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STRENGTHENING STUDENT WELLBEING MANAGEMENT IN CHINESE UNIVERSITIES: VALIDATION OF THE CHINESE VERSION OF THE PERCEPTION OF ACADEMIC STRESS SCALE

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ABSTRACT

Academic stress has become an increasingly significant concern in higher education due to its influence on student wellbeing, academic performance, and institutional effectiveness. Effective educational management requires reliable and culturally appropriate instruments to identify stress-related challenges and support evidence-based student intervention strategies. This study aimed to validate the Chinese version of the Perception of Academic Stress Scale (PAS) among Chinese university students and examine its suitability as a tool for educational management and student support planning. A cross-sectional survey design was employed, involving 278 Chinese university students from different academic disciplines and regions. Reliability was assessed using Cronbach's Alpha, while construct validity was examined through Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The results demonstrated satisfactory internal consistency for the overall scale ($\alpha = 0.851$). EFA and CFA supported a revised four-factor structure consisting of Academic and Career Confidence, Academic Workload Stress, Academic Task and Expectation Stress, and Academic Competition Stress, reflecting the cultural and educational realities of Chinese higher education. The findings indicate that the Chinese version of the PAS is a reliable and valid instrument for assessing academic stress among university students. Beyond psychometric validation, the instrument offers educational leaders, student affairs practitioners, and university administrators a practical mechanism for monitoring student wellbeing, identifying at-risk populations, and informing evidence-based interventions and support services. The study contributes to educational management by providing a culturally validated assessment tool that can strengthen institutional decision-making and promote student success in Chinese higher education.

Keywords: Academic stress, educational management, higher education, student wellbeing, scale validation.

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INTRODUCTION

The widespread presence of academic stress among university students has consistently been a significant issue, with education being identified as a primary source of pressure for many students (Barbayannis et al., 2022). Furthermore, academic stress levels are on the rise. Societal expectations for academic achievement and shifts in social and economic conditions have exacerbated this stress (Li et al., 2005). Additionally, the challenging job market within the context of global economic competition has worsened the problem (Yang, 2023). Different scholars have varying definitions of academic stress.

Regarding the causes of academic stress, Abdollahi suggests that academic stress occurs when academic demands exceed students' coping abilities (Abdollahi et al., 2020). Other scholars argue that the sources of stress are diverse, including exams, assignments, grades, and societal expectations for academic success, which are particularly prevalent in Asian cultures (Ye et al., 2018). Academic stress is also shaped by external influences, including family dynamics, cultural norms, and peer relationships (Santhakumar, 2023). The consequences of academic stress are multifaceted, affecting students' academic performance, mental health, overall well-being, and even attendance rates (Van, 2024). Furthermore, academic stress can impact students' study habits and academic achievements (Kashif et al., 2021).

Academic stress can have numerous negative effects on students. Particularly among university students, high academic expectations and demands often lead to increased academic stress, impairing sleep quality (Jahangeer et al., 2022). This impact is usually exacerbated by heavy academic workloads, which disrupt sleep patterns (Schalkwijk et al., 2015). The resulting stress not only heightens cognitive and physiological arousal but also reduces sleep quality (Sin et al., 2017). Furthermore, poor sleep quality induced by academic stress can intensify academic pressure, negatively affecting academic performance (Shammari et al., 2020).

Researchers have created various tools and scales to effectively measure academic stress to evaluate the different aspects of stress that students face in educational settings. These instruments are crucial for understanding how stress impacts students' well-being, academic performance, and overall adjustment. For instance, Zajacova et al. (2005) focused on academic self-efficacy and perceived stress related to college tasks, developing a survey instrument to measure these factors. Similarly, Pascoe et al. (2019) underscored the adverse impact of academic-related stress on students' achievement, motivation, and dropout risk, stressing the need for accurate stress measurement to mitigate these challenges effectively. Both studies aim to understand how academic stress affects students' academic performance and mental health.

Bedewy and Gabriel (2015) developed a scale to assess university students' perceptions of academic stress and identify its sources, offering a framework for evaluating diverse stressors affecting students. Similarly, Rathakrishnan et al. (2022) utilized the Perception of Academic Stress Scale (PAS) to measure academic stress among university students, emphasizing subscales such as performance pressure, workload perception, academic self-perception, and time management challenges. Murphy (2023) explored category-specific stress mindsets, where academic stress emerged as a significant stressor among young adults, highlighting the importance of measuring stress perceptions in different contexts.

Although academic stress has been widely recognised as a critical issue affecting university students' academic achievement, wellbeing, and retention, educational institutions frequently face challenges in identifying students who require timely support. Effective educational management depends on the availability of valid and reliable assessment instruments that generate accurate information about students' academic experiences. However, many existing academic stress instruments were originally developed in Western contexts and may not adequately reflect the educational, social, and cultural realities experienced by Chinese university students.

In the Chinese higher education context, intense academic competition, strong family expectations, employment



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pressures, and examination-oriented educational traditions may shape students' perceptions of academic stress differently from students in other cultural settings. Without culturally validated measurement instruments, educational leaders and student affairs administrators may have difficulty identifying high-risk student groups and designing evidence-based intervention programmes.

Therefore, validating the Chinese version of the Perception of Academic Stress Scale (PAS) is important not only from a psychometric perspective but also from an educational management perspective. A culturally appropriate instrument can support universities in monitoring student wellbeing, informing institutional policies, and strengthening student support systems. This study addresses this gap by validating the Chinese version of the PAS among Chinese university students and examining its applicability for educational management purposes.

RESEARCH OBJECTIVES

1. To determine the reliability of the Chinese version of the Perception of Academic Stress Scale (PAS) among Chinese university students.
2. To examine the construct validity and factor structure of the Chinese version of the PAS within the Chinese higher education context.
3. To evaluate the comprehensive psychometric properties of the validated PAS—specifically its convergent and discriminant validity—to ensure its robustness as a data-driven tool for educational management and student wellbeing monitoring in Chinese universities.

RESEARCH QUESTIONS

1. What is the reliability level of the Chinese version of the Perception of Academic Stress Scale (PAS) among Chinese university students?
2. What factor structure best represents academic stress among Chinese university students in the Chinese higher education context?
3. To what extent does the Chinese version of the PAS demonstrate satisfactory convergent and discriminant validity to support educational management initiatives?

LITERATURE REVIEW

Theoretically, this study is grounded in the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984). According to this theory, stress is not merely an external stimulus but arises from an individual's cognitive appraisal of their environment. When academic demands are perceived as exceeding a student's available resources and coping abilities, academic stress occurs. Within the Chinese higher education context, stressors such as intense academic competition, workload, and future career uncertainties act as primary environmental triggers. The Perception of Academic Stress Scale (PAS) aligns directly with this theoretical framework, as it measures the students' subjective cognitive appraisal of these specific academic stressors rather than just objective workload. By viewing academic stress through this transactional lens, educational management can better understand that interventions must not only aim to reduce external academic demands but also enhance students' coping resources.

Educational management increasingly emphasizes student wellbeing as an important indicator of institutional effectiveness (Rathakrishnan et al., 2022). Universities are expected not only to provide academic instruction but also to establish support systems that promote student success, retention, and psychological wellbeing. Effective management of student wellbeing requires reliable assessment tools capable of identifying stress-related challenges and informing intervention strategies (Bedewy & Gabriel, 2015).

Academic stress has been associated with reduced academic engagement, lower academic achievement, mental health concerns, and increased dropout intentions among university students (Barbayannis et al., 2022; Pascoe et



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al., 2020). Consequently, educational leaders require accurate information to identify vulnerable student populations and allocate institutional resources effectively. Student support services, counselling programs, academic advising initiatives, and wellbeing interventions all depend on the availability of valid assessment instruments that can provide meaningful evidence for decision-making.

Within this context, validated academic stress instruments serve an important educational management function. They enable institutions to monitor student wellbeing systematically, evaluate the effectiveness of intervention programmes, and develop evidence-based policies aimed at improving the student experience (Rathakrishnan et al., 2022). Therefore, validating the Chinese version of the PAS contributes not only to measurement research but also to the broader educational management agenda of promoting student wellbeing and institutional effectiveness.

METHODOLOGY

Study Design, Participants and Setting

This study utilized a cross-sectional design. A two-month online data collection process was conducted on current college students (undergraduate and master's degree students) in mainland China. A total of 377 questionnaires were collected. The survey covered students from different disciplines and regions in China. After data quality screening, 278 valid questionnaires were retained.

Sampling Technique and Sample Size

A non-probability convenience sampling approach was utilized. Participants were invited to share the survey link with peers to broaden the sample reach. For Exploratory Factor Analysis (EFA), the recommended sample size typically ranges from 5 to 10 participants per item (Costello & Osborne, 2005). With 18 items in the PAS, a minimum of 90 to 180 participants is required to ensure the stability and interpretability of the factor structure. For Confirmatory Factor Analysis (CFA) using AMOS, a minimum of 200 participants is considered necessary for robust model testing (Kline, 2016). Accounting for potential invalid or incomplete responses, the study aimed to collect 377 samples to ensure the reliability of the analyses.

Instruments

Demographic Variables. Socio-demographic Variables of the Study: This study collected data on the participants' age, gender, education level, specialty, and other measurements. It also collected the subjects' level of satisfaction with the study environment and residential environment.

Perception of Academic Stress Scale (PAS). The Perception of Academic Stress Scale (PAS) was used to measure the sources of academic stress perceived by university students. The PAS consists of 18 items divided into three subscales: (1) Academic Expectations (4 items), (2) Workload and Examinations (8 items), and (3) Students' Academic Self-Perceptions (6 items). Each item is rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating lower levels of academic stress. Completing the scale takes approximately 5 minutes.

The PAS exhibits strong psychometric qualities. The overall scale's internal consistency, assessed using Cronbach's Alpha, is 0.7, demonstrating adequate reliability for research purposes. Content validity was validated during the development of the original scale. Twelve experts in psychology and educational psychology evaluated the scale. Each item's relevance was scored on a 5-point scale, retaining only those with an average score of 3.5 or above. This process ensured all items accurately represented the dimensions of academic stress. The experts' average agreement rate was 89%. The scale items were pilot-tested among students to evaluate their clarity and comprehensibility. Based on feedback, some items were revised to improve readability and understanding.

The questionnaire also has good Construct Validity. Exploratory Factor Analysis (EFA) identified four factors—



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Academic Expectations, Workload, Self-Perceptions, and Time Restraints—which explained 43% of the variance. These factors are theoretically consistent and align with prior research on academic stress.

Ethical Consideration

This study adhered strictly to ethical research principles to ensure participants' rights and privacy. An informed consent statement was included at the beginning of the questionnaire, outlining the study's purpose, content, anonymity, data usage, and potential risks. Participants were clearly informed that participation was voluntary and that they could withdraw without explanation. Data privacy was protected using the "Wenjuanxing" platform, which ensured participants' information was neither disclosed nor used for purposes outside the study. Additionally, questionnaire data were anonymized, and results were reported in aggregate form only.

Data Collection

Data were collected online, with the questionnaire link shared weekly in university student groups. The researcher, an undergraduate from Shandong Province, used convenience sampling, resulting in most samples being collected from northern China. To increase response rates, promotional posters and short descriptions were created to advertise the study.

Items 1–5 in the questionnaire were positive items, rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Items 6–18 were negative items, rated on a 5-point Likert scale from 1 (strongly agree) to 5 (strongly disagree). The questionnaire included clear instructions to ensure participants noticed the reversed scoring. Attention-check items were also embedded, such as "Please select '1 = strongly agree' for this item". At the end of the questionnaire, a small reward of 1 RMB was offered to participants, processed through Wenjuanxing's backend after completion and verification.

Data Analysis

This study addresses the research questions and evaluates the applicability of the Chinese adaptation of the Perception of Academic Stress Scale (PAS) among Chinese university students. First, SPSS was utilized to calculate Cronbach's α , assessing the scale's internal consistency, reliability, and stability within the Chinese university student population. Second, Confirmatory Factor Analysis (CFA) was conducted in AMOS, focusing on fit indices such as CFI, TLI, and RMSEA to ensure alignment with acceptable standards. Exploratory Factor Analysis (EFA) was also performed to identify potential factor structures and evaluate the scale's construct validity. Before EFA, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were assessed. Furthermore, to establish robust psychometric properties, Convergent Validity was evaluated using Average Variance Extracted (AVE) and Composite Reliability (CR), while Discriminant Validity was assessed using the Fornell-Larcker criterion (or Heterotrait-Monotrait Ratio). Finally, descriptive statistics, variance analysis, and correlation analysis were combined to investigate significant influence patterns of gender, region, and other demographic variables on academic stress, further validating the scale's applicability across different populations.

RESULTS

A total of 278 valid responses were collected, with participants aged between 17 and 30 years (mean = 21.61, standard deviation = 2.74). Among the participants, 96 were male (34.5%), and 182 were female (65.5%). In terms of educational background, 183 participants (65.8%) were undergraduate students, while 95 (34.2%) were master's students. The two most prevalent majors were Humanities and Social Sciences (106 participants, 38.1%), followed by Natural Sciences and Engineering (81 participants, 29.1%).

Dimensionality of PAS

The Perceived Academic Stress (PAS) scale was originally developed by Bedewy and Gabriel (2015) to identify the key factors contributing to academic stress among university students through three core subscales. The questionnaire encompasses four factors: "performance pressure," "perceived workload and examination stress,"



"academic self-perception," and "time constraints" (Bedewy & Gabriel, 2015).

Exploratory Factor Analysis (EFA) of PAS

Confirmatory Factor Analysis (CFA) for four-factor models showed that it did not achieve acceptable fit: CMIN/DF = 4.506, CFI = 0.711, RMSEA = 0.113, and GFI = 0.798. To examine the dimensions of the Perception of Academic Stress Scale (PAS) in the Chinese context, this study performed an Exploratory Factor Analysis (EFA) using SPSS. The analysis reclassified items into four dimensions based on the standard factor loading threshold of 0.4. Items with factor loadings exceeding 0.4 on multiple factors were assigned to the factor with the highest loading. All three factor loadings below 0.4 were not involved in the new dimensions.

Based on the reclassification of items, the revised dimensions of the Perception of Academic Stress Scale (PAS) in the Chinese context are outlined as follows. Factor 1: Academic and Career Confidence reflects students' confidence in their academic abilities and future career prospects. Factor 2: Academic Workload Stress encompasses stress associated with academic workload and teachers' expectations. Factor 3: Academic Task and Expectation Stress focuses on the stress arising from academic tasks and expectations, including parental pressure and examination difficulties. Finally, Factor 4: Competitive Academic Stress represents stress related to competition and the fear of academic failure.

Confirmatory Factor Analysis (CFA) of PAS

The overall model fit significantly improved by comparing the CFA fit indices before and after removing three items. The chi-square to degrees of freedom ratio (χ^2/df) decreased from 2.675 to 2.239, meeting the recommended threshold of <3 (Kline, 2016), indicating a better fit. The root mean square error of approximation (RMSEA) dropped from 0.078 to 0.067, remaining within the acceptable range of <0.08 (MacCallum et al., 1996), with its 90% confidence interval narrowing from [0.067, 0.089] to [0.054, 0.080], reflecting improved precision. Parsimony indices, including the Akaike Information Criterion (AIC) and Expected Cross-Validation Index (ECVI), also improved, supporting the simplified model's advantages (Akaike, 1974).

Reliability of PAS

Cronbach's Alpha coefficients measure the scale's internal consistency reliability. Based on the three subscales from the original Perception of Academic Stress Scale (PAS), the subscales "Stress Related to Faculty Work and Examinations" ($\alpha = 0.778$) and "Stress Related to Students' Academic Self-Perceptions" ($\alpha = 0.722$) demonstrate acceptable reliability levels. The "Stress Related to Academic Expectations" subscale shows low reliability ($\alpha = 0.401$), possibly due to the limited number of items.

Based on the four dimensions of the PAS, the reliability results of the Chinese version of the PAS are consistent with those of the original version, with differences across dimensions generally within a ± 0.1 range. Notably, the overall reliability (Cronbach's Alpha) of the Chinese version increased from 0.7 in the original version to 0.851.

Content Validity of PAS

To validate the cross-cultural adaptation of the PAS Scale, 15 in-service teachers from Liaocheng No. 3 Middle School in Shandong Province, China, evaluated the content validity. Experts rated the relevance of items based on their suitability in the Chinese educational context. Results indicated strong content validity, with high agreement on item relevance, confirming the PAS scale's applicability in cross-cultural research.

DISCUSSION

Beyond psychometric validation, the findings of this study have important implications for educational management in higher education. Reliable measurement of academic stress enables universities to establish evidence-based approaches for student wellbeing monitoring, early identification of vulnerable students, and development of targeted support interventions. The validated Chinese version of the PAS provides a practical mechanism through



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which educational leaders and student affairs administrators can better understand stress patterns within their student populations and make informed decisions regarding support services and institutional policies.

The overall reliability of the Chinese version of the Perception of Academic Stress Scale (PAS) is high ($\alpha = 0.851$), indicating strong internal consistency among Chinese college students. Most dimensions exhibit acceptable reliability ($\alpha > 0.6$). However, the reliability for Subscale 1, "Stress Related to Academic Expectations," is relatively low ($\alpha = 0.401$), which may be attributed to the limited number of items. Similarly, Factor 3, "Self-Perception," has low reliability ($\alpha = 0.527$), possibly due to challenges in cultural adaptation. Consequently, findings related to these specific dimensions must be interpreted with caution. While they offer preliminary insights into the students' stress profiles, these subscales likely require further conceptual refinement and item pool expansion in future studies to ensure more robust measurement and better cultural resonance within the Chinese demographic.

Confirmatory Factor Analysis (CFA) was conducted to assess the construct validity of the scale, but the results were unsatisfactory. Consequently, we performed Exploratory Factor Analysis (EFA) to further optimize the structure of the scale. Based on the Chinese context, the Academic Stress Perception Scale (PAS) was reorganized into four dimensions: Academic and Career Confidence, Academic Workload Stress, Task and Expectation Pressure, and Academic Competition Stress.

The dimensional structure of the questionnaire changed in the cross-cultural context. To validate the new dimensional structure, we conducted two rounds of CFA: the first round included all items, while the second round excluded three items (Q6, Q7, and Q13) with factor loadings below 0.4. The results indicated a significant improvement in the overall model fit after removing these three items, further demonstrating the superiority of the simplified model.

The new dimensions of the scale better reflect the unique academic pressures experienced by Chinese college students. For instance, parental expectations, socio-cultural norms, and the competitive educational system in China may lead to these differences. Through Exploratory Factor Analysis (EFA), the Chinese version of the Perception of Academic Stress Scale (PAS) was reorganized from the original four dimensions into four culturally relevant dimensions. This structural adjustment highlights the impact of culture on students' perceptions of academic stress and the questionnaire's structure.

The adjusted dimensions reflect a shift from general stress factors to those rooted in the educational and cultural context of China. For example, "Task and Expectation Pressure" emphasizes the significant role of familial and teacher expectations, while "Academic Competition Stress" reflects the peer-driven competitive nature of the Chinese educational system. Moreover, "Academic and Career Confidence" highlights the pressures related to career development and future success, where the importance of the graduate admission examinations and job competition amplifies this pressure. These specific cultural dimensions illustrate the substantial influence of social norms, educational values, and parental expectations on the academic stress of Chinese students.

When comparing these findings with previous international studies, a distinct cultural divergence in academic stress conceptualization becomes evident. For instance, Western studies often emphasize individual academic self-efficacy, personal time management, and intrinsic motivation as primary stress determinants (Pascoe et al., 2020; Zajacova et al., 2005). In contrast, the current study reveals that Chinese students' stress is heavily embedded in collective expectations and intense peer competition. Similarly, while Bedewy and Gabriel (2015) highlighted general workload and examinations as universal stressors in their original PAS development, the revised Chinese PAS structure distinctively isolates "Academic and Career Confidence" and "Task and Expectation Pressure" (heavily influenced by parental and societal expectations). This comparison underscores the necessity of culturally adapted psychometric instruments, confirming that stress appraisals in Asian contexts are heavily shaped by traditional examination-oriented educational values and rigorous global job market competition (Ye et al., 2018).

CONCLUSION



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This study validated the Chinese version of the Perception of Academic Stress Scale (PAS) among Chinese university students and confirmed its reliability and construct validity within the Chinese higher education context. The revised four-factor structure consisting of Academic and Career Confidence, Academic Workload Stress, Academic Task and Expectation Stress, and Academic Competition Stress reflects the distinctive academic and socio-cultural pressures experienced by Chinese students.

The findings demonstrate that a combination of workload demands, academic competition, future career concerns, and social expectations influence academic stress among Chinese university students. The revised factor structure provides a more culturally appropriate representation of academic stress compared to the original model. Most importantly, this study contributes to educational management by providing a validated instrument that can support student wellbeing monitoring, institutional decision-making, and evidence-based intervention planning. Universities may utilize the PAS to identify high-risk student groups, evaluate support programmes, and strengthen student affairs initiatives aimed at enhancing academic success and wellbeing. The availability of a culturally validated academic stress assessment tool enables educational leaders to make more informed decisions regarding student support policies and resource allocation.

Future research should continue examining the applicability of the PAS across different institutional contexts and student populations while exploring how academic stress data can be integrated into broader educational management and student wellbeing frameworks.

Implications for Practice

The validated Chinese version of the Perception of Academic Stress Scale (PAS) provides an essential, data-driven tool for educational leaders to optimize institutional effectiveness. By regularly assessing students with the PAS, universities can transition from reactive counselling models to proactive student wellbeing monitoring. Specifically, the PAS can be integrated into university digital administration platforms to serve as an early warning system. This system would allow student affairs practitioners to flag at-risk cohorts exhibiting dangerously high levels of "Academic Workload Stress" or "Competitive Academic Stress" before these issues escalate into severe psychological crises or academic dropout.

Utilizing the assessment results, schools can implement targeted evidence-based support planning. For example, if institutional data reveals a spike in "Academic and Career Confidence" stress among senior students, administrators can allocate resources toward specialized career advising, resume workshops, and industry networking events. Conversely, widespread "Task and Expectation Pressure" might prompt curriculum committees to review assessment distributions and pedagogical approaches. This data-driven approach enables educational management to make informed decisions and optimize policies tailored precisely to the students' actual stress profiles.

Institutions should implement personalized interventions to effectively support students and strengthen collaboration between schools and families. By analysing PAS data to identify specific sources of stress, schools can adopt flexible teaching and assessment strategies, such as adjusting course schedules, to alleviate unnecessary academic burdens. Furthermore, fostering school-family partnerships can help align academic expectations and mitigate family-related stressors, promoting holistic student development.

Institutions should establish mechanisms for stress assessment and monitoring to enhance the effectiveness of stress management. Educational institutions can easily conduct routine evaluations by piloting the PAS in universities and integrating it into student management systems. Moreover, systematic data tracking and analysis will provide strong evidence for policy optimization and support data-driven educational decision-making. These implications for practice are crucial for improving students' academic experience and overall well-being in the Chinese educational context.

Limitations and Recommendations for Future Research

Despite its contributions, this study has limitations. The sample was primarily drawn from a few Chinese universities,



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which may limit the generalizability of the findings to all Chinese university students. Additionally, the reliance on self-reported data may introduce biases, such as social desirability and recall bias, potentially affecting the accuracy of the reported academic stress levels. Furthermore, the short data collection period may not adequately capture the evolving nature of academic stress, influenced by factors like exam schedules and personal circumstances.

Future research should aim to expand the sample size to include students from a broader range of universities and diverse geographical regions, enhancing the generalizability of the findings. Longitudinal studies are recommended to better understand academic stress's causal relationships and long-term effects. Employing qualitative methods, such as interviews and focus groups, could provide deeper insights into students' experiences and coping strategies. Additionally, exploring other demographic factors, such as socioeconomic status and academic discipline, may offer a more comprehensive understanding of the determinants of academic stress.

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