high validity ($r \geq 0.70$), 6 items high validity ($0.60 \leq r < 0.70$), 4 items moderate validity ($0.50 \leq r < 0.60$), and 5 items low validity ($r < 0.50$). All items were retained, and this instrument had a Cronbach's Alpha reliability coefficient of 0.893, confirming its validity and reliability for the study.

Third, the academic stress scale employed the Student Life Stress Inventory (SLSI) as adapted by Praghlapati et al. (2021), consisting of 51 items across two main dimensions (sources of stress and reactions to stress), measured on a 4-point Likert scale. The measurement

of academic stress in this study refers to the concept of Gadzella (1991), which divides it into two main dimensions: sources of stress and responses to stress. Sources of stress encompass stimuli demanding adaptation beyond the limits of normal experience, manifested in the form of frustration, conflict, pressure (such as competition and excessive workload), disruptive situational changes, and self-imposed changes triggered by the need for competition, social acceptance, or concerns about evaluation. Meanwhile, the response to stress constitutes the individual's reaction to these conditions, which can emerge through four aspects: physiological (such as autonomic disturbances and psychosomatic issues), emotional (negative affect such as fear and anger), behavioral (maladaptive actions such as aggression or withdrawal), and cognitive (subjective appraisal of stressors and coping strategies). Validity testing in the adaptation study showed a KMO of 0.787 and a significant Bartlett's Test. In the present study, content validity index (CVI) assessment by three experts indicated that 48 items were perfectly valid (I-CVI = 1.0) and 3 items (22, 30, 44) required revision (I-CVI = 0.67). Construct validity testing yielded significant correlation coefficients ($p < 0.05$) ranging from 0.364 to 0.745, with 9 items showing very high validity ($r \geq 0.70$), 10 items high validity ($0.60 \leq r < 0.70$), 17 items moderate validity ($0.50 \leq r < 0.60$), and 15 items low validity ($r < 0.50$). All items were retained, and this instrument had a Cronbach's Alpha reliability coefficient of 0.951, confirming its validity and reliability.

Fourth, the parental support scale employed The Social Provisions Scale as adapted by Putra (2015), consisting of 27 items across six dimensions (emotional attachment, social integration, reassurance of worth, reliable alliance, guidance, and opportunity for nurturance), measured on a 4-point Likert scale. Social support in this study was measured based on Weiss's theory as cited by Putra (2015). The six dimensions include emotional attachment, namely the expression of affection that creates a sense of security and comfort; social integration, namely parental involvement in sharing interests and activities that fosters a sense of belonging; reassurance of worth, in the form of recognition of the child's capabilities; reliable alliance, which positions parents as the primary source of support in problem resolution; guidance, namely the function of parents as attachment figures in the problem-solving process; and opportunity for nurturance, namely the child's perception of parental contribution to the achievement of success in their life. Validity testing in the adaptation study indicated that all dimensions met the goodness-of-fit criteria after model modification. In the present study, content validity index (CVI) assessment by three experts showed that all items were perfectly valid (I-CVI = 1.0). Construct validity testing yielded significant correlation coefficients ($p < 0.05$) ranging from 0.377 to 0.855, with 9 items showing very high validity ($r \geq 0.70$), 4 items high validity ($0.60 \leq r < 0.70$), 6 items moderate validity ($0.50 \leq r < 0.60$), and 8 items low validity ($r < 0.50$). All items were retained, and this instrument had a Cronbach's Alpha reliability coefficient of 0.931, confirming its validity and reliability.

The data analysis in this study implemented moderated regression analysis and interaction effects using SPSS software with data transformation (centering) techniques and Hayes' PROCESS Model 1. This analysis aimed to investigate the relationships between academic resilience and academic stress on academic burnout, considering parental support as a

moderating variable. The results of the analysis were interpreted as significant if they met the statistical criterion of $p < 0.05$.

Results

This study aimed to analyse the relationships between academic resilience and academic stress on academic burnout among medical clerkship students, as well as to examine the role of parental support as a moderating variable in the relationships between these variables. The sample in this study consisted of 112 medical clerkship students. An overview of the characteristics of the 112 respondents can be seen in Table 1.

Table 1. Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage
Age	20	1	1%
	21	4	4%
	22	30	27%
	23	32	29%
	24	26	23%
	25	14	13%
	26	1	1%
	27	3	3%
	28	1	1%
Gender	Female	79	71%
	Male	33	29%
University	Universitas Hang Tuah	28	25%
	Universitas Airlangga	27	24%
	Universitas Surabaya	13	12%
	Universitas Katolik Indonesia Atma Jaya	5	4%
	Universitas Nahdlatul Ulama Surabaya	5	4%
	Universitas Negeri Gorontalo	4	4%
	Universitas Muhammadiyah Malang	4	4%
	Universitas Andalas	3	3%
	Universitas Wijaya Kusuma Surabaya	3	3%
	Universitas Baiturrahmah	2	2%
	Universitas Gadjah Mada	2	2%
	Universitas Alkhairaat	2	2%
	Universitas Islam Sultan Agung Semarang	1	1%
	Universitas Hasanuddin	1	1%
	Universitas Muhammadiyah Makassar	1	1%
	Universitas Brawijaya	1	1%
	Universitas Sebelas Maret	1	1%
	Universitas Jember	1	1%
	Universitas Muhammadiyah Semarang	1	1%
	Universitas Malikussaleh	1	1%
	Universitas Indonesia	1	1%
	Universitas Sam Ratulangi	1	1%
	Universitas Bosowa	1	1%
	Universitas Muhammadiyah Surakarta	1	1%
	Universitas Jambi	1	1%
	Universitas Tarumanagara	1	1%
Sleep Duration	<5 hours	27	24%
	5-6 hours	66	59%
	7-8 hours	19	17%
	>8 hours	0	0%

Based on the statistical calculations and descriptive data in this study, the results can be seen in Table 2.

Table 2. Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Deviation
Academic Burnout	112	33	46	38,90	3,193
Academic Resilience	112	50	80	63,89	6,866
Academic Stress	112	115	170	141,54	14,600
Parental Support	112	50	71	60,19	5,503

From the descriptive statistical analysis of 112 respondents, an overview of the research variables was obtained. Academic burnout had a mean score of 38.90 (range 33–46) with a low standard deviation (3.193), indicating a homogeneous data distribution and relatively similar levels of academic exhaustion among most respondents. In contrast, academic resilience had a mean of 63.89 (range 50–80) and a higher standard deviation (6.866), indicating significant variability in each respondent's adaptive capacity and self-endurance. Academic stress recorded the highest variability, with a mean of 141.54 (range 115–170) and a large standard deviation (14.600), illustrating a marked disparity in the experience of stress among respondents. Meanwhile, parental support had a mean of 60.19 (range 50–71) and a relatively low standard deviation (5.503), indicating a uniform perception of the support received. Overall, academic resilience and academic stress showed heterogeneous data distributions, whereas academic burnout and parental support were more homogeneous.

The categorization of research subjects was carried out to map the score distribution by analyzing the tendency of each respondent and comparing them, based on the empirical norm method (Azwar, 2012). This method places respondents into hierarchical categories based on the measured attributes, allowing them to be classified into three levels of categories, namely high, moderate, and low, using a predetermined categorization formula.

Table 3. Formula for Data Categorization

Categorization	Interval Formula
Low	$X < (M-1SD)$
Moderate	$(M-1SD) \leq X < (M+1SD)$
High	$X \geq (M+1SD)$

Note:

X = Participant's Score; M = Mean; SD = Standard Deviation

Table 4. Categorization of Research Respondents

Variable	Category	Score Range	Frequency	Percentage
Academic Burnout	Low	$X < 35,71$	19	16.96%
	Moderate	$35,71 \leq X < 42,09$	74	66.07%
	High	$X \geq 42,09$	19	18.66%
Academic Resilience	Low	$X < 57,02$	25	22.32%
	Moderate	$57,02 \leq X < 70,76$	70	62.50%
	High	$X \geq 70,76$	17	15.18%
Academic Stress	Low	$X < 126,94$	22	19.64%
	Moderate	$126,94 \leq X < 156,14$	71	63.39%
	High	$X \geq 156,14$	19	16.96%
Parental Support	Low	$X < 54,69$	8	7.14%
	Moderate	$54,69 \leq X < 65,69$	86	76.79%
	High	$X \geq 65,69$	18	16.07%

The descriptive analysis explaining the distribution of respondents for each variable shows diverse patterns. Most of medical clerkship students were in the moderate category for academic burnout (66.07%), academic resilience (62.50%), and academic stress (63.9%). However, there are groups that require attention, namely 18.66% experiencing high academic burnout, 22.32% having low academic resilience, and 16.96% experiencing high academic stress. This condition indicates that, alongside the majority situated in the middle, there is a minority group vulnerable to high academic burnout and low resilience, as well as a group experiencing high academic stress, all of which have the potential to disrupt the learning process.

In contrast to the other variables, the distribution of parental support was highly concentrated in the moderate category, with 76.79% of respondents perceiving support at this level. Only 7.14% reported low support and 16.07% high support. This suggests that, in general, students in this study perceived support from their parents, although the intensity was mostly at a moderate level.

Table 5. Normality Test Results

Kolmogorov-Smirnov	
Statistic	Sig.
0,062	0,200

The normality test using the Kolmogorov-Smirnov method yielded a significance value of 0.200 ($p > 0.05$), indicating that the residuals are normally distributed. Thus, the normality assumption in the regression model has been met based on the data from 112 respondents.

Table 6. Multicollinearity Test Results

Variable	VIF	Tolerance
Academic Resilience (Centering)	1,659	0,603
Academic Stress (Centering)	1,513	0,661
Parental Support (Centering)	1,774	0,564
Interacts AR(C) dan PS(C)	1,250	0,800
Interacts AS(C) dan PS(C)	1,283	0,779

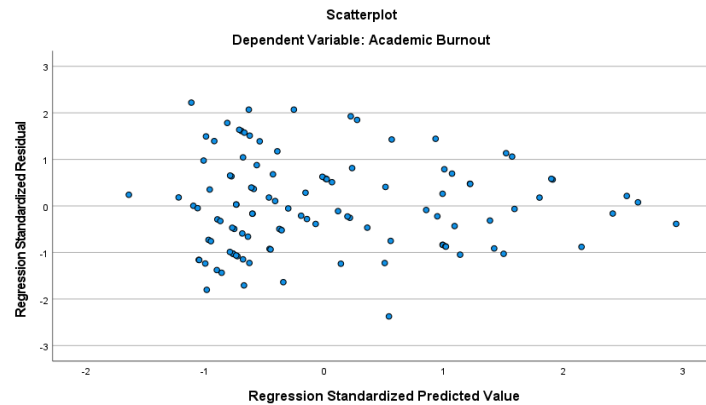


Figure 1. Scatterplot Heteroscedasticity Test Results

Based on the results of the multicollinearity analysis, it was identified that all independent variables met the criteria, with Variance Inflation Factor (VIF) values below 10 and tolerance values exceeding 0.10. These findings indicate the absence of high correlations among the predictor variables in the regression model. Thus, it can be concluded that the regression model used is free from multicollinearity issues and meets the feasibility assumptions for further analysis.

Table 7. Heteroscedasticity Test Results

Variable	Sig.
Academic Resilience (Centering)	0,114
Academic Stress (Centering)	0,207
Parental Support (Centering)	0,063
Interacts AR(C) dan PS(C)	0,365
Interacts AS(C) dan PS(C)	0,085

Based on the results of the Glejser test, it was found that all independent variables showed significance values above 0.05. This condition indicates that there is no significant influence between the predictor variables and the absolute residual values. Thus, it can be concluded that the regression model in this study is free from heteroscedasticity issues and has met the assumption of homoscedasticity.

The results of the scatterplot above indicate a relationship between the standardized predicted values and the residuals in the regression model with academic burnout as the variable. The random scatter of points without forming any specific curved pattern or funnel (expanding or narrowing) indicates that the homoscedasticity assumption is met in this study. Furthermore, no systematic pattern suggesting heteroscedasticity is observed, thus the error variance is relatively constant across the entire range of predicted values. Additionally, no extreme outliers deviating markedly from the pattern are evident.

Table 8. Autocorrelation Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,829	0,688	0,673	1,825	1,732

Based on the results of the Durbin-Watson test, a statistical value of 1.732 was obtained. This value is close to 2, indicating that there is no autocorrelation, either positive or negative, in the regression model. Based on these findings, it can be concluded that the non-autocorrelation requirement in the regression model has been met.

Table 9. Results of Linear Regression Analysis between Variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1					
Academic Burnout	38,097	0,226		168,847	0,000
Academic Resilience (Centering)	-0,114	0,033	-0,245	-3,512	0,001
Academic Stress (Centering)	0,076	0,015	0,346	5,189	0,000
Parental Support (Centering)	-0,165	0,042	-0,285	-3,944	0,000

Based on the regression analysis, there is a significant relationship between the predictor variables and academic burnout. Academic resilience has a significant negative effect ($\beta = -0.245$), meaning that high adaptive capacity is associated with lower levels of academic burnout. Academic stress shows the strongest positive effect ($\beta = 0.346$), confirming its role as the primary predictor of increased academic burnout. Meanwhile, parental support also has a protective effect ($\beta = -0.285$).

Table 10. Moderation Analysis Results of Parental Support on the Relationship of Resilience and Academic Stress with Academic Burnout Using Data Transformation (Centering)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1					
Academic Burnout	38,097	0,226		168,847	0,000
Interacts AR(C) dan PS(C)	0,022	0,007	0,190	3,124	0,002
Interacts AS(C) dan PS(C)	-0,008	0,003	-0,189	-3,071	0,003
Coefficient of Determination Test					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	0,829	0,688	0,673	1,825	

The moderation analysis revealed complex dynamics. Parental support was found to moderate the relationship between academic resilience and academic burnout ($\beta = 0.190$), whereby high levels of support weakened the protective effect of resilience, suggesting a substitution effect between external support and internal capacity. On the other hand, in the context of academic stress, parental support functioned as an effective buffer ($\beta = -0.189$), with

statistical significance confirming its ability to mitigate the negative impact of stress on academic burnout. Based on the test results, an R Square value of 0.688 indicated that 68.8% of the variance in academic burnout could be explained by academic resilience, academic stress, parental support, and their interactions, while the remaining 31.2% was attributed to other factors outside the model.

Table 11. Moderation Analysis Results of Parental Support on the Relationship of Resilience and Academic Stress with Academic Burnout Using Hayes' PROCESS Model

Model & Variable	Interaction Coefficient	ΔR^2	Conditional Effect	Low Parental Support (-1 SD)	Moderate Parental Support (Mean)	High Parental Support (+1 SD)
Model X → Y	$\beta = 0,0354$ $p < 0,001$			$\beta = -0,3490$ $p < 0,001$	$\beta = -0,1542$ $p < 0,001$	$\beta = 0,0406$ $p = 0,464$
X: Academic Resilience		0,0965	Academic Resilience			
Y: Academic Burnout	BootLLCI 0,0215	$p < 0,001$	→ Academic Burnout	BootLLCI -0,4589	BootLLCI -0,2303	BootLLCI -0,0689
Moderator: Parental Support	BootULCI 0,0493			BootULCI -0,2391	BootULCI -0,0781	BootULCI 0,1502
Model X → Y	$\beta = -0,0111$ $p < 0,001$			$\beta = 0,1524$ $p < 0,001$	$\beta = 0,0912$ $p < 0,001$	$\beta = 0,0300$ $p = 0,197$
X: Academic Stress		0,0670	Academic Stress			
Y: Academic Burnout	BootLLC -0,0163	$p < 0,001$	→ Academic Burnout	BootLLCI 0,1042	BootLLCI 0,0543	BootLLCI -0,0158
Moderator: Parental Support	BootULC -0,0057			BootULCI 0,2006	BootULCI 0,1281	BootULCI 0,0757
Model Description		Academic Resilience → Academic Burnout Model $R^2 = 0.5622$, $F(3,108) = 54.03$; $p < 0.001$				
		Academic Stress → Academic Burnout Model $R^2 = 0.6194$, $F(3,108) = 79.26$; $p < 0.001$				

The moderation analysis results using Hayes' PROCESS Model 1 indicated that parental support significantly interacted with both predictors. First, the interaction between parental support and academic resilience provided an additional 9.65% of explained variance (ΔR^2), increasing the total model from 46.57% to 56.22%, and weakened the negative relationship between resilience and burnout ($\beta = 0.0354$; $p < 0.001$). At high levels of support, resilience was no longer a significant predictor of burnout ($\beta = 0.0406$; $p = 0.464$), demonstrating its ability to compensate for low resilience. Second, the interaction between parental support and academic

stress provided an additional 6.70% of explained variance (ΔR^2), increasing the total model from 55.24% to 61.94%, and weakened the positive relationship between stress and burnout ($\beta = -0.0111$; $p < 0.001$). At high levels of support, academic stress was also no longer a significant predictor of burnout ($\beta = 0.0300$; $p = 0.197$), confirming its fully protective effect.

Based on the various presentations of hypothesis testing results conducted using data transformation (centering) and Hayes' PROCESS Model 1 in SPSS software, the decisions regarding hypothesis acceptance in this study can be seen in Table 12.

Table 12. Hypothesis Test Decisions

No.	Hypothesis	Decisions
1.	Academic resilience has a negative effect on academic burnout among medical clerkship students	Accepted
2.	Academic stress has a positive effect on academic burnout among medical clerkship students	Accepted
3.	Parental support moderates the relationship between academic resilience and academic burnout among medical clerkship students	Accepted
4.	Parental support moderates the relationship between academic stress and academic burnout among medical clerkship students	Accepted

Discussion

Academic burnout is defined as a multidimensional condition of exhaustion (emotional, physical, and mental), manifested through exhaustion, cynicism, and inefficacy, resulting from continuous exposure to educational demands, and associated with decreased motivation and academic performance (Schaufeli et al., 2002; Zhang et al., 2007). This study found a high prevalence of academic burnout (>50% in the moderate-to-high category) among medical clerkship students. Descriptive analysis also showed that most respondents (83%) reported sleep durations below the recommended level (<7 hours/day), whereas the National Sleep Foundation recommends 7–9 hours for young adults (Ramadhan, 2022; Muntomimah & Mubarak, 2025). Sleep deprivation is associated with an increased risk of physical disorders and depression (Watson et al., 2015) and is consistent with the physiological dimension of academic stress (Gadzella, 1991), thus serving as a potential precipitating factor for both stress and academic burnout.

Several studies have demonstrated a relationship between academic burnout and sleep quality among medical clerkship students. A study by Fitriyani et al. (2024) found that 62.3% of students experienced poor sleep quality, with the majority sleeping only 5–6 hours per day (40.6%), and 63.8% reporting sleep disturbances at least once a week. Similarly, Winarni et al. (2025) reported that 60% of final-year students experienced academic burnout and 74.5% had poor sleep quality, with a significant association between the two variables. Meanwhile, Makki (2022) found that 4.37% of medical students experienced severe academic burnout and 75.7% had poor sleep quality, which was attributed to a heavy academic workload and increased cortisol levels disrupting sleep rhythms.

These findings can be explained through the Conservation of Resources Theory (Hobfoll, 1989), which posits that heavy academic demands during the medical clerkship program lead to significant depletion of resources, particularly time and mental energy. To maintain their academic performance, medical clerkship students often neglect adequate sleep, creating a vicious cycle: sleep deprivation reduces cognitive function and emotional resilience, thereby making it increasingly difficult to cope with academic pressure (Hobfoll, 2001). Consequently, insufficient sleep is not merely a consequence but also a contributing factor that exacerbates stress and increases the risk of academic burnout.

The majority of respondents, aged 22–24 years (79%), fall within the emerging adulthood phase (18–25 years), which is characterized by identity exploration, instability, and the transition toward adult autonomy (Arnett, 2000; Santrock, 2019). However, the intense academic demands of the medical clerkship program may limit opportunities for such exploration, thereby potentially triggering academic burnout. This transitional period also highlights the need for an extended psychosocial moratorium (Erikson, 1968), in which prolonged educational demands may isolate medical clerkship students from real-world independence, thereby maintaining their dependence on family support—particularly parental support—even though they have chronologically entered adulthood.

The results showed a significant negative relationship between academic resilience and academic burnout, confirming the first hypothesis and indicating that higher resilience is associated with lower levels of burnout. This finding is consistent with the theoretical framework of Cassidy (2016), which emphasizes perseverance and adaptive help-seeking as active coping mechanisms, as well as Richardson's (2002) theory, which suggests that high resilience facilitates better adaptation and recovery from adversity. However, 22.32% of respondents demonstrated low resilience, indicating a concerning resilience gap. Research by Adni et al. (2024) further highlights resilience as a significant protective factor that not only reduces stress and burnout but also improves academic performance (up to 1.73 times) and contributes 40% to psychological well-being and life satisfaction among medical students.

Academic stress demonstrated the strongest positive relationship with academic burnout, supporting the second hypothesis: higher academic stress is associated with higher levels of burnout. This finding reinforces Gadzella's (1991) dimensional model of academic stress and indicates that stressors during the clinical clerkship phase arise not only from academic workload but also from moral and emotional responsibilities in patient care, thereby accelerating the development of inefficacy (Maslach et al., 2001). This aligns with Lazarus and Folkman's (1984) transactional theory of stress, in which a sustained imbalance between perceived demands and available resources—particularly when coping strategies are ineffective—drives burnout. The Conservation of Resources Theory (Hobfoll, 1989) similarly explains that demanding environments lead to continuous depletion of emotional and cognitive resources without adequate recovery, corresponding to emotional exhaustion, cynicism, and reduced personal accomplishment.

Previous studies consistently support these findings. Kushidayanti et al. (2025) reported

that high academic stress is significantly associated with increased burnout, exacerbated by workload and sleep deprivation. Similarly, Rabuka et al. (2023) found a significant positive relationship between academic stress and burnout among 108 medical students, with most respondents experiencing moderate levels of stress (66.7%) and burnout (75.9%).

Parental support was also found to have a direct protective effect against academic burnout, supporting Cohen and Wills's (1985) social support theory, which posits that emotional and instrumental support functions as a buffer against stress. The majority of respondents (76.79%) reported moderate-to-high levels of support, highlighting the role of family as a key source of strength.

A key finding of this study is the complex moderating role of parental support. It significantly moderated the relationship between academic stress and burnout, such that at high levels of support, the relationship became non-significant. This supports the stress-buffering model (Cohen & Wills, 1985). However, parental support weakened the relationship between academic resilience and burnout. At high levels of support, resilience was no longer a significant predictor. This may reflect a protective-protective factor interaction, where excessive external support reduces reliance on internal resources (Hobfoll, 2002) and may hinder autonomy development (Barber et al., 2005).

These findings also align with self-determination theory (Ryan & Deci, 2000), which emphasizes autonomy-supportive parenting. In contrast, overprotective or controlling support may hinder self-regulation and mastery, increasing vulnerability to burnout. Within the Indonesian collectivist context, these dynamics become more complex. While family support remains central, excessive dependence may prolong psychosocial moratorium (Erikson, 1968), limiting autonomy development and increasing vulnerability to academic burnout. Finally, this study is subject to several limitations, including the use of self-report measures and an imbalanced demographic distribution, which may limit the generalizability of the findings.

CONCLUSION

Based on the data analysis, it can be concluded that academic resilience has a negative relationship with academic burnout, whereby higher resilience is associated with lower levels of academic burnout among medical clerkship students. Conversely, academic stress demonstrated the strongest positive relationship with academic burnout, meaning that an increase in academic stress significantly raises the risk of burnout. Furthermore, this study revealed a complex moderating role of parental support. Parental support was found to moderate the effect of academic stress on academic burnout, functioning as an effective buffer that weakens this positive relationship. However, parental support did not moderate the relationship between academic resilience and academic burnout; in fact, under certain conditions, high levels of parental support weakened the protective effect of resilience.

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Conflict of Interest Statement: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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