

TEST ANXIETY AND TEACHING–LEARNING OUTCOMES AMONG UNDERGRADUATE STUDENTS: A REVIEW OF EMPIRICAL STUDIES

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Abstract

Test anxiety has become a persistent psychological challenge within higher education, with clear implications for students' academic performance and the effectiveness of teaching and learning. Excessive anxiety before or during examinations can impair attention, memory, motivation, and confidence, thereby undermining learning outcomes despite adequate preparation. This paper reviews empirical studies on the influence of test anxiety on teaching and learning among undergraduate students. The review clarifies the concepts of test anxiety, teaching, and learning, and discusses relevant theoretical explanations, including Spielberger's State–Trait Theory of Anxiety and Sarason's Four-Factor Theory of Test Anxiety. Empirical evidence consistently shows a negative relationship between test anxiety and academic performance, as well as gender differences in anxiety levels. The paper concludes by highlighting implications for lecturers, counsellors, and educational administrators, and suggests strategies for reducing test anxiety to enhance effective teaching and learning in Nigerian universities.

Keywords: Test anxiety, teaching and learning, academic performance, undergraduate students

Introduction

Assessment is a central component of the teaching and learning process in higher education. Through assessment, lecturers evaluate students' understanding, progress, and achievement of learning objectives. Among the various assessment methods, tests and examinations remain the most widely used tools for measuring academic performance in universities. However, testing situations often provoke fear, worry, and emotional discomfort among students, particularly when the perceived consequences of failure are high.

Test anxiety refers to an excessive level of anxiety experienced before or during examinations, which goes beyond normal nervousness and interferes with performance. While a moderate level of anxiety can motivate preparation and alertness, high levels of anxiety can disrupt concentration, memory retrieval, and problem-solving abilities. Undergraduate students are especially vulnerable due to academic workload, fear of failure, competition, parental expectations, and concerns about future career prospects.

In Nigerian universities, where examination outcomes strongly influence academic progression and employability, test anxiety has become a significant concern. Empirical studies have shown that test anxiety negatively affects students' academic performance and learning outcomes, thereby influencing the overall effectiveness of teaching and learning. Despite its importance, test anxiety is often overlooked in instructional planning and student support services. This review therefore examines empirical studies on test anxiety among undergraduate students, with emphasis on its implications for teaching and learning.

Concept of Test Anxiety

Test anxiety is a psychological condition characterized by intense fear, worry, tension, and physiological arousal in evaluative situations (Zeidner, 1998; Akinsola & Nwajei, 2013). Feldman (2006) described it as an unpleasant emotional response involving apprehension and concern about possible failure. Stober (2004) identified two major components of test anxiety: worry, which involves negative thoughts about performance and consequences of failure, and emotionality, which refers to physiological reactions such as increased heart rate, sweating, and nervousness.

Test anxiety can impair students' academic functioning by diverting attention away from the task, reducing working memory capacity, and lowering self-confidence. It affects both high and low achieving students and may lead to avoidance of tests, poor study habits, and academic underachievement (Wachelka & Katz, 1999). In severe cases, it can negatively influence students' mental health and overall academic engagement.

Concept of Teaching and Learning

Teaching and learning involve a dynamic interaction between lecturers and students aimed at knowledge transmission, skill development, and attitude formation. Munna and Kalam (2021) described teaching and learning as a process through which teachers facilitate learning experiences that enable students to acquire new knowledge, skills, and values. Effective teaching and learning require not only well-structured content and instructional strategies but also a supportive psychological environment.

When students experience high test anxiety, the teaching–learning process is compromised. Anxiety can reduce students' participation, motivation, and ability to benefit from instruction, thereby limiting the achievement of instructional objectives.

Theoretical Framework

Spielberger's State–Trait Theory of Anxiety

Spielberger (1972) distinguished between state anxiety and trait anxiety. State anxiety is a temporary emotional condition characterized by feelings of tension and apprehension that fluctuate depending on situational demands, such as examinations. Trait anxiety, on the other hand, is a relatively stable personality characteristic that predisposes individuals to perceive situations as threatening.

In testing situations, students with high trait anxiety are more likely to interpret examinations as threatening and to experience intense state anxiety. Such students often display heightened physiological arousal, excessive worry, and intrusive thoughts that interfere with task performance (Zeidner, 1998). This theory explains why some students consistently experience test anxiety across different academic contexts.

Sarason's Four-Factor Theory of Test Anxiety

Sarason (1984) conceptualized test anxiety as comprising four components: tension, worry, bodily symptoms, and test-irrelevant thoughts. Tension and bodily symptoms represent emotional and physiological reactions, while worry and test-irrelevant thoughts reflect cognitive aspects of anxiety. According to this theory, cognitive components, particularly worry and intrusive thoughts, are most detrimental to academic performance because they divert attention away from the test task.

This framework is relevant in understanding how test anxiety disrupts learning and performance by interfering with concentration, information processing, and effective response to test demands.

A substantial body of empirical research has examined the relationship between test anxiety and academic achievement among university students, with findings largely indicating a negative association between the two variables, though with some inconsistencies across contexts and disciplines.

Zamir and Hina (2013) investigated the relationship between test anxiety and academic achievement among university students in Islamabad. Using a descriptive survey design, 237 students were randomly selected from a population of 3,000. Data were collected using the Test Anxiety Inventory (TAI) and analysed through correlation and regression techniques. The findings revealed a significant negative relationship between test anxiety and students' academic achievement, indicating that higher levels of test anxiety were associated with lower performance. The study further identified test anxiety as a major contributor to students' underachievement, while emphasizing that appropriate training and coping strategies could effectively reduce anxiety levels and improve academic outcomes.

Similarly, Rizwan and Nasir (2010) examined test anxiety and academic achievement among postgraduate students in Pakistan. A sample of 414 students (116 males and 298 females) was drawn from a population of 4,200 using random sampling. Employing the TAI and analysing data through Pearson correlation and regression analysis, the study found a significant negative relationship between test anxiety and academic achievement. Importantly, the cognitive component of anxiety (worry) was found to contribute more significantly to poor performance than affective components, suggesting that intrusive thoughts and fear of failure play a critical role in academic underachievement.

In contrast, Dawood et al. (2016) explored the relationship between test anxiety and academic achievement among undergraduate nursing students in Saudi Arabia using a cross-sectional survey design. A convenience sample of 277 female students participated in the study. Although a high proportion of students experienced moderate to severe levels of test anxiety, the findings revealed no significant relationship between test anxiety and Grade Point Average (GPA). This inconsistency suggests that contextual factors such as professional discipline, assessment format, and grading systems may moderate the effect of test anxiety on academic outcomes.

Ahmad, Hussain, and Khan (2018) examined test anxiety, gender, and academic achievement among undergraduate university students using a descriptive survey design. A sample of 126 students was selected, and data were analysed using Pearson Product Moment Correlation. The findings revealed an inverse relationship between test anxiety and CGPA. Although female students reported slightly higher anxiety levels, they also recorded higher academic performance compared to male students, suggesting that moderate anxiety may not necessarily impair performance when effective coping mechanisms are present.

Chappell et al. (2005) conducted a large-scale study among undergraduate and postgraduate students in New Jersey to examine the relationship between test anxiety and academic performance. Using a descriptive survey design, 1,414 students were sampled from a population of 4,000. The findings indicated a small but significant inverse relationship between test anxiety and GPA. Interestingly, female students reported higher test anxiety levels but also achieved higher GPAs than their male counterparts at both undergraduate and postgraduate levels, further highlighting the complex nature of the anxiety–performance relationship.

Dordianaejad et al. (2011) investigated test anxiety and academic performance among medical university students using a descriptive cross-sectional design. A sample of 150 students was selected, and data were analysed using Spearman correlation and Mann–Whitney tests. The results revealed a negative correlation between test anxiety and academic performance, with most students reporting low to moderate anxiety levels. The study also found a positive relationship between age and test anxiety, while semester of study showed no significant effect, suggesting that personal and developmental factors may influence anxiety more than academic level.

Adeoye-Agboola and Evans (2015) examined anxiety and academic performance among postgraduate students at the University of Bedfordshire, United Kingdom. Using a cross-sectional survey design,

150 students were purposively sampled. The findings showed a significant relationship between anxiety and academic performance, with workload, coping strategies, educational system changes, and future career concerns identified as major anxiety-inducing factors. The study recommended broader investigations involving both undergraduate and postgraduate populations.

In Nigeria, Afolayan et al. (2013) investigated anxiety and academic performance among nursing students in the Niger Delta region. The descriptive survey involved 50 purposively selected students. The findings revealed no significant gender difference in anxiety levels and academic performance, although anxiety manifested in psychological and behavioural disturbances. The authors emphasized the importance of maintaining optimal psychological well-being during examinations to enhance academic achievement.

Collectively, these empirical studies demonstrate that test anxiety is a pervasive psychological factor that often undermines academic achievement, though its impact may vary depending on gender, discipline, assessment structure, and coping mechanisms.

Author's Analytical Position on Test Anxiety and Teaching–Learning Outcomes

As a position paper, this review goes beyond summarising empirical findings to critically interpret the literature on test anxiety. While most studies establish a negative relationship between test anxiety and academic achievement, the inconsistencies observed suggest that test anxiety should not be viewed as a unidimensional construct. Rather, its effects depend on intensity, cognitive appraisal, and contextual factors such as assessment practices, instructional support, and students' coping skills.

From an educational psychology perspective, the cognitive component of test anxiety, particularly worry and intrusive thoughts, emerges as the most detrimental to learning and performance. This supports attentional control theories, which argue that anxiety consumes cognitive resources necessary for effective information processing. Furthermore, evidence that some students, particularly females, achieve high academic performance despite elevated anxiety levels suggests the presence of adaptive coping strategies that mitigate the negative effects of anxiety.

Therefore, test anxiety should be conceptualised not merely as a student deficit but as an outcome of the interaction between learner characteristics and instructional environments. University assessment systems that emphasize high-stakes testing without adequate feedback and psychological support may inadvertently intensify anxiety and undermine learning.

Conclusion

This paper reviewed empirical studies on test anxiety and its influence on teaching and learning among undergraduate students. The evidence indicates that excessive test anxiety negatively affects attention, memory, motivation, and academic performance, thereby undermining effective teaching and learning. Given the central role of examinations in university education, addressing test anxiety is essential for improving learning outcomes and ensuring fair assessment practices.

Recommendations

1. University lecturers should adopt diverse assessment methods and provide clear information about test formats to reduce uncertainty and anxiety.
2. Counselling units in universities should design intervention programmes focusing on test anxiety management, study skills, and coping strategies.
3. Students should be trained in effective time management, examination preparation, and relaxation techniques.
4. Educational policymakers should integrate psychological support services into academic programmes to promote students' emotional well-being.

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