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Test Anxiety, Gender and Emotional Intelligence Competencies and Academic Performance among Secondary School students in Ondo State

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Abstract
This study adopted survey research design to investigate test anxiety, gender and emotional intelligence competencies as predictors of academic performance of secondary school students in mathematics in Ondo State. The population of the study consisted all senior secondary school II students in Ondo State. Multi-stage sampling procedure was used to select 360 students for the study. It was guided by two research questions and four hypotheses tested at 0.05 level of significance. A questionnaire titled Emotional Intelligence Competencies and Test Anxiety Questionnaire (EICTAQ) and a proforma were used as instruments to collect data. Data collected were analysed using percentages, multiple regression and PPMC statistics. Findings showed, among others, that test anxiety, gender, and emotional intelligence competencies had significant influence on the academic performance of students in mathematics ($F_{(3, 356)} = 862.302$); $p < 0.05$). The result also revealed positive significant relationship between emotional intelligence and academic performance in mathematics ($r = 0.67$) and negative moderate relationship between test anxiety and academic performance ($r = -0.46$). There was significant relationship between gender and academic performance of students in mathematics ($r = 0.591$). It was recommended that students' emotional intelligence competencies be enhanced with programmes to mitigate test anxiety and improve students' performance.

Keywords: test anxiety, gender, emotional intelligence competencies, academic performance

Introduction
Education is a fundamental tool for total development of an individual. The purpose of educational experience is learning, a process through which students develop skills and knowledge through a variety of experiences that are designed and monitored by teachers. It is believed that academic performance is the ultimate goal expected by students, teachers and other stakeholders in education. The performance of students on various subject areas is a major task for all. Academic performance refers to how well students can accomplish the classroom task given to them by their teachers; it is the extent at which they cope with their studies in relation to the stipulated aims and objectives of the school. Academic performance is usually reflected in learner's ability to be able to communicate the knowledge they have acquired within a given period of time verbally or most of the time, to put it down on paper and measured using test or any other valid instrument. Academic performance is a complex construct

influenced by various factors, including test anxiety, Emotional Intelligence (EI), motivation and cognitive ability and so on. Research has shown that test anxiety can have a negative impact on academic performance, while EI can have a positive impact (Cassady & Johnson, 2002; Chikaodi & Tariah, 2019).

Emotional intelligence (EI) is the area of cognitive ability involving traits and social skills that facilitate interpersonal behaviour. Intelligence can be broadly defined as the capacity for goal-oriented adaptive behaviour; emotional intelligence focuses on the aspects of intelligence that govern self-knowledge and social adaptation. Mayer and Salovey (1987) as cited in Goleman (1995) defined emotional intelligence as the ability to monitor one's and others' emotion to discriminate among and to use this information to guide one's thinking and action. To them, emotional intelligence comprises four broad areas namely; competences, perception, appraisal and expression of emotion to facilitate thinking, understanding, analyzing and implementing emotional knowledge and managing emotion. Emotional intelligence is described as the art of handling emotionally charged situation, the ability to stay focused under a conflict, handle criticism, diffuse anger and manage other forms of confrontation that can make or break one in life. Thus, it requires emotional intelligence to make it to the top.

A child's emotional state at school is said to influence his/her selective attention, recall, event interpretation, decision making, motivation and problem-solving abilities (Mkpaoro, 2006). These in turn affect his academic performance. According to Akinboye (2002), emotional intelligence is associated with success at school, because social and emotional skills have been found to create higher educational performance. It was estimated that 80% of human success could be attributed to emotional intelligence while the remaining 20% belongs to intelligence quotient. Afridi and Ali (2019) and Al-khawaldeh (2023) reported from their various studies, that emotional intelligence has a statistically significant relationship with academic performance of students.

In Nigeria, excellent academic qualification and high performance which are measured by achievement tests have been regarded as the parameters for advancement, recruitment and placement in both public and private organizations. More importantly, these parameters have also been adopted in selection of candidates for admission into tertiary institutions. Due to this high premium placed on academic performance and the societal demand for excellence, individuals do everything possible to obtain excellent results (Iroegbu, 2013). This urge to excel placed those concerned, particularly the adolescent students, at varying levels of test anxiety and tension which when it is high may results in negative academic performance (Ilogho, 2019). Test can be described as a device or procedure that can be used to obtain a systematic sample of an aspect of behaviour from where the totality of such behaviour can be inferred (Ogunmakin & Popoola, 2003). The achievement test, which is one of the types of test, is responsible for bringing about test anxiety in a testee because it has wrong and right responses.

Test anxiety can, in some cases, be facilitating because it makes one to be aware and prepare for the test but when it is too much, it becomes disturbing. At this stage some people find it difficult to remember what they have learnt over the weeks and months, and do not put any

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reasonable thing down during the examination. Excess anxiety seems to possess a harmful effect on the academic performance of adolescents (Lufi et al., 2004; Ilogho, 2019). Iroegbu (2013) rightly pointed out that test anxiety can also be caused by parent who criticizes and expects perfection from their adolescent children.

Test anxiety, according to Al-Khawaldeh (2023), is a physiological state, characterized by cognitive, somatic, emotional and behavioural components which combine to create sweating, dizziness, headaches, racing heart beats, nausea, fidgeting, drumming on a desk, fear, apprehension and worry. Test anxiety may also be viewed as a state of uneasiness and distress, before and during a test that often lowers performance (Ossai, 2011). Test anxiety can equally be defined as the set of phonological, physiological and behavioural responses that accompany concern about possible negative consequences of failure on the examination or similar evaluative situation (Rezazadeh & Tavakoli, 2019). According to Bonaccio et al. (2011), test anxiety includes worry and emotionality. Worry has to do with the cognitive distress connected to the testing situation, which is based on what the testee is thinking about. Emotionality on the other hand deals with the affective dimension which refers to the physical reactions such as nervousness, panicking and physical discomfort of students during testing situation.

It has been recognized that test-anxiety plays significant role in students' learning and academic performance. Reilly and Lewis (1991) say that test-anxiety is hampering to young people's academic performance. Academic performance can be described as an indicator of learning gains from course of instruction. High test anxiety may be considered as one of the main factors for low academic performance of adolescent students due to cognitive distraction created by task; that is, irrelevant thinking in the examination situation (Al-Khawaldeh, 2023). It has been observed that if one's fear is too strong; it can interfere during examination with the ability to recall material learnt.

Test anxiety is a state of uneasiness, worry or feelings of uncertainty about impending or on-going evaluation programme (Okorodudu & Ossai, 2004). Test anxiety can also be defined as all behaviours that affect achievement in school and examinations which incorporate things such as insufficient studying techniques, excessive physiological reactions and non-test related thoughts (Duman, 2008). Rezazadeh and Tavakoli (2019) investigated the relationship among test anxiety, gender, academic achievement and years of study; the findings revealed that female students have a higher level of test anxiety in contrast to male students. But contrary to this is the findings of Ndirangu, Muola, Kithuka and Nassiuma, (2008), who revealed that there was no significant relationship between test anxiety and academic performance. Test anxiety is a pervasive issue among secondary school students, leading to decreased academic performance, low self-esteem, and poor mental health. Research has consistently shown that test anxiety can have a negative influence on academic performance (Cassady & Johnson, 2002). Studies also found that test anxiety can lead to decreased motivation, lower self-esteem, and poor mental health (Putwain, 2009). Despite its prevalence, the relationship between test anxiety, emotional intelligence competencies and academic performance remains underexplored, particularly in the context of gender differences. Test anxiety is a significant concern, as it can impact students' academic success and future career prospect (Sisbane, 2019). Emotional intelligence, which involves recognizing and managing one's emotion, may

play a crucial role in mitigating test anxiety (Yaziei, 2017). Additionally, research suggests that gender differences may influence academic performance; with some studies indicating that females tend to outperform males in certain subjects (Siffour, 2020). Studies have shown that boys tend to perform better in mathematics and science which can be attributed to various factors including societal expectations and stereotypes (Ilogho, 2019).

Research questions

The following research questions were raised to guide the study.

i. What is the level of emotional intelligence competencies among secondary school students in Ondo State?
ii. What is the level of test anxiety among secondary school students in Ondo State?

Hypotheses

Ho1: Test anxiety, gender and emotional intelligence competencies do not significantly predict students' academic performance in mathematics.

Ho2: There is no significant relationship between test anxiety and academic performance of secondary school students in mathematics.

Ho3: There is no significant relationship between emotional intelligence competencies and academic performance of secondary school students in mathematics.

Ho4: There is no significant relationship between gender and academic performance of secondary school students in mathematics.

Methodology

The study employed expost facto research design because the scores of the students collected are already in existence and cannot be manipulated. The population of the study consisted all senior secondary school II students in Ondo State. Multi-stage sampling procedure was used to select 360 senior secondary school II (SS2) students for the study. Ondo State has three senatorial districts. Firstly, two local government areas were selected from each senatorial district, through simple random sampling technique. Secondly, two schools each were selected from the six local government areas selected through simple random sampling technique. Stratified random sampling technique was used to select 15 males and 15 females making a total of 360 respondents.

The instrument for data collection was a questionnaire titled Emotional Intelligence Competencies and Mathematics Test Anxiety Questionnaire (EICMTAQ) and a proforma. The questionnaire contains three sections, A, B and C. Section A comprises of bio data of the respondents; Section B contains items on Emotional Intelligence and it contains 20 items. Section C contain items on Mathematics Test Anxiety with sixteen items. A proforma was used to collect students' scores in mathematics from the schools used. Four likert point scale was used, Strongly Agree (4), Agree (3) Disagree (2), Strongly Disagree (1). The validity was ascertained by two experts in Test and Measurement. The reliability coefficient was established through test-retest and the coefficient yielded 0.88 for the entire questionnaire while section B and C yielded 0.76 and 0.82 respectively. The high reliability indicated that the instrument is reliable. Data collected were analysed using percentages to answer the research questions; while hypothesis one was analysed using multiple regression analysis, hypotheses two, three

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and four were analysed using Pearson- Product Moment Correlation. All hypotheses were tested at 0.05 level of significance.

Presentation of results

Research question 1: What is the level of emotional intelligence competencies among secondary school students in Ondo State?

In answering the research question, responses of the respondents on emotional intelligence scale of secondary school students were collated and the result presented in table 1.

Table 1: Level of emotional intelligence competencies of secondary school students in Ondo State

Emotional Intelligence	Frequency	Percentages (%)
High emotional intelligence	115	31.94
Moderate emotional intelligence	160	44.44
Low emotional intelligence	85	23.62
Total	360	100

Table 1 showed the frequency counts and percentage for the responses to the emotional intelligence competency scale of secondary school students in Ondo State. The result revealed 115 representing 31.94% of the total sample indicated a high emotional intelligence, while 160(44.44%) showed moderate emotional intelligence and 85 (23.62 %) low emotional intelligence. This implies emotional intelligence competencies of secondary school students in Ondo State is moderate

Research question 2: What is the level test anxiety of secondary school students in Ondo State?

In answering the question, responses to the section on mathematics anxiety scale were scored and computed. The students test anxiety were computed and grouped into two, low and high. The result is presented in table 2.

Table 2: Level of students test anxiety in mathematics

Test anxiety of secondary school students	Frequency	Percentage
Low (16-43.86)	140	37.5
High(43.87-64.00)	220	62.5
Total	360	100.0

In Table 2, respondents were categorized into low- and high-test anxiety. Respondents whose scores on the test anxiety section equal to or higher than the mean score were classified into high-, while those below were grouped as low-test anxiety level. Table 3 revealed that 140 respondents representing 37.5% of the total population sample had low level of test anxiety

while 62.5 % had high level of test anxiety. This implies that the level of test anxiety of secondary school students in Ondo State is high.

Ho1: Test anxiety, gender and emotional intelligence competencies do not significantly predict students' academic performance.

In testing the hypothesis, data collected on emotional intelligence competencies, test anxiety, gender and academic performance were computed and analysed and the result presented in table 3.

Table 3: Summary of multiple regression analysis of emotional intelligence competencies, test anxiety, gender and academic performance

R	**R Square**	**Adjusted R Square**		**Std. Error of the Estimate**	
.873[a]	.782	.763		.397	
Model	**Sum of Squares**	**Df**	**Mean Squares**	**F**	**Sig.**
Regression	864.268	3	288.089		
Residual	1130.313	356	12.800	86.23	.000
Total	1994.581	359			

Table 3 revealed that there is a significant joint contribution of the independent variables (test anxiety, gender, emotional intelligence competencies) to the prediction of academic performance of student in mathematics. The result yielded a coefficient of multiple regression ($R=0.873$, $P<0.05$) and multiple R-square =0.782. This implies that the three factors combined accounted for 76.3% (Adj $R^2 = .763$) variance in the prediction of academic performance, while the remaining 23.7% unexplained variation is largely due to other factors not included in the model that accounted for academic performance.

Ho2: There is no significant relationship between test anxiety and academic performance of secondary school students.

In testing the hypothesis, data collected on test anxiety and academic performance were computed and analysed and the result presented in table 4.

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Table 4: Summary of Pearson Product Moment Correlation showing relationship between test anxiety and academic performance

Variables	N	R	p-value
Test anxiety	360	-0.421*	0.001
Academic Performance	360		

Table 4 present the result of Pearson product moment correlation coefficient for the relationship between test anxiety and academic performance. The result reveals a moderate but negative linear relationship between the two variables (r=-0.421) which was significant at 0.05 level of significance. The result implies that when test anxiety increases, academic performance will reduce. This means high test anxiety equals low performance and low test anxiety equals high performance.

Ho3: There is no significant relationship between emotional intelligence competencies and academic performance of secondary school students.

In testing the hypothesis, data collected on emotional intelligence competencies and academic performance were computed and analysed and the result presented in table 5.

Table 5: Summary of Pearson Product Moment Correlation showing relationship between emotional intelligence competencies and academic performance

Variables	N	R	p-value
Emotional intelligence competencies	360	0.722*	0.001
Academic Performance	360		

Table 5 reveals the relationship between emotional intelligence and academic performance, r=0.722, p= 0.001. Hence, the null hypothesis 3 is rejected. Therefore, there is significant relationship between emotional intelligence and academic performance.

Hypothesis 4: There is no significant relationship between gender and students' academic performance in mathematics.

Table 6: PPMC analysis showing relationship between gender and academic performance

Variables	N	R	p-value
Gender	360	0.591*	0.001
Academic Performance	360		

Table 6 showed the relationship between gender and academic performance: r= 0.591, p=0.001. Hence, the null hypothesis is rejected. Therefore, there is a significant relationship between gender and academic performance.

Discussion of findings

The results of the study showed a significant joint contribution of test anxiety, gender and emotional intelligence competencies on the academic performance of students in mathematics. The influence of emotional intelligence, test anxiety, and gender were significant. This is in agreement with Putwain (2009), Rezazadeh and Tavakoli (2019), Ilogho (2019) and Yaziei (2017) who assert that emotional intelligence, test anxiety, and gender influence academic performance of students. The study also found that if emotional intelligence increases, test anxiety is reduced and it leads to better performance of students. The study also revealed a negative but significant relationship between test anxiety and academic performance. Research question two also revealed that test anxiety of students in Ondo State is high. This finding is supported by the findings of Al-khawaldeh (2023) and Ndirangu et al. (2008) who found a high level of test anxiety among students in Ondo State.

Again, the study revealed a significant relationship between emotional intelligence competencies and academic performance**.** Afridi and Ali (2019), corroborated this finding when they established in their studies that students with higher emotional intelligence tend to achieve better academically. This indicates that emotional awareness fosters persistence and reduces stress, indirectly enhancing learning capacity. The correlation between emotional intelligence and academic performance shows that it is one of the many predictors of academic success. Furthermore, the study revealed a significant relationship between gender and academic performance in mathematics. This is in line with the studies of Siffour (2020) and Ilogho (2019) who affirmed that gender differences is significant in academic performance in mathematics.

Conclusion

Based on the findings, it was concluded that senior secondary school students in Ondo State have high level of test anxiety, moderate level of performance in mathematics and moderate level of emotional intelligence competence. This suggests that while students may believe in their abilities, they may also experience significant stress and worry which can lead to poor academic performance. The study concluded that emotional intelligence, test anxiety and gender of secondary school students had a significant influence on their academic performance. Gender, test anxiety and emotional intelligence were shown to be significant predictors of academic performance of secondary school students in mathematics.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Test developers should develop programmes that address students' test anxiety.
2. Teachers should promote emotional intelligence competencies of students to reduce test anxiety and improve performance.

3. Government should provide academic support and resources needed to learn mathematics. Students who struggle with academic performance may benefit from additional academic support and resources, such as tutoring or after school programmes.
4. Schools can also give support programmes such as personalized instruction to improve performance of students based on gender.

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