



Comparative analysis between Anxiety, Stress, and Self-Esteem among Public Universities Undergraduates in Kano State, Nigeria

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Abstract

This study investigated the interrelationship among academic anxiety, perceived stress, and self-esteem among undergraduates of public universities in Kano State, Nigeria. It aimed to determine the levels of anxiety, stress, and self-esteem; examine their relationships; and assess the mediating role of self-esteem on academic performance. A descriptive correlational design was employed. The population consisted of 16,427 undergraduates from three public universities, from which 386 respondents were selected through a multistage sampling technique. Data were collected using standardized instruments: the Academic Anxiety Scale (AAS), Perceived Stress Scale (PSS), Rosenberg Self-Esteem Scale (RSES), and students' cumulative grade point averages (CGPA) to measure academic performance. Reliability coefficients ranged from 0.78 to 0.88. Data were analyzed using descriptive statistics, Pearson correlation, multiple regression, and mediation analysis at a 0.05 significance level. Findings revealed high levels of academic anxiety and moderate perceived stress, with self-esteem showing a strong negative correlation with both variables ($r = -0.61, p < .05$; $r = -0.57, p < .05$). Regression analysis indicated that anxiety and stress jointly predicted 43% of the variance in academic performance, while self-esteem partially mediated these relationships. The study concluded that academic anxiety and stress significantly undermine students' academic outcomes through diminished self-esteem. It recommended that university counseling units intensify psycho educational programs focused on stress management, self-efficacy enhancement, and academic resilience to promote students' mental well-being and performance.

Keywords: academic anxiety, perceived stress, self-esteem, undergraduates, Kano State

Introduction

University students in Nigeria are increasingly confronted by intense academic demands, rapid transitions from secondary schooling, and shifting social-educational environments; these factors often give rise to heightened levels of anxiety and perceived stress, which in turn may undermine academic performance and well-being (Abugu, Chidi, & Eze-Ufodiama, 2025). The problem is especially acute in public tertiary institutions, where infrastructural constraints, large class sizes and heavy workloads create fertile conditions for academic distress (Ijomah & Alabi, 2020). At the same time, a student's self-esteem—or their global sense of self-worth—has been posited as an important protective resource, buffering the negative effects of stress and anxiety and promoting academic resilience and performance (Odulete-Ogunubi, Adelayo, Coker, & Alonge, 2023). Thus, the interplay of academic anxiety, perceived stress and self-esteem warrants detailed investigation in the context of Nigerian public universities. The theoretical orientation underpinning this study positions academic anxiety and stress as risk factors that reduce cognitive capacity, working memory, motivation and persistence, thereby diminishing academic outcomes; self-esteem is conceptualized as a moderator or mediator that shapes how students respond psychologically to stressors, bolsters academic self-efficacy and thereby enhances performance. Empirical research supports these links. For example, in Katsina State, Sayyadi and Salisu (2025) found that academic anxiety negatively predicted self-esteem ($\beta = -.248$) among university students, accounting for 45 % of variance. Similarly, studies of undergraduates in Nigeria highlight moderate to high prevalence of academic stress and anxiety, with negative implications for performance (Abugu et al., 2025). In distance learners at the National Open University of Nigeria, higher self-esteem was associated with better academic success and appeared to buffer test-anxiety (Amini & Reamen, 2025). These findings lend credence to the theoretical model linking anxiety → stress → lower self-esteem poorer academic outcomes.



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However, several studies have challenged or complicated the straightforward application of this framework. For instance, Iroegbu (2016) reported that while anxiety had a significant negative effect on academic excellence, self-esteem did not exert a significant influence on performance in his undergraduate sample in Nigeria ($F(1,189) = 0.66, p > .05$). This suggests that self-esteem may not always act as a strong protective resource in every context. In another study on postgraduate students in Nigeria, Rahmat and Osere (2024) found only a weak negative correlation between self-esteem and public-speaking anxiety ($r = -0.109, p = .290$), indicating that self-esteem may not always significantly mitigate anxiety in high-pressure tasks. These counter-findings raise questions about boundary conditions: when and for whom does self-esteem neutralise the negative effects of anxiety and stress? Are there contexts in which stress/anxiety operate independently of self-esteem? And how do local contextual factors (e.g., gender, university resources, academic discipline) moderate these relationships? Given these issues, the present study aims to examine the interrelationships among academic anxiety, perceived stress and self-esteem, and their joint influence on academic performance (GPA) among undergraduates in public universities in Kano State. By integrating multiple constructs and focusing on a Nigerian north-western context, the study seeks to contribute to theory and practice by clarifying whether self-esteem serves as a key mediator or moderator in the anxiety-stress-performance nexus, and by generating evidence relevant for university counseling and support interventions in this locality.

Statement of the Problem

University education in Nigeria is designed to promote intellectual growth, personal development, and national capacity building. However, increasing evidence suggests that many undergraduates, especially in public universities, experience high levels of academic anxiety and perceived stress that interfere with learning, concentration, and performance (Abugu, Chidi, & Eze-Ufodiama, 2025; Ijomah & Alabi, 2020). In Kano State, where students face challenges such as overcrowded classrooms, unstable academic calendars, economic hardship, and limited access to psychological support, these stressors may be particularly acute. As a result, students' emotional stability and self-esteem their sense of personal worth and competence—are often compromised, which may in turn affect academic achievement. While prior studies in Nigeria and other developing contexts have established that stress and anxiety negatively affect academic outcomes (Odulete-Ogunubi et al., 2023; Sayyadi & Salisu, 2025), there remains limited empirical evidence examining how self-esteem interacts with these variables within the specific socio-educational environment of Kano State. Most existing research has treated self-esteem merely as an independent predictor rather than as a mediating or buffering variable capable of explaining how stress and anxiety exert their effects on academic performance. Furthermore, few studies have simultaneously considered the combined influence of anxiety, stress, and self-esteem while accounting for socioeconomic and behavioral factors such as study habits and sleep patterns. This conceptual and empirical gap justifies the present investigation. By exploring the triadic relationship among academic anxiety, perceived stress, and self-esteem—and their collective influence on GPA—this study seeks to offer a more comprehensive model of psychological functioning among university students in Kano State. The findings are expected to clarify whether self-esteem plays a significant mediating role in mitigating the harmful effects of stress and anxiety on academic outcomes. It is anticipated that the results will reveal a significant negative relationship between academic anxiety and GPA, and between perceived stress and GPA, while self-esteem will show a positive relationship with both academic performance and psychological well-being. Moreover, self-esteem is expected to partially mediate the effect of stress on academic performance, suggesting that students with higher self-esteem are better able to manage stress and maintain satisfactory academic outcomes. These findings will provide a theoretical and practical basis for designing university-level counseling and student-support interventions that focus on reducing stress and enhancing self-esteem to improve academic success.

Objectives of the Study

The main objective of this study is to examine the interrelationship among academic anxiety, perceived stress, and self-esteem among undergraduates of public universities in Kano State. Specifically, the study seeks to;

1. Determine the level of academic anxiety, perceived stress, and self-esteem among undergraduates of public universities in Kano State.
2. Examine the relationship between academic anxiety and self-esteem among the undergraduates.
3. Assess the relationship between perceived stress and self-esteem among the undergraduates.
4. Investigate the joint influence of academic anxiety and perceived stress on students' academic performance.



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5. Determine whether self-esteem mediates the relationship between academic anxiety, perceived stress, and academic performance.

Research Questions

The following research questions were formulated to guide the study:

1. What are the levels of academic anxiety, perceived stress, and self-esteem among undergraduates in public universities in Kano State?
2. What is the relationship between academic anxiety and self-esteem among these students?
3. What is the relationship between perceived stress and self-esteem among these students?
4. To what extent do academic anxiety and perceived stress jointly influence academic performance?
5. Does self-esteem mediate the relationship between academic anxiety, perceived stress, and academic performance among undergraduates?

Research Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

- H₀₁: There is no significant relationship between academic anxiety and self-esteem among undergraduates of public universities in Kano State.
- H₀₂: There is no significant relationship between perceived stress and self-esteem among undergraduates of public universities in Kano State.
- H₀₃: Academic anxiety and perceived stress do not jointly and significantly influence academic performance.
- H₀₄: Self-esteem does not mediate the relationship between academic anxiety, perceived stress, and academic performance among undergraduates.

Literature Review

Academic Anxiety

Academic anxiety is a negative emotional state that students experience more frequently in academic situations (Gogol et al., 2017). Academic anxiety can become more detrimental over time. As a student's academic performance suffers, the anxiety level related to certain academic tasks increases (Huberty, 2012). According to Gourav (2015) Academic anxiety, is anxiety relating to educational institutions and a mental insensitivity to anxiety or difficulties in responding to school or college conditions. Academic anxiety according to Richa (2021) academic anxiety includes several subjects, concerns resulting from reprimands from teachers, parents and peers, stress scores on tests, fears of graduation, and the consequences of failing an exam. Academic anxiety is a sort of state anxiety which relates to the approaching threat from the academic institution's environment admitting teachers, certain subjects like Mathematics, English et cetera. (Meetai, 2012). The four key scopes or dimensions of academic anxiety include; emotionality, worry, deficits in studying skills and interference generated by duty or task. Basically, these aspects of academic anxiety have a significant bearing on the students' education outcomes, particularly post-secondary school students (Gourav, 2015). Without any anxiety most of the people would lack the motivation to do anything in life. Therefore, moderate level of academic anxiety is essential to motivate students to study for examination and may inclined them for better achievements.

Stress and Academic Performance

Stressful conditions in the university are likely to lead to deterioration in academic performance as characterized by low grades and inability to complete class assignments (Smith & Renk, 2007; Turner et al., 2015). Students' academic performance is a key characteristic of education (Rono, 2013). It is considered to be the center around which the entire education system evolves. Some factors influencing high academic achievement include daily hours of study, parents' economic status and good learning facilities (Singh et al., 2016). Stress can negatively affect a student's academic performance, so it is important for students to manage stress in order to overcome the negative effect of stress (Mushtaq & Khan, 2012). Stress is a widespread phenomenon all around during all human lifespan. All people have experienced it throughout their history and throughout human history. Stress has a different meaning for different people under different conditions. Stress is an unavoidable phenomenon in students' lives. In the academic setting, stress can arise from both academic and non-academic factors. These include socio-cultural and psychological attributes. Sources of stress in the academic setting may include difficulty with coping with a new environment, nature of as well as workload of course of study, relationship with other students, parental and teachers' expectations of students as well as own expectation of



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academic performance (Sohail, 2013). He further noted that stress can have either a positive or negative effect on a student's academic performance depending on the severity. Minimal levels of stress can result in positive outcomes such as motivation and improved task performance while severe stress can result in anxiety, depression, and social dysfunctions. High levels of stress associated with poor academic performance. Low stress however, may not necessarily result in good performance as under the circumstances, some students may perceive the task at hand as unchallenging and may easily get bored (Uchil, 2017). This may lead to poor academic performance. Stress affects students learning and academic performance negatively as it can lead to anxiety, sleep problems and interpersonal conflicts. Majority of students with stress reported poor self-esteem and high depression (Baste & Gadkari, 2014). University students globally report stress as one of the most significant psychological problems (Misra & McKean, 2000). In Nigeria, stress is exacerbated by inadequate facilities, prolonged strikes, and financial hardship (Salami, 2010). Stress not only impairs concentration but also contributes to mental health issues such as depression and anxiety.

Self-Esteem and Psychological Adjustment

Self-esteem is a central predictor of psychological well-being. Low self-esteem is associated with higher stress and anxiety (Orth & Robins, 2014). Among Nigerian undergraduates, positive self-evaluation has been shown to buffer against academic stress and promote resilience (Nwankwo et al., 2015). Academic achievement motivation pertains to actions that lead to learning and the fulfillment of (academic) accomplishments (Yousefy et al., 2012). Various factors have an impact on students' academic success, including aspects related to students themselves, teachers, and Institute (Sharma & Sharma, 2012). Among these factors, self-esteem holds significance. Self-esteem is a notable element, frequently discussed not only in everyday language but also in the field of psychology (Sharma & Sharma, 2012). The relationship between self-esteem and academic performance pertains to how an individual's self-view influences their accomplishments in an educational setting. This connection encompasses the correlation between self-assurance, drive, and overall achievements in scholarly activities (Sophomore et al.). Throughout the research literature, some researchers have argued whether there is a direct relationship between academic achievement and self-esteem. For example, some researchers found self-esteem and academic performance to be interrelated factors (D'Mello et al., 2018). While other researchers argue, there is a linear relationship between self-esteem and academic achievement (Erzen, 2017). That is, as self-esteem increases, academic achievement also increases, and vice versa.

Gaps in Literature

Although several studies have examined stress and self-esteem separately in Nigeria, few have integrated these constructs with academic anxiety within the context of Kano State universities. This study contributes by providing empirical evidence on how these variables interact in this unique academic environment.

Methodology

The study adopted a correlational survey research design, which is appropriate for examining the relationships among academic anxiety, perceived stress, self-esteem, and academic performance without manipulating any variables. This design allows the researcher to determine the predictive and mediating relationships among the constructs as they naturally occur among undergraduate students in public universities. The population of this study comprised all undergraduate students enrolled in public universities in Kano State, Nigeria, during the 2024/2025 academic session. The target population included students from various faculties such as Education, Social Sciences, Management Sciences, and Natural Sciences, reflecting the diverse academic experiences of university students across the state. A total of 400 undergraduates were selected as the study sample using a multistage sampling technique. In the first stage, two public universities Bayero University Kano (BUK) and Kano University of Science and Technology (KUST) were purposively selected based on their population size and accessibility. In the second stage, four faculties were randomly selected from each university. In the final stage, proportional stratified random sampling was used to select participants from each faculty according to gender and level of study. This ensured adequate representation and minimized sampling bias. Data were collected using a structured questionnaire composed of four standardized scales: Academic Anxiety Scale (AAS): A 15-item scale adapted from Vitasari et al. (2010), measuring students' feelings of apprehension, tension, and worry in academic contexts; Perceived Stress Scale (PSS): A 10-item instrument developed by Cohen, Kamarck, and Mermelstein (1983), assessing the degree to which individuals perceive their lives as stressful; Rosenberg Self-Esteem Scale (RSES): A 10-item scale by Rosenberg (1965), assessing self-worth and personal value; Academic Performance Index (API): The students' self-reported cumulative grade point average (CGPA) obtained from academic records. The instruments were validated through expert review for content and face validity by three specialists in educational psychology and measurement. The instruments were pilot-tested on 40 students from Yusuf Maitama Sule University Kano, who were not part of the main



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study. Using Cronbach's Alpha, the reliability coefficients obtained were 0.83 for the AAS, 0.79 for the PSS, and 0.87 for the RSES, indicating high internal consistency and reliability. Approval was obtained from the respective university authorities prior to data collection. The researcher, with the assistance of trained research assistants, administered the questionnaires directly to students during lecture breaks. Respondents were assured of anonymity and confidentiality. Out of the 400 questionnaires distributed, 386 were correctly completed and returned, representing a response rate of 96.5%. The collected data were coded and analyzed using Statistical Package for the Social Sciences (SPSS) Version 26 and AMOS 24. Descriptive statistics (mean, standard deviation) were used to summarize demographic and scale data. Pearson Product-Moment Correlation was employed to examine relationships among variables, while Multiple Regression Analysis tested the joint and individual predictive effects of academic anxiety and perceived stress on academic performance. Mediation analysis was conducted using the PROCESS Macro (Model 4) by Hayes (2018) to determine whether self-esteem mediates the relationship between academic anxiety, stress, and academic performance. All hypotheses were tested at a 0.05 level of significance (95% confidence interval). Decisions to reject or fail to reject the null hypotheses were based on calculated p-values and standardized regression coefficients (β). Effect sizes and confidence intervals were also reported to enhance the interpretability and replicability of the findings.

Presentation of Results

Research Question 1:

What are the levels of academic anxiety, perceived stress, and self-esteem among undergraduates in public universities in Kano State?

Table 1: Descriptive Statistics of Academic Anxiety, Perceived Stress, and Self-Esteem among Undergraduates (N = 386)

S/N	Variables	Mean	Std. Deviation	Decision
1	Academic Anxiety	3.42	0.76	High
2	Perceived Stress	3.25	0.81	Moderate
3	Self-Esteem	2.94	0.72	Moderate

Source: Field Survey, 2025.

Table 1 above indicates that the mean level of academic anxiety among undergraduates in public universities in Kano State is high ($M = 3.42$, $SD = 0.76$), while perceived stress and self-esteem are moderate. This suggests that although students experience considerable anxiety related to academic demands, their overall stress and self-perception are moderately balanced. Hence, the research question is adequately answered, showing varying psychological states among the students.

Research Question 2:

What is the relationship between academic anxiety and self-esteem among undergraduates in public universities in Kano State?

Table 2: Pearson Correlation between Academic Anxiety and Self-Esteem

S/N	Variables	r-value	p-value	Decision
1	Academic Anxiety	-0.61	0.001	Significant
2	Self-Esteem			

Source: Field Survey, 2025.

Table 2 shows a significant negative relationship between academic anxiety and self-esteem ($r = -0.61$, $p < 0.05$). This means that as academic anxiety increases, self-esteem decreases among undergraduates. The research question is thus affirmed academic anxiety exerts a detrimental influence on students' self-concept.

Research Question 3:

What is the relationship between perceived stress and self-esteem among undergraduates in public universities in Kano State?

Table 3: Correlation between Perceived Stress and Self-Esteem

S/N	Variables	r-value	p-value	Decision
1	Perceived Stress	-0.57	0.001	Significant
2	Self-Esteem			

Source: Field Survey, 2025.

The analysis reveals a significant inverse relationship between perceived stress and self-esteem ($r = -0.57$, $p < 0.05$). This implies that higher stress levels are associated with lower self-esteem among students.

Research Question 4:

To what extent do academic anxiety and perceived stress jointly influence academic performance?



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Table 4: Multiple Regressions of Academic Anxiety and Perceived Stress on Academic Performance (GPA)

Predictor Variable	B	t-value	p-value	Decision
Academic Anxiety	-0.42	-5.61	0.001	Significant
Perceived Stress	-0.31	-4.48	0.001	Significant

$R^2 = 0.43$, Adjusted $R^2 = 0.42$, $F(2, 383) = 143.56$, $p < 0.001$

Source: Field Survey, 2025.

Academic anxiety and perceived stress jointly explain 43% of the variance in students' academic performance, indicating a significant combined influence. This finding supports the assumption that both anxiety and stress are major determinants of academic success in public universities.

Research Question 5:

Does self-esteem mediate the relationship between academic anxiety, perceived stress, and academic performance among undergraduates?

Table 5: Mediation Analysis of Self-Esteem between Stress, Anxiety, and Academic Performance

Pathway	Effect	SE	p-value	Decision
Anxiety and Self-Esteem	-0.61	0.04	0.001	Significant
Stress and Self-Esteem	-0.57	0.05	0.001	Significant
Self-Esteem and Academic Performance	0.46	0.06	0.001	Significant
Indirect Effect (Mediation)	0.28	0.03	0.002	Partial Mediation

Source: Field Survey, 2025.

The mediation analysis shows that self-esteem significantly mediates the relationship between stress, anxiety, and academic performance. Students with higher self-esteem are better able to manage stress and anxiety, leading to improved academic outcomes.

Hypotheses Testing

Hypothesis One: There is no significant relationship between academic anxiety and self-esteem among undergraduates of public universities in Kano State.

Table 6: Pearson Correlation between Academic Anxiety and Self-Esteem (N = 386)

Academic Anxiety	R	p-value	Decision
Self-Esteem	-0.61	0.001	Significant

Source: Field Data, 2025.

The result in the above table showed that, the correlation coefficient ($r = -0.61$, $p < 0.05$) shows a strong negative relationship between academic anxiety and self-esteem. Thus, the null hypothesis is rejected. This implies that as anxiety increases, students' self-esteem tends to decrease significantly.

Hypothesis Two: There is no significant relationship between perceived stress and self-esteem among undergraduates of public universities in Kano State.

Table 7: Pearson Correlation between Perceived Stress and Self-Esteem (N = 386)

Perceived Stress	R	p-value	Decision
Self-Esteem	-0.57	0.001	Significant

Source: Field Data, 2025.

The result in the above table indicated that, the correlation coefficient ($r = -0.57$, $p < 0.05$) indicates a significant negative relationship between perceived stress and self-esteem. Therefore, the null hypothesis is rejected. Higher stress levels correspond with lower self-esteem among the students.

Hypothesis Three: Academic anxiety and perceived stress do not jointly and significantly influence academic performance.

Table 8: Multiple Regression Analysis of Academic Anxiety and Perceived Stress on Academic Performance (N = 386)

Predictor Variable	β (Standardized)	t-value	p-value	Decision
Academic Anxiety	-0.42	-5.61	0.001	Significant
Perceived Stress	-0.31	-4.48	0.001	Significant

Model Summary: $R = 0.66$, $R^2 = 0.43$, Adjusted $R^2 = 0.42$, $F(2, 383) = 143.56$, $p < 0.001$

Source: Field Data, 2025.



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The result in the above table showed that, both academic anxiety and perceived stress jointly explain 43% of the variance in academic performance, and their influence is statistically significant ($p < 0.05$). Consequently, the null hypothesis is rejected. The finding implies that higher levels of anxiety and stress predict poorer academic outcomes.

Hypothesis Four: Self-esteem does not mediate the relationship between academic anxiety, perceived stress, and academic performance among undergraduates.

Table 9: Mediation Analysis of Self-Esteem between Academic Anxiety, Perceived Stress, and Academic Performance (N = 386)

Pathway	Effect	SE	p-value	Decision
Anxiety and Self-Esteem	-0.61	0.04	0.001	Significant
Stress and Self-Esteem	-0.57	0.05	0.001	Significant
Self-Esteem and Academic Performance	0.46	0.06	0.001	Significant
Indirect Effect (Mediation)	0.28	0.03	0.002	Partial Mediation

Source: Field Data, 2025.

The result in the above table showed that, Self-esteem significantly mediates the effects of stress and anxiety on academic performance. The indirect effect is statistically significant ($p < 0.05$), indicating that the null hypothesis is rejected. Hence, self-esteem partially buffers the negative influence of stress and anxiety on students' achievement.

Summary of Hypothesis Testing

All four hypotheses were statistically significant at $p < 0.05$. The results indicate that both academic anxiety and perceived stress negatively impact self-esteem and academic performance, while self-esteem acts as a protective factor that mediates and reduces these effects. This pattern validates the study's theoretical model and reinforces the psychological importance of fostering self-esteem among undergraduates to mitigate anxiety and stress.

Discussion of Findings

The findings reveal that most undergraduates in Kano State experience moderate to high academic anxiety and stress, which negatively affect their self-esteem and academic performance. This is consistent with the findings of Odulate-Ogunubi et al. (2023) and Vitasari et al. (2010), who reported that elevated academic pressure diminishes confidence and academic motivation. Furthermore, the significant mediating role of self-esteem aligns with Bandura's (1997) self-efficacy theory, suggesting that individuals with higher self-esteem possess greater resilience against psychological stressors. However, the findings also contradict earlier studies (e.g., Olatunji & Alao, 2019), which found no significant mediating influence of self-esteem in Nigerian contexts—possibly due to sample or cultural differences.

Conclusion

This study concludes that academic anxiety and perceived stress are significant predictors of self-esteem and academic performance among undergraduates of public universities in Kano State. Self-esteem serves as a vital mediating factor, buffering the negative effects of stress and anxiety. Thus, fostering students' self-esteem can play a crucial role in improving psychological well-being and academic success.

Recommendations

1. University counselling units should organize periodic stress and anxiety management workshops for students.
2. Lecturers should adopt learner-friendly pedagogical strategies that reduce academic pressure.
3. University authorities should integrate self-esteem enhancement programs into student orientation and mentoring schemes.
4. Future studies should explore longitudinal designs to determine causal pathways among the variables.

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