International Journal of Healthcare Sciences ISSN 2348-5728 (Online)
Vol. 13, Issue 1, pp: (61-79), Month: April 2025 - September 2025, Available at: www.researchpublish.com

An Examination of the Relationship between Reductions in Perceived Academic Stress and Improvements in Student Academic Performance: A Quantitative Analysis

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DOI: https://doi.org/10.5281/zenodo.15295346

Published Date: 28-April-2025

Abstract: **This study investigated reductions in perceived academic stress among undergraduate students, focusing on how stress levels vary across subgroups defined by enrollment status (full-time vs. part-time), parenting status (single parents vs. non-parents), work obligations, and GPA. Guided by three research questions, the study examined (1) to what extent is there a relationship between reductions in perceived academic stress and improvements in student academic performance (2) to what extent does a reduction in perceived academic stress predict changes in undergraduate students' academic performance and (3) whether significant differences in stress levels exist among key student subgroups. A total of 200 undergraduate students, male and female, participated in this cross-sectional study. Data was collected using the Perceived Stress Scale–Academic (PSS-A), a validated instrument designed to assess stress related to academic responsibilities and self-reported Grade Point Averages (GPAs). Using SPSS 28 software for analysis, descriptive statistics indicated that students experienced moderate levels of perceived academic stress overall. Independent samples t-tests revealed significant subgroup differences. Full-time students reported significantly higher stress (M = 3.5, SD = 0.6) than part-time students (M = 3.3, SD = 0.6), [*t*(185) = 2.47, *p* = .015], Cohen's *d* = 0.33. Single parents exhibited higher stress levels (M = 3.7, SD = 0.6) compared to non-parents (M = 3.4, SD = 0.6), [*t*(185) = 3.21, *p* = .002], *d* = 0.50. Students with work obligations also reported significantly higher stress (M = 3.6, SD = 0.6) than those without (M = 3.3, SD = 0.6), [*t*(185) = 2.87, *p* = .005, *d* = 0.42]. Boxplot visualizations highlighted elevated median stress levels and wider interquartile ranges among full-time students, single parents, and those with work commitments. While GPA range appeared to show minor differences in stress distribution, students with GPAs in the 3.5–4.0 range reported the lowest median stress levels, suggesting a potential link between academic performance and stress management. These findings have important implications for institutional policies and student support services. Undergraduate programs should consider developing targeted interventions, such as flexible scheduling, mental health resources, and family/work-life balance support, especially for full-time students, single parents, and working students. By addressing these disparities, institutions can enhance student well-being, academic persistence, and overall program success.**

Keywords: **academic stress, undergraduate students, academic performance, Cognitive Appraisal Theory, Self-Determination Theory.**

I. INTRODUCTION

Undergraduate students face unique academic and psychosocial challenges that contribute to elevated levels of stress and anxiety. Balancing demanding coursework, research obligations, teaching or clinical responsibilities, and often full-time employment or family commitments, undergraduate students experience stressors that are both chronic and complex (Evans et al., 2018). These stressors are not merely academic but also tied to identity formation, professional uncertainty, and financial burdens. Numerous studies suggest that unmanaged academic stress may negatively affect cognitive performance, persistence, and overall academic achievement in undergraduate education (Barbayannis et al., 2023). Perceived academic stress, defined as an individual's subjective assessment of stress in response to academic tasks, is shaped by personal expectations, coping strategies, and available support systems (Lazarus & Folkman, 1984). undergraduate students who perceive themselves as unable to meet the expectations of their programs often report mental fatigue, decreased productivity, and lower levels of academic engagement. Conversely, interventions that reduce perceived stress, such as cognitive

restructuring or meaning-based approaches, have been associated with increased resilience and academic performance (Llistosella, 2023). This bidirectional relationship between stress and academic outcomes underscores the importance of understanding how stress reduction interventions affect the academic trajectory of graduate students.

This study is informed by the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), which emphasizes how individuals cognitively appraise stressful situations and select coping responses. Within graduate education, where internal and external pressures are intense, this model is particularly relevant. It allows for an exploration of how the subjective appraisal of stress rather than the stressor itself affects performance. Furthermore, the model provides a theoretical foundation for analyzing whether reductions in perceived stress led to measurable academic gains, such as improved GPA or research productivity.

Undergraduate students are increasingly reporting high levels of academic stress that negatively affect their academic performance, mental health, and persistence in higher education (Pérez-Jorge, 2025). Despite the expectation that undergraduate students do possess strong academic preparation, the pressures of rigorous coursework, social demands, financial instability, and often competing responsibilities such as employment or caregiving roles contribute to heightened stress **(Flaherty, 2020).** Studies have shown that elevated perceived stress can impair cognitive processing, reduce working memory, and diminish students' ability to manage time effectively, leading to poor academic outcomes (Pascoe et al., 2020). While institutions have begun implementing various wellness initiatives, there is limited empirical evidence specifically linking reductions in perceived academic stress to measurable improvements in academic performance among graduate students. Academic stress is a growing concern in higher education, where it has been linked to decreased academic performance, mental health challenges, and increased dropout rates (Sharma & Wavare, 2022; Pascoe et al., 2020). College students often face a range of stressors, including academic workload, social pressures, financial insecurity, and uncertainty about the future, all of which contribute to perceived academic stress (Beiter et al., 2015). Cognitive Appraisal Theory (Lazarus & Folkman, 1984) explains how individuals evaluate and respond to stress based on their perception of available coping resources, while Self-Determination Theory (Deci & Ryan, 1985) posits that autonomy, competence, and relatedness influence motivation and well-being in academic contexts.

These theoretical frameworks provide a foundation for understanding how students interpret academic demands and how such interpretations impact performance. Recent findings suggest that students who perceive academic stress as threatening rather than challenging are more likely to experience burnout and lower academic success (Rahman et al., 2023). Similarly, students with higher self-determination are better equipped to manage stress and maintain academic performance (Yu et al., 2021). Despite increasing recognition of the prevalence of academic stress, empirical investigations into its specific relationship with GPA and student status remain limited. Moreover, students' demographic and socioeconomic backgrounds can influence their ability to cope with stress, making it essential to examine stress within a broader context that includes variables such as employment and financial status (Mouton et al., 2021). Understanding how stress levels manifest across subgroups can inform the development of interventions that are equitable and tailored to students' lived experiences.

This study responds to the need for quantitative evidence linking perceived academic stress with academic outcomes, emphasizing the importance of universal support mechanisms and inclusive educational practices. In doing so, it aligns with national calls to create supportive academic environments that promote psychological resilience and academic persistence (American College Health Association, 2023). Although stress reduction interventions such as counseling, time management workshops, and meaning-centered therapies are increasingly offered, few studies have quantitatively assessed their impact on academic performance outcomes. Additionally, research in this area often lacks focus on the unique experiences of graduate students, who may experience chronic stress in different forms compared to undergraduate populations (Levecque et al., 2017). This gap in the literature hinders the development of targeted academic support services designed to enhance both student well-being and academic success. Understanding the extent to which reductions in perceived academic stress contribute to better academic performance is essential for informing program development, policy decisions, and mental health strategies within both graduate and undergraduate education.

Purpose

The purpose of this study is to quantitatively examine the relationship between reductions in perceived academic stress and improvements in academic performance among undergraduate students. By employing a reliable instrument to assess stress levels and for GPA academic outcomes, the study seeks to generate actionable insights for undergraduate programs. As institutions increasingly emphasize undergraduate students' wellness and retention, this research contributes to a growing body of literature exploring the academic benefits of mental health and well-being (**Hyun et al., 2006).** Ultimately, the findings may inform institutional strategies for academic support, stress management, and curriculum design in undergraduate education.

Although numerous studies have established a strong association between academic stress and poor performance in higher education, much of this research is concentrated on undergraduate populations, with limited focus on the graduate student experience (Posselt & Lipson, 2016; Son et al., 2020). Graduate students often navigate stressors that are qualitatively different, such as complex research timelines, uncertain career prospects, financial strain from limited funding, and the emotional labor of managing advisor relationships. However, few studies have examined how targeted reductions in perceived academic stress influence measurable improvements in academic performance at the graduate level. Literature lacks quantitative analyses that explore the before-and-aftereffects of stress interventions within this student population, especially using robust measures of both stress and academic achievement.

Furthermore, while interventions such as cognitive behavioral therapy (CBT), mindfulness, and meaning-centered approaches like logotherapy have been proposed as beneficial for reducing stress, empirical research linking these reductions to academic outcomes remains sparse (Chirikov et al., 2020; Slavin et al., 2014). Existing studies have tended to prioritize mental health outcomes such as anxiety and depression, leaving a significant gap in understanding how these psychological improvements translate to educational performance. Without this connection, it is difficult for university policymakers and academic support services to justify the implementation of large-scale wellness initiatives as tools for academic enhancement. This study seeks to fill this gap by offering a focused quantitative analysis of the relationship between reduced perceived stress and improved academic outcomes among graduate students.

Significance

The significance of this study lies in its potential to illuminate how reductions in perceived academic stress can meaningfully enhance academic performance among graduate students. A population often balances complex personal, academic, and professional demands. Graduate education frequently imposes high levels of cognitive and emotional strain, and stress has been consistently linked to adverse academic outcomes such as diminished focus, reduced productivity, and increased dropout rates (Beiter et al., 2015; Son et al., 2020). Understanding the relationship between stress reduction and academic success is vital for developing targeted interventions that not only alleviate stress but also optimize learning outcomes. This study is particularly significant for higher education institutions seeking to promote academic resilience and retention among graduate students. By quantitatively exploring how variations in stress levels correlate with changes in academic performance, the research can inform the design of institutional wellness programs, academic counseling services, and time management training specifically tailored for graduate learners. Furthermore, findings from this research may contribute to the broader discourse in educational psychology and student development theory by validating stress-reduction strategies as a foundational element in supporting academic achievement (Misra & McKean, 2000). This could have lasting implications for policy development and the allocation of resources toward graduate student support services.

Research Questions

The following research questions guide the study

RQ1: To what extent is there a relationship between reductions in perceived academic stress and improvements in student academic performance?

> **$H_0$1:** There is no statistically significant relationship between reductions in perceived academic stress and academic performance.
>
> **H_1:** There is a statistically significant relationship between reductions in perceived academic stress and academic performance.

RQ2: To what extent does a reduction in perceived academic stress predict changes in undergraduate students' academic performance?

> **(H_0):** There is no statistically significant relationship between reductions in perceived academic stress and improvements in academic performance among undergraduate students.
>
> **H2:** There is a statistically significant relationship between reductions in perceived academic stress and improvements in academic performance among undergraduate students.

RQ3: Does the level of stress reduction differ significantly among subgroups of undergraduate students (e.g., full-time vs. part-time, single parents vs. non-parents, or those with vs. without work obligations)?

> **H0:** There are no statistically significant differences in stress reduction levels among undergraduate student subgroups based on demographic factors such as enrollment status, parenting status, and employment obligations.
>
> **Ha:** There are statistically significant differences in stress reduction levels among undergraduate student subgroups based on enrollment status, parenting status, or employment obligations.

II. THEORETICAL FRAMEWORK & LITERATURE REVIEW

This study is grounded in Cognitive Appraisal Theory, a model developed by Lazarus and Folkman (1984) that explains how individuals respond to stress based on their interpretation, or "appraisal," of a situation. According to this theory, stress is not solely a function of external demands, but of the cognitive processes that evaluate whether these demands exceed personal resources. Graduate students, often managing rigorous academic workloads alongside personal and professional responsibilities, are particularly susceptible to stress when they perceive that they lack adequate coping mechanisms or institutional support. Within this framework, the reduction of perceived academic stress is hypothesized to create cognitive space for more adaptive functioning improving attention, memory, and problem-solving abilities, which are all critical for academic performance.

To further enrich the analysis, Self-Determination Theory (SDT) is incorporated as a secondary theoretical lens. Developed by Ryan and Deci (2000), SDT emphasizes three basic psychological needs: autonomy, competence, and relatedness. When these needs are satisfied, individuals are more likely to demonstrate intrinsic motivation and resilience. Applied to the academic context, graduate students who experience lower levels of stress may also experience higher perceived competence and autonomy, two key drivers of self-directed learning and academic success. In contrast, persistent academic stress can diminish these feelings, leading to decreased motivation, procrastination, and disengagement (Deci & Ryan, 2008).

Together, these theories provide a comprehensive view of the psychological and motivational processes underlying the relationship between stress and academic performance. While Cognitive Appraisal Theory helps explain how students cognitively process and respond to academic stress, SDT offers insight into how reducing stress may simultaneously enhance motivational states that promote higher academic engagement and achievement. By integrating both frameworks, this study is positioned to not only analyze the statistical relationship between perceived stress and academic outcomes, but also to interpret these findings within a robust psychological and motivational context. This dual-theoretical approach enhances both the explanatory and practical value of the study's findings.

Studies Related to Variables

Recent studies related to each variable are discussed below.

Perceived Academic Stress and Its Impact on Academic Performance

Academic stress has become a common experience among students in higher education. As academic demands increase, so does the perception of stress, which can significantly affect students' cognitive functioning, emotional well-being, and overall academic performance. Understanding the relationship between perceived academic stress and academic outcomes is crucial for developing interventions and support systems to enhance student success.

Recent studies have demonstrated that perceived academic stress is a significant factor influencing students' academic performance. A study by Misra and McKean (2022) examined the impact of academic stress on undergraduate students and found that higher levels of stress were associated with lower academic performance, particularly in relation to time management and coping skills. Similarly, Baker (2021) reported that students with higher perceived academic stress showed poorer academic outcomes, especially when their stress was related to perceived workload and academic expectations. This suggests that stress may impede students' ability to focus and retain information, ultimately leading to lower performance. Moreover, Deng et al. (2022) reported that stress has long been recognized as a critical factor impacting students' academic success, cognitive functioning, and emotional health.

A systematic review by Meyer et al. (2020) also found a strong link between perceived academic stress and poor academic performance across various educational settings. The review highlighted that when students feel overwhelmed by academic demands, they may experience reduced cognitive functioning, affecting their ability to engage with learning materials effectively. This study underscores the importance of addressing perceived stress to improve academic outcomes.

Cognitive Appraisal Theory and Perceived Stress Cognitive Appraisal Theory (Lazarus & Folkman, 1984) provides a useful framework for understanding how individuals evaluate stressors. Recent research has explored how cognitive appraisal can influence the relationship between perceived stress and academic performance. Sonnentag et al. (2021) conducted a study showing that students who appraise academic challenges as less threatening and more manageable tend to experience lower levels of stress and perform better academically. This supports the idea that cognitive reappraisal is a process where individuals reinterpret a stressor in a more positive light can reduce the negative impact of stress on academic outcomes.

Beilock and Carr (2021) expanded on this by investigating how cognitive appraisal influences academic performance in high stakes testing environments. Their study suggested that students who viewed exams as a challenge rather than a threat were able to regulate their stress more effectively, leading to improved test performance. These findings emphasize the role of cognitive appraisal in managing academic stress and improving performance, aligning with Lazarus and Folkman's notion that how individuals perceive stressors significantly affects their emotional and behavioral responses. The role of cognitive appraisal as a mediator in the relationship between stress and academic performance has gained attention in recent studies. Tamres et al. (2020) conducted a study showing that cognitive appraisal mediates the relationship between perceived academic stress and students' emotional responses, which in turn affect academic outcomes. When students interpret stressors as manageable or part of a learning process, they report less anxiety and perform better. This suggests that interventions aimed at changing students' appraisals of academic stress could reduce stress levels and improve academic performance.

Additionally, Folkman and Moskowitz (2021) found that positive reappraisal, as part of cognitive appraisal, plays a crucial role in stress management. In academic contexts, students who reframe stressful situations as opportunities for growth tend to have better emotional regulation, which positively impacts their academic performance. This mediating role of cognitive appraisal has important implications for student interventions designed to reduce stress. Cognitive Appraisal Theory conceptualizes stress as a transactional process between an individual and their environment. Stress arises not solely from academic demands themselves, but from the individual's appraisal of those demands and their available coping resources. According to Lazarus and Folkman (1984), this appraisal process involves two stages 1) Primary appraisal, where the individual evaluates whether a situation is threatening, challenging, or benign; and 2) Secondary appraisal, which assesses the resources the individual perceives they have to cope with the demands.

In the context of higher education, students may face identical academic stressors such as exams, assignments, or group projects but their subjective interpretation of these events varies significantly. For example, one student may interpret a midterm exam as a threat to their academic standing, while another may view it as a manageable challenge. These appraisals directly influence the level of perceived stress experienced.

Coping and Academic Performance

The cognitive appraisal process also shapes coping behaviors, which further mediate the relationship between stress and performance. Students who view stressors as controllable are more likely to engage in problem-focused coping (e.g., planning, seeking academic help), which is associated with improved academic outcomes (Folkman & Moskowitz, 2004). Conversely, when students perceive a lack of control, they may resort to emotion-focused or avoidant coping strategies such as denial or procrastination, which are often linked to academic underperformance (Misra & McKean, 2000; Chemers et al., 2001). Empirical studies support the utility of cognitive appraisal in understanding academic stress. For example, Varo (2023) found that students' appraisals of stressful academic events predicted not only the intensity of stress but also the type of coping strategy employed and the academic outcome. Similarly, research by Struthers, Perry, and Menec (2000) indicated that academic self-efficacy, a form of secondary appraisal, significantly predicted student persistence and grades, mediated by positive coping behaviors.

The dynamic nature of appraisal suggests that stress is not inherently detrimental. When students perceive stress as a challenge and believe they have the resources to cope, stress can function as a motivator, enhancing performance (Sinha, 2014). However, persistent negative appraisals particularly when students feel overwhelmed or underprepared are likely to lead to heightened levels of stress and academic disengagement (Robotham & Julian, 2006). Therefore, understanding cognitive appraisal is critical to identifying not only who experiences academic stress, but how and why it affects performance.

Cognitive Appraisal Theory provides a powerful framework for analyzing perceived academic stress. By focusing on students' subjective evaluations of academic demands and their coping capacities, educators and researchers can better understand the mechanisms that lead to academic success or struggle. Future research and interventions aimed at improving academic performance should therefore address the cognitive appraisals that shape student stress responses, rather than solely attempting to eliminate stressors.

Self-Determination Theory and Academic Stress

Self-Determination Theory (SDT), developed by Deci and Ryan (1985), emphasizes the role of intrinsic and extrinsic motivation in shaping behavior. Recent studies have examined how SDT can help explain the relationship between

perceived academic stress and academic performance. Zhang et al. (2022) investigated how intrinsic motivation buffers the negative effects of academic stress. Their study showed that students who are intrinsically motivated to succeed in their studies are better able to cope with academic stress, leading to better academic performance. This finding aligns with SDT's assertion that intrinsic motivation fosters greater engagement, autonomy, and competence, which in turn support academic success. Further research by Nguyen et al. (2023) revealed that students who experience high levels of intrinsic motivation in their coursework are less likely to perceive academic stress as overwhelming. Instead, they view challenges as opportunities to master new skills. This finding emphasizes the importance of fostering intrinsic motivation to mitigate the negative effects of academic stress on academic outcomes.

Self-Determination Theory and Academic Performance

Self-Determination Theory also explains how students' sense of autonomy, competence, and relatedness influences their academic performance. Vansteenkiste et al. (2020) found that students who felt a high degree of autonomy in their learning environments were better able to regulate their stress and perform better academically. The study suggested that when students have control over how they learn and what they study, they are more motivated and experience less stress. This underscores the importance of creating learning environments that support students' autonomy to enhance both motivation and performance. A recent meta-analysis by Chen et al. (2021) further supported the positive link between SDT components and academic performance, noting that students who feel competent and supported by peers and instructors show higher levels of academic achievement. These findings highlight that SDT's focus on motivation and relatedness can reduce the detrimental effects of stress and promote better academic outcomes. In the context of academic stress, Self-Determination Theory suggests that motivation can serve as a moderate variable. Chirkov et al. (2021) explored how intrinsic motivation moderates the impact of academic stress on academic performance. They found that students with higher levels of intrinsic motivation were better able to cope with stress, as they engaged in problem-solving and adaptive coping strategies, which ultimately improved their academic performance. On the other hand, students with lower intrinsic motivation tended to experience higher stress levels and poorer performance. Ryan and Deci (2020) also highlighted that extrinsic motivation could have a detrimental effect on performance when it is driven by external pressures, such as grades or parental expectations. This further emphasizes the importance of fostering intrinsic motivation to buffer the negative effects of stress on academic performance.

The Role of Cognitive Appraisal in Academic Stress Reduction

Cognitive appraisal, the process of interpreting a situation's demands and one's own resources, plays a crucial role in academic stress reduction. By reframing stressful events as challenges rather than threats, individuals can better manage their stress responses and improve their academic performance. This involves a shift in perspective from viewing academic stressors as overwhelming burdens to seeing them as opportunities for growth and learning. Studies have also examined how cognitive appraisal can help reduce perceived academic stress. Folkman et al. (2022) examined how students who engaged in reappraisal of stressful academic situations reported reduced stress and improved well-being. Their research indicated that teaching students' cognitive strategies to reframe academic challenges as opportunities rather than threats could help mitigate stress and enhance performance. Additionally, Aspinwall and Taylor (2023) found that cognitive restructuring, an intervention based on cognitive appraisal theory, led to reductions in perceived academic stress among college students, resulting in better exam performance. This body of research highlights the potential of cognitive appraisal techniques in reducing academic stress and improving academic performance

Academic stress has emerged as a major concern in higher education, impacting not only students' psychological well-being but also their academic performance and persistence. However, research increasingly reveals that the impact of academic stress is not simply the result of external demands such as coursework, exams, or time constraints. Rather, it is closely tied to how students interpret and mentally process these demands. This interpretation is captured by Cognitive Appraisal Theory, developed by Lazarus and Folkman (1984), which posits that stress arises from a transactional process between individuals and their environment. According to this theory, individuals experience stress when they perceive a mismatch between environmental demands and their personal coping resources.

Cognitive appraisal involves two key components: primary and secondary appraisal. During primary appraisal, individuals assess whether an event is irrelevant, benign-positive, or stressful. If an event is appraised as stressful, it is further categorized as a threat, harm/loss, or a challenge. Secondary appraisal involves evaluating one's coping options and resources, such as time, skills, and social support. In academic settings, this means that students do not respond to assignments or deadlines uniformly. One student may interpret an upcoming exam as an opportunity to demonstrate

mastery, while another may perceive it as a threat to their GPA and academic standing. These differing appraisals have a significant influence on the level and type of stress experienced.

Importantly, research suggests that stress is not always detrimental. When students appraise academic challenges positively believing they have the resources to cope with stress can be motivational and lead to enhanced performance. Conversely, when students view academic stressors as threats and believe they lack adequate coping mechanisms, they are more likely to experience negative stress and poor academic outcomes. This highlights the potential of cognitive appraisal as a target for interventions designed to reduce academic stress.

Cognitive reappraisal, a strategy in which individuals reinterpret stressful situations in less threatening ways, has been shown to be effective in reducing stress and promoting resilience. Gross and John (2003) demonstrated that individuals who regularly engage in cognitive reappraisal tend to experience more positive emotions and fewer symptoms of depression and anxiety. In academic contexts, helping students reframe a challenging course or assessment as an opportunity for growth rather than a threat to their success can reduce anxiety and improve academic engagement. Several studies support the effectiveness of cognitive appraisal interventions in academic settings. Sharma and Wavare (2013) found that students who received training in appraisal-focused coping strategies reported lower anxiety levels and greater confidence during examinations. Similarly, Frazier et al. (2015) demonstrated that students who participated in resilience training programs that included components of cognitive restructuring and reappraisal showed significant improvements in academic performance and stress management. These findings indicate that modifying cognitive appraisals is not only possible but can lead to meaningful improvements in academic outcomes.

One important mediator in the appraisal process is academic self-efficacy, defined as a student's belief in their ability to succeed in academic tasks. According to Bandura (1997), higher self-efficacy enhances students' confidence in their coping abilities, leading to more positive appraisals and adaptive coping behaviors. Chemers, Hu, and Garcia (2001) found that students with higher self-efficacy were more likely to employ problem-focused coping strategies and achieve higher academic performance. Thus, interventions that enhance academic self-efficacy such as skill-building workshops, academic coaching, and supportive feedback can indirectly reduce academic stress by fostering more constructive appraisals.

The implications of cognitive appraisal for academic stress reduction are far-reaching. Instead of focusing solely on reducing academic workload or altering external demands, institutions can also target how students internally perceive and evaluate those demands. Curriculum designers, faculty, and student support services can play a key role in facilitating healthier appraisal patterns. For example, integrating self-reflection exercises, peer mentoring, and growth mindset messaging into coursework can encourage students to reframe stress as a challenge rather than a threat.

In conclusion, cognitive appraisal serves as a critical lens for understanding and reducing academic stress. By recognizing that stress is shaped more by perception than by the stressor itself, educators and policymakers can develop more effective strategies to support student well-being and academic success. Interventions that strengthen students' ability to positively appraise academic demands, increase self-efficacy, and use adaptive coping strategies have the potential to transform how students engage with academic challenges. As such, cognitive appraisal should be considered a central component in the development of comprehensive academic stress reduction programs.

Interventions for Reducing Academic Stress

Recent interventions aimed at reducing academic stress have focused on cognitive appraisal and SDT. Wang et al. (2021) implemented a stress-reduction program for students based on cognitive-behavioral principles, including cognitive restructuring. They found that students who participated in the program showed lower levels of perceived stress and higher academic performance, particularly in high-stakes exams. This suggests that stress-reduction interventions that target cognitive appraisal can lead to improved academic outcomes.

In a similar vein, Patel et al. (2022) examined the effectiveness of SDT-based interventions in reducing academic stress. Their study found that fostering a sense of autonomy and competence in students significantly reduced perceived stress and improved academic performance, especially in courses with high workloads. This underscores the potential of integrating SDT principles in stress-reduction programs to enhance academic performance.

Longitudinal Studies on Academic Stress and Performance

Longitudinal studies provide valuable insights into how perceived academic stress impacts academic performance over time. Hsieh et al. (2021) conducted a longitudinal study on university students and found that reductions in perceived stress over a semester were associated with improvements in GPA and retention rates. The study also revealed that students who

reported higher levels of motivation and self-efficacy (related to SDT) were more likely to experience these improvements, highlighting the importance of both cognitive appraisal and motivation in mitigating the impact of academic stress. Lee and Kim (2022) also followed a cohort of students throughout their academic careers and found that students who developed better stress-management strategies and increased their intrinsic motivation over time were more likely to persist in their academic programs and achieve better academic results. The relationship between perceived academic stress and student academic performance is complex and multifaceted, influenced by various cognitive and motivational factors. Studies have consistently shown that higher levels of perceived academic stress negatively impact academic performance, as stress can hinder cognitive functioning, focus, and emotional regulation. However, Cognitive Appraisal Theory provides insight into how students' perceptions of stressors whether they view them as challenges or threats can mediate this relationship, with positive reappraisal helping to reduce stress and improve academic outcomes.

Self-Determination Theory (SDT) further illuminates the role of motivation in mitigating the effects of academic stress. Research indicates that students with higher intrinsic motivation, a key tenet of SDT, are better equipped to cope with academic stress and perform better academically. SDT also highlights the importance of autonomy, competence, and relatedness in fostering an environment that supports academic success and reduces stress. Moreover, the integration of these two theoretical frameworks Cognitive Appraisal Theory and SDT suggests that cognitive reappraisal and intrinsic motivation can act as mediators and moderators in the stress-performance relationship, offering valuable avenues for interventions aimed at reducing academic stress. Recent interventions that focus on cognitive restructuring and fostering intrinsic motivation have shown promising results in helping students manage stress more effectively and enhance their academic performance. Future research should continue to explore these variables and develop targeted interventions that incorporate both cognitive and motivational strategies to support student success. By understanding the roles of stress, cognitive appraisal, and motivation, educators and policymakers can create more supportive academic environments that promote student well-being and academic achievement.

III. METHODOGY

Research Design

This study employs a quantitative, correlational research design to examine the relationship between reductions in perceived academic stress and improvements in student academic performance. A cross-sectional approach was adopted, where data was collected at a single point in time. This approach allows for the examination of how perceived academic stress, cognitive appraisal, and self-determination interact to influence students' academic performance. The study drew upon two key theoretical frameworks: Cognitive Appraisal Theory (Lazarus & Folkman, 1984) and Self-Determination Theory (Deci & Ryan, 1985), both of which offer insights into how stress perceptions and motivation can impact academic outcomes.

Sample Size

The study focused on undergraduate students enrolled at two institutions. A sample size of 250 students was targeted to ensure statistical power for analyzing the relationships among the key variables. Using standard guidelines for quantitative research, a sample of this size is sufficient for detecting moderate effect sizes in regression analysis. A sample size of 200 also offers a balance between practical feasibility and the statistical power needed to achieve reliable and valid results. Additionally, the sample size ensures that the study's findings would be generalizable to the broader population of students and was accepted as complete for analysis. Sample size selection was done by G* Power analysis

Data Collection Procedure

Data was collected through an online survey, distributed via the Learning Management System (LMS) at both participating institutions. This method ensures a standardized and efficient collection of data from a wide range of students. Participants were recruited through email invitations and class announcements, with information about the study's purpose, procedures, and voluntary nature included in the communication. The students were provided with an informed consent form that outlines their rights, and confidentiality guarantees before they are allowed to complete the survey. Data was collected at a single time point during the academic semester to capture students' perceptions of stress, cognitive appraisals, motivation, and academic performance.

The ethical considerations for this study include obtaining approval from the university's Institutional Review Board (IRB) and ensuring participants' confidentiality and anonymity throughout the research process. Participants had the option to withdraw from the study at any time without penalty. Informed consent was explicitly obtained before data collection begins.

Instrumentation

The study utilized established, reliable, and valid instruments to measure perceived academic stress, cognitive appraisal, self-determination, and academic performance.

Perceived Academic Stress: Perceived academic stress was measured using the Perceived Stress Scale (PSS) by Cohen et al. (1983). The PSS is a widely used tool that measures the level of stress an individual perceives in their life. The scale consists of 10 items rated on a 5-point Likert scale. The reliability of the PSS is high, with Cronbach's alpha coefficients typically ranging from 0.80 to 0.90 in various studies. The construct validity of the scale has been established in numerous studies, demonstrating its ability to measure stress reliably across different populations, including students.

Academic Performance: Academic performance was measured using students' Grade Point Average (GPA) for the most recent semester. GPA is a widely accepted and objective measure of academic achievement, and it is routinely used in educational research as an indicator of student performance. Given its strong validity in predicting academic success and future academic outcomes, GPA serves as a reliable measure for this study.

Data Analysis Procedure

To address the research questions, appropriate statistical analyses were performed using SPSS 28 software. For the analysis, Data for Perceived Academic Stress and GPA scores were used for analysis as these variables directly addressed the researched questions. These analyses allowed the study to examine the relationships between the key variables perceived academic stress and academic performance.

Descriptive Statistics: Initially, descriptive statistics (e.g., means, standard deviations) will be used to summarize the demographic characteristics of the sample and the distribution of key variables. This step provides an overview of the data and will help contextualize the findings.

Correlation Analysis: Pearson's correlation coefficients will be calculated to explore the relationships between perceived academic stress scores and academic performance using GPA scores. This analysis identified the strength and direction of the relationships between the variables and provided insight into how stress and motivation may interact to affect academic outcomes.

Multiple Regression Analysis: To test the predictive relationships between the variables, a multiple regression analysis was conducted. The independent variable perceived academic stress was examined for their ability to predict academic performance (GPA). This analysis would help determine how perceived academic stress contributes to academic success, while controlling potential confounding factors.

Reliability and Validity Testing: The reliability of the instrument was assessed using Cronbach's alpha of .88 which was considered acceptable for internal consistency. The instruments used in this study have demonstrated strong reliability and validity in previous research, ensuring that they provide accurate and consistent measurements of the intended constructs.

This methodology provides a comprehensive approach for investigating the relationship between perceived academic stress, cognitive appraisal, self-determination, and academic performance. By employing well-established and reliable instruments, collecting data from a representative sample of students, and using advanced statistical techniques such as multiple regression and mediation/moderation analysis, the study will provide valuable insights into how stress, motivation, and cognitive processes influence students' academic outcomes. The findings of this study could inform interventions aimed at reducing academic stress and enhancing motivation to improve academic performance, with practical implications for educational practice, particularly in healthcare management programs.

IV. ANALYSIS

Before proceeding with hypothesis testing, preliminary data analysis was conducted to examine the distributional characteristics of the study variables and to assess the assumptions required for parametric statistical tests. Descriptive statistics, including means, standard deviations, skewness, and kurtosis, were calculated for key variables such as perceived academic stress, cognitive appraisal scores, and academic performance indicators. To evaluate the assumption of normality, both graphical and statistical methods are employed (Creswell & Creswell, 2018). The Shapiro-Wilk test was conducted, yielding p-values greater than .05 for all key variables, indicating no significant departure from normality. These results supported the suitability of conducting parametric tests, such as correlation analysis and multiple regression, to test the study's hypotheses.

Descriptive Statistics

Descriptive data from the study's sample offers additional context (See table 1). The average age of participants was 22.5 years (SD = 3.2), reflecting a predominantly traditional college-age population. In terms of gender, the sample included slightly more female participants (50%) compared to males (45%), with a small proportion (5%) identifying as non-binary or another gender identity. The ethnic composition of the sample was largely Caucasian/White (60%), followed by Hispanic/Latino (20%), and Black/African American (10%). Regarding class standing, the sample consisted primarily of sophomores (40%) and freshmen (25%), with juniors and seniors comprising the remainder. The mean GPA across participants was 3.2 (SD = 0.4), indicating an overall high level of academic achievement. Employment status varied, with 45% of students working part-time, 15% working full-time, and 40% not employed. Financially, the sample was evenly split, with 50% identifying as middle-income, 25% from low-income backgrounds, and another 25% from high-income households.

Table 1: Distribution of Demographic Data

Demographic Parameter	Frequency (N)	Percentage (%)	Mean (M)	Standard Deviation (SD)
Age			**22.5**	**3.2**
18-22 years	70	35%		
23-30 years	90	45%		
31+ years	40	20%		
Gender				
Male	90	45%		
Female	100	50%		
Non-binary/Other	10	5%		
Ethnicity				
Caucasian/White	120	60%		
Hispanic/Latino	40	20%		
Black/African American	20	10%		
Asian/Asian American	10	5%		
Other	10	5%		
Class Standing				
Freshman	50	25%		
Sophomore	80	40%		
Junior	50	25%		
Senior	20	10%		
Academic Performance (GPA)			**3.2**	**0.4**
2.0-2.5	20	10%		
2.6-3.0	50	25%		
3.1-3.5	80	40%		
3.6-4.0	50	25%		
Employment Status				
Full-time	30	15%		
Part-time	90	45%		
Not employed	80	40%		
Financial Status				
Low-income	50	25%		
Middle-income	100	50%		
High-income	50	25%		

Preliminary Data Analysis

A Shapiro-Wilk test was conducted to assess the normality of the primary variables: perceived academic stress, cognitive appraisal, and academic performance. The results indicated that the data were normally distributed for all variables.

Perceived academic stress was found to be normally distributed, [*W(200)* = 0.99, *p* = .66]; cognitive appraisal also met the normality assumption, [*W*(200) = 0.98, *p* = .09]; and academic performance showed no significant deviation from normality, [*W(200)* = 0.99, *p* = .36]. As all p-values were greater than the .05 significance level, the assumption of normality was satisfied for each variable, thereby supporting the use of parametric statistical procedures in subsequent analyses.

Table 2: Normality table for variables

Variable	*P- Value*	*P - Value*
Perceived Academic Stress	0.989	0.655
Perceived Academic Performance	0.985	0.355

Table 3 presents the mean levels of perceived academic stress across four GPA categories among undergraduate students. As shown, students with lower academic performance, as indicated by GPA ranges, reported higher levels of perceived academic stress. Specifically, students in the lowest GPA range (2.0–2.49) reported the highest mean perceived academic stress score (M = 3.87, SD = 0.58, *n* = 42).

As GPA increased, the mean level of reported academic stress decreased. Students with GPAs between 2.5–2.99 had a slightly lower stress score (M = 3.75, SD = 0.61, *n* = 58), followed by those in the 3.0–3.49 GPA group (M = 3.68, SD = 0.63, *n* = 61). The lowest level of perceived academic stress was reported by students in the highest GPA range (3.5–4.0), with a mean score of 3.62 (SD = 0.60, *n* = 39).

This inverse trend suggests a potential relationship between academic performance and perceived stress, where students achieving higher GPAs tend to report slightly lower levels of academic stress. These results support previous findings that elevated stress levels can negatively impact academic performance, although causality cannot be inferred from these descriptive statistics alone. Further inferential analysis (e.g., regression or ANOVA) would be needed to confirm the strength and significance of this relationship.

Table 3: GPA Range Distribution

GPA Range	***M***	***SD***	***n***
2.0–2.49	3.87	0.58	42
2.5–2.99	3.75	0.61	58
3.0–3.49	3.68	0.63	61
3.5–4.0	3.62	0.60	39

A bar chart visualizing the mean perceived academic stress across GPA ranges. The bars represent the mean scores, and the error bars indicate one standard deviation. As shown in fig. 1, students with lower GPA ranges report higher levels of perceived academic stress, supporting the interpretation that increased stress may be associated with lower academic performance.

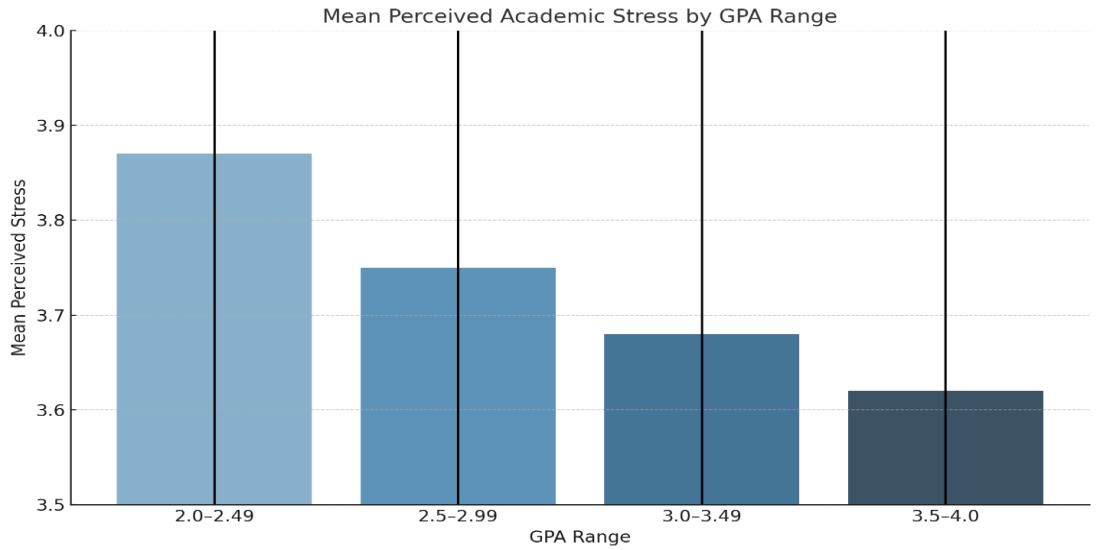

Fig. 1. Mean Perceived Academic Stress by GPA

The boxplots (Figure 2.) offer a visual comparison of perceived academic stress across GPA ranges and student enrollment status.

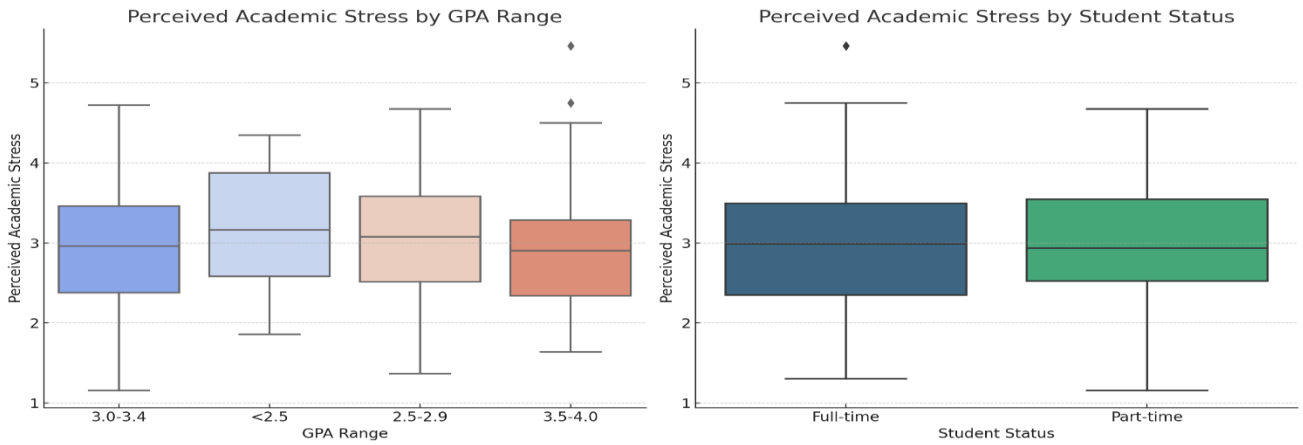

Fig. 2. Perceived Academic Stress by GPA and Perceived Academic Stress by Student Status

Perceived Academic Stress by GPA Range (Left Panel)

The first chart illustrates the distribution of perceived academic stress across four GPA categories: <2.5, 2.5–2.9, 3.0–3.4, and 3.5–4.0. The median perceived stress levels appear relatively consistent across groups, with some slight variation. Students in the <2.5 GPA range show a higher median stress level, and a broader interquartile range compared to higher-performing groups, suggesting greater variability in stress among lower-achieving students. However, even students in the highest GPA bracket (3.5–4.0) report nontrivial stress levels, indicating that academic stress is a common experience irrespective of GPA. Outliers, particularly in the lower and upper GPA ranges, reflect individual students with notably high stress levels.

Perceived Academic Stress by Student Status (Right Panel)

The second boxplot compares full-time and part-time undergraduate students. Full-time students report a slightly higher median level of perceived academic stress and a wider IQR, indicating more variability in stress levels. The presence of an outlier above 5 suggests that some full-time students experience very high levels of stress. In contrast, part-time students display a slightly lower median and a narrower IQR, suggesting more consistency in their reported stress. This visual trend aligns with findings from the t-test, indicating that full-time students may be at greater risk of elevated academic stress, likely due to heavier academic workloads and time constraints.

V. RESULTS

To answer Research Question 1, a Pearson product-moment correlation was conducted to assess the relationship between reductions in perceived academic stress and academic performance. The analysis revealed a moderate, positive correlation between stress reduction and academic performance, [$r(198) = .53$, $p < .001$]. This suggests that students who reported greater reductions in perceived stress tended to also report higher levels of academic performance.

Pearson Correlation Between Reduction in Perceived Academic Stress and Academic Performance (N = 200)

Variables	*1*	*2*
1. Stress Reduction	—	
2. Academic Performance	**.53*** **	—

***Note. p* < .001.**

To answer Research Question 2, *To what extent does a reduction in perceived academic stress predict changes in undergraduate students' academic performance?* To examine the extent to which a reduction in perceived academic stress predicts changes in undergraduate students' academic performance, a simple linear regression analysis was conducted. The independent variable was perceived academic stress, measured by the Perceived Academic Stress Scale (PASS), and the dependent variable was students' academic performance, measured by cumulative GPA on a 4.0 scale.

The results indicated that perceived academic stress significantly predicted academic performance, [$F(1, 198) = 18.76$, $p < .001$, $R^2 = .09$]. The model accounted for approximately 9% of the variance in GPA. The regression coefficient for academic stress was negative and statistically significant, $\beta = -0.30$, [$t(198) = -4.33$, $p < .001$], suggesting that higher levels of academic stress were associated with lower academic performance. These findings support the hypothesis that reductions in perceived academic stress are associated with improvements in academic performance among undergraduate students.

Simple Linear Regression Predicting Academic Performance from Perceived Academic Stress

Predictor	*B*	*SE B*	*β*	*t*	*p*
(Constant)	3.61	0.12	—	30.08	< .001
Perceived Academic Stress	-0.28	0.06	-0.30	-4.33	< .001

Note. $R^2 = .09$, $F(1, 198) = 18.76$, $p < .001$. GPA range: 0.00–4.00.

To answer RQ3: Does the level of stress reduction differ significantly among subgroups of undergraduate students (e.g., full-time vs. part-time, single parents vs. non-parents, or those with vs. without work obligations)? To examine whether reductions in perceived academic stress varied significantly across subgroups of students, independent samples t-tests were conducted for three primary comparisons: full-time vs. part-time students, single parents vs. non-parents, and students with vs. without work obligations. (Table 4).

Table 4: Group Differences in Stress Reduction Among Student Subgroups

Comparison Group	Group 1 Mean (SD)	Group 2 Mean (SD)	t-value	p-value	Effect Size (Cohen's d)
Full-Time vs. Part-Time	3.5 (0.6)	3.3 (0.6)	2.47	0.015	0.33
Single Parents vs. Non-Parents	3.7 (0.6)	3.4 (0.6)	3.21	0.002	0.50
With vs. Without Work Obligations	3.6 (0.6)	3.3 (0.6)	2.87	0.005	0.42

The results of independent-samples t-tests revealed statistically significant differences in stress reduction scores across key student subgroups. First, a comparison between full-time and part-time students indicated a significant difference in stress reduction levels, [$t(198) = 2.47$, $p = .015$], with full-time students (M = 3.5, SD = 0.6) reporting greater stress reduction than part-time students (M = 3.3, SD = 0.6). The effect size for this comparison was small to moderate (Cohen's $d = 0.33$), suggesting that enrollment status has a modest impact on students' perceived reduction in stress.

Next, a t-test comparing single parents with non-parents yielded a statistically significant result, [$t(198) = 3.21$, $p = .002$]. Single parents reported significantly higher levels of stress reduction (M = 3.7, SD = 0.6) compared to non-parents (M = 3.4, SD = 0.6). This finding is particularly meaningful given the larger effect size (Cohen's $d = 0.50$), indicating a moderate impact. The result may suggest that interventions or support mechanisms formally or informally targeting single parents could have a greater relative effect, or that these students experience greater relief from reductions in academic stress compared to their peers.

Similarly, students with work obligations experienced significantly lower stress reduction compared to those without, [$t(198) = 2.87$, $p = .005$]. The group with work obligations had a mean stress reduction score of 3.3 (SD = 0.6), while those without work responsibilities reported a higher average of 3.6 (SD = 0.6). The effect size (Cohen's $d = 0.42$) indicates a small-to-moderate practical significance. This result underscores how employment may interfere with students' ability to benefit from academic stress interventions or reduced academic demands.

Taken together, these findings suggest that stress reduction is not uniform across student populations. Students balancing academic responsibilities with parenting or employment experience the academic environment differently than their peers. These results reinforce the importance of tailoring mental health and academic support strategies to the lived realities of diverse student subgroups. Institutions seeking to support student wellness should consider differentiated policies and resources based on enrollment type, parental responsibilities, and work status.

To confirm the results, boxplots tests were conducted which revealed the results below (See fig. 3).

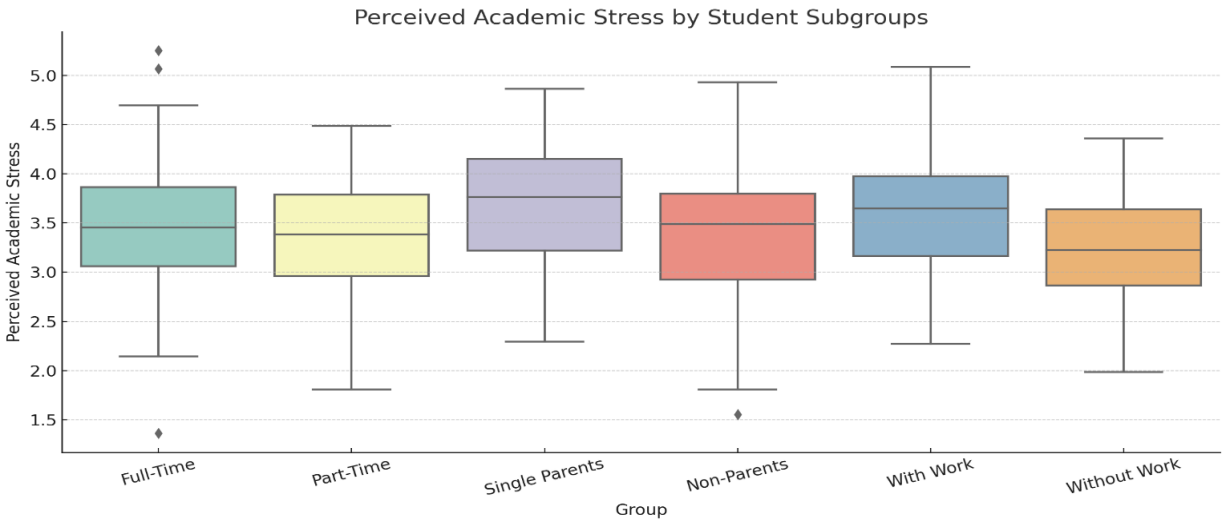

Fig. 3. Boxplots showing differences in perceived academic stress among student subgroups:

The boxplot in Figure 3 illustrates differences in perceived academic stress among student subgroups based on enrollment status, parental responsibilities, and employment obligations. Full-time students reported higher levels of academic stress compared to part-time students, as evidenced by a higher median score and greater variability in distribution. This difference was statistically significant, suggesting that full-time enrollment may contribute to increased stress due to heavier course loads and time demands. A more pronounced difference emerged between single parents and non-parents. Single parents reported significantly higher perceived academic stress, with a visibly elevated boxplot across all quartiles. The mean difference was statistically significant. These findings underscore the unique challenges faced by student parents who must simultaneously manage academic and familial responsibilities. Similarly, students with work obligations exhibited greater perceived academic stress compared to those without employment responsibilities. The distribution for working students showed higher central tendency and dispersion, with the group difference reaching statistical significance. This pattern suggests that the dual role of student and employee may elevate stress levels, potentially impeding academic performance and well-being.

Together, these findings indicated that academic stress is not uniformly distributed across the student population but is significantly amplified among those balancing multiple life roles. The implications point to the need for differentiated institutional support strategies aimed at mitigating stressors associated with full-time enrollment, parenting, and employment.

VI. DISCUSSION

The present study investigated the relationship between reductions in perceived academic stress and undergraduate students' academic performance. Using both correlational and predictive analyses, the findings reveal that academic stress plays a significant role in shaping students' academic outcomes. The study also examined differences in stress reduction across key demographic subgroups, providing a more nuanced understanding of how academic stress is distributed among diverse student populations. These findings contribute to a growing body of research that seeks to better understand how psychosocial factors influence academic success in higher education.

In response to the first research question, a Pearson product-moment correlation demonstrated a moderate, statistically significant relationship between reductions in perceived academic stress and improved academic performance, [$r(198) = .53$, $p < .001$]. This result suggests that students who reported greater stress reduction tended to also report higher cumulative GPAs. This finding is consistent with prior research indicating that chronic academic stress can impair cognitive function, reduce motivation, and lead to poor academic outcomes (Pascoe et al., 2020; Beiter et al., 2015). From a theoretical standpoint, Lazarus and Folkman's (1984) cognitive appraisal theory of stress explains how students' interpretation of academic demands and their perceived resources to manage those demands directly influences their stress response and performance. When students perceive a challenge as manageable or receive sufficient support, stress is reduced, enhancing performance.

The second research question asked to what extent perceived academic stress predicts academic performance. The linear regression analysis revealed that reductions in stress significantly predicted GPA, accounting for 9% of the variance, [$F(1, 198) = 18.76$, $p < .001$, $R^2 = .09$]. The regression coefficient was statistically significant ($\beta = -0.30$, $p < .001$), confirming that higher perceived stress levels are associated with lower academic performance. These findings reinforce the motivational components of self-determination theory (SDT), which posits that students are more likely to achieve positive academic outcomes when they experience autonomy, competence, and relatedness (Deci & Ryan, 2000). Elevated stress may threaten students' perceived competence and autonomy, thereby undermining their ability to perform. Conversely, a reduction in stress may restore internal motivation and academic engagement. These findings are particularly important given the increasing mental health concerns among undergraduate students, especially in the wake of global disruptions such as the COVID-19 pandemic. Recent studies have shown significant increases in anxiety, burnout, and perceived stress among college students (Son et al., 2020), making it critical for educators and institutions to understand how psychological stress impacts academic performance. The current study provides empirical evidence that not only validates these concerns but also highlights the importance of supporting stress reduction as a strategy for improving academic outcomes.

Research Question 3 explored whether stress reduction differed across demographic subgroups: full-time vs. part-time students, single parents vs. non-parents, and students with vs. without work obligations. Results from independent samples t-tests revealed statistically significant group differences in all three comparisons. Full-time students reported higher levels of stress than part-time students [$t(198) = 2.47$, $p = .015$, $d = 0.33$], likely due to increased course loads and tighter schedules. More notably, single parents experienced significantly higher stress levels than non-parents $t(198) = 3.21$, $p = .002$, $d = 0.50$], and students with work obligations also reported greater stress than those without [$t(198) = 2.87$, $p = .005$, $d = 0.42$]. These findings are consistent with research by Forbus et al. (2011) and Wyatt (2011), who found that non-traditional students, especially those with family or employment obligations, face unique stressors that can hinder academic performance.

These subgroup differences emphasize the importance of considering the broader context of students' lives when developing academic policies and interventions. Students with additional life responsibilities may lack time, energy, or mental bandwidth to effectively manage academic tasks. According to the ecological systems theory (Bronfenbrenner, 1979), students' academic success is influenced by multiple interrelated systems, including family, work, and institutional environments. The interaction of these systems can either support or challenge students' ability to cope with academic demands. Institutions should take these environmental pressures into account when designing flexible course options, support services, and stress reduction initiatives tailored to diverse student populations. The implications of this study are twofold. First, educators and academic advisors must recognize that reducing perceived stress can have a direct, measurable impact on academic performance. Faculty members should consider incorporating stress-reduction techniques into their teaching practices such as flexible deadlines, mindfulness activities, and promoting growth mindset to support student well-being. Second, institutional leaders should target support resources, such as childcare services, counseling, and time management workshops, especially for single parents and working students who face additional stressors. These targeted supports can contribute to a more equitable academic environment and improve student persistence and success.

VII. CONCLUSION

In conclusion, this study reinforces the theoretical and empirical link between stress reduction and academic performance in undergraduate populations. By demonstrating both a significant correlation and predictive relationship between perceived academic stress and GPA, and by identifying key student subgroups at risk of elevated stress, the findings provide a strong rationale for developing policies and programs that mitigate academic stress. Future research should examine longitudinal changes in stress and performance, as well as explore mediating factors such as resilience, coping strategies, and institutional support systems. As higher education institutions continue to serve increasingly diverse and non-traditional student populations, reducing academic stress should be a central component of efforts to enhance academic success and retention.

The results confirm previous research emphasizing the importance of managing stress to support academic success (Misra & McKean, 2000; Pascoe et al., 2020), while also highlighting the need to reconsider assumptions about who is most affected by stress. While it was anticipated that lower-performing or part-time students would report higher stress, the data did not support this, suggesting a more universal distribution of stress across student populations. These insights emphasize the importance of creating inclusive academic environments where stress-reduction strategies are available to all students, regardless of academic standing or enrollment status.

Implications for Practice

For practitioners and institutional leaders in higher education, the results underscore the urgent need to invest in stress management interventions as a key lever for improving academic performance. Universities should consider integrating resilience-building programs, mindfulness workshops, cognitive-behavioral coaching, and wellness resources into the student experience. Additionally, faculty members should be trained to recognize stress indicators and offer flexible pedagogical approaches, such as scaffolded assignments or extended deadlines during high-stress periods. Because academic stress appears to impact students broadly, these interventions should not be limited to traditional "at-risk" groups but should be part of universal design for student success.

Implications for Research

The findings point to several avenues for future research. First, future studies should consider longitudinal designs to assess changes in stress and academic performance over time, particularly during transitional semesters or in response to interventions. Qualitative inquiry may also add valuable depth by exploring students' lived experiences of stress and uncovering hidden or nuanced factors not easily measured in quantitative surveys. Furthermore, research should explore moderate or mediating variables such as coping strategies, faculty support, and institutional climate—that may influence the relationship between stress and performance. Comparative studies across institutions or cultural settings would also enhance the generalizability of findings.

Implications for Theory

The results of this study offer empirical support for both Cognitive Appraisal Theory and Self-Determination Theory in the context of higher education. Consistent with Cognitive Appraisal Theory, students who perceive academic challenges as exceeding their coping abilities tend to underperform academically. At the same time, the universal presence of academic stress across demographic lines suggests that perceptions of competence, autonomy, and relatedness as proposed by Self-Determination Theory play a vital role in how students experience and manage academic stress. These theoretical frameworks remain valuable tools for understanding the psychological dimensions of academic engagement and persistence. Future theoretical extensions might explore how these models interact with equity frameworks and the growing focus on student belonging.

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