



RELATIONSHIP BETWEEN TEST-ANXIETY AND ACADEMIC ACHIEVEMENT OF ECONOMICS/MATHEMATICS STUDENTS IN COLLEGES OF EDUCATION IN NORTH CENTRAL NIGERIA

BY

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Abstract: The study assessed the relationship between test-anxiety and academic achievement of Economics/Mathematics Students in Colleges of Education in North Central Nigeria. It addressed two objectives in line their respective research questions and hypotheses using a correlational research design. A sample of 379 was selected from the population of 26,344 Students in NCE 2 through multi-stage sampling procedure and the Krejcie and Morgan table of sample size determination. Two instruments were used for data collection for this study. A questionnaire of 15 items and a “Profoma” for collection of achievement scores were used for data collection. The instruments were validated by five (5) experts for content and logical validities. Cronbach Alpha method was used to determine the mean reliability coefficient of 0.76 for the instruments. Data were analyzed with the use of Pearson Product Moment Correlation Statistics. Relationships were interpreted as follows: 0.01-0.39 (low), 0.40-0.69 (moderate), and 0.70-1.00 (high); significance was based on p-values ($p \geq 0.05$ = not significant, $p < 0.05$ = significant). The results showed a moderate negative and significant relationship between test-anxiety and academic achievement, and negative relationships between test-anxiety with academic achievement for both gender in Economics/Mathematics in Colleges of Education in North Central zone of Nigeria. Conclusion was drawn that test-anxiety has a moderate negative relationship with Economics/Mathematics students’ academic achievement in Colleges of Education in North Central Nigeria. The study recommended that teachers/lecturers should encourage students during test taking to facilitate and improve their academic achievement and school administrators carry out orientations regularly on test anxiety for students and on how manage anxiety during test as this will enhance their academic achievement.

Keywords: Economics, Mathematics, T-anxiety and Academic Achievement.



INTRODUCTION

Mathematics and Economics are taught in schools all over the world. At colleges of Education, they are offered as a programme (Economics/Mathematics). Mathematics is among the compulsory subjects offered in schools in Nigeria, especially at the primary and secondary school levels. It is also one of the core courses required by JAMB for the entry into tertiary institutions in Nigeria. While Economics is a core subjects offered by social science students in both secondary and tertiary levels of Nigerian education. The importance of Mathematics as a field of study is enormous; it is responsible for the advancement of science and technology (Otukpa, Obinne & Adikwu, 2024). Mathematics as the queen of science subjects cannot be completely separated from sciences because of its application to physical sciences. A good knowledge of Mathematics further helps adequate grasp of other subjects (Emmanuel, Lega & Akinboboye, 2024).

Mathematics shapes and influences nearly every object around us, no facet of man's endeavor will be without Mathematics and mathematics cannot be separated from other subjects. Mathematics is very important to human life. Students who ignore Mathematics do that at their own risk to forfeit many future career opportunities that they could have. Most of degree courses in the universities require Mathematics as one of the prerequisite subjects for their admission and entry requirement.

Wilbur, Craig and Menso (2024) regard Mathematics as a science of structure and a major component for the production and use of modern science and technology that basically differentiates developing nations from the developed nations of the world. That is to say the standard of living of a nation depends greatly on the level of science and technology of that nation.

Economics is social science discipline concerned with the production, distribution and

consumption of goods and services (www.investopedia.com). It is a core subject for students offering social science courses in tertiary level of education in Nigeria, it is important to students studying Economics, Accounting, Banking and Finance, Marketing, Taxation among other social science courses. Students with sound knowledge in Economics have better chances of performing very well in their respective disciplines. Economics is a crucial field that enables individuals, households, firms and business organizations to carryout budgeting and financial decision about investments, it helps in public policies, international trade among others. The importance of Economics can never be overemphasized as we know that is the engine room for economic growth and sustainable development. Therefore, the inclusion of Mathematics and Economics as core subjects in secondary school as well as the inclusion of Economics/Mathematics as a department in Colleges of Education is a wise decision and an attempt by the policy makers to solve certain quantitative and economic problems.

Test anxiety could be associated with academic achievement, which could result to either good or poor academic achievement. Anxiety is an overwhelming feeling of disturbance and distress among students. Anxiety refers to a psychological phenomenon in which individual experiences when facing academic evaluations, such as examinations, quizzes, and assignments. Anxiety is a common problem among students of all ages and can have a significant impact on their academic performance and overall well-being this because students struggle studying many courses in the school (Nicklas, 2024). When individuals are pressurized to make high scores in a test, their anxiety is bound to increase (Nonyelu & Anikweze, 2019).

Rizwan and Nasir (2023) conducted a study titled "Relationship between Anxiety and Academic Achievement of Students at the Postgraduate Level in University in Lahore, Pakistan. The study was guided by three specific objectives and raised three research questions. The descriptive survey research design was used



for the study. The population of the study was 5242 postgraduate students and a sample of 414 students was randomly selected from seven different science departments in the University. Data were collected by using the Anxiety Inventory (TAI) developed by Spielberger in 1971. Pearson correlation, multivariate statistics and regression analyses were used for data analysis. The findings of the study revealed that a significant negative relationship exists between anxiety scores and students' achievement scores. Results showed that a cognitive factor (worry) contributed more in anxiety than affective factors (emotional). The reviewed study and the present study are related in terms both focusing on the correlation between anxiety and students' academic achievement. The two studies differ in terms of scope and geographical scope. The reviewed study was carried out using postgraduate students in the university of Lahore, Pakistan while the present study used students in Colleges of Education in the north central, Nigeria.

Nadeem, Ali, Maqbool and Zaidi (2018) conducted a study on "The Impact of Anxiety on the Academic Achievement of Students at University Level" in Bahawalpur, Pakistan. Three (3) objectives and three (3) research questions guided the study. Being a descriptive study, survey method was adopted for data collection. Out of 200 students, 97 students were selected by proportionate stratified sampling technique. Questionnaire (OtisSelf-administering Test of Mental Ability) and Anxiety Measurement Scale were used as instruments for data collection. Data was analyzed by using the formula of regression to see the impact of anxiety on the academic achievements of students and formula of correlation was applied to test the relationship between anxiety and academic achievement of students. The study revealed that anxiety had negative impact on academic achievement of students. The results showed that when anxiety increases, academic achievement decreases in both male and female students. The reviewed study is relevant to the present study because it was carried out to determine the relationship between anxiety and students' academic

achievement which is also the focus of the present study. However, the two studies differ in terms of their location as the reviewed study was conducted in Pakistan while the present study was carried out in Nigeria.

Birhanu and Tilahun (2020) in a study "The relationship between test-anxiety and academic achievement of grade ten students of Shirka Woreda, Oromia Regional State, Ethiopia". The study examined the correlation between test anxiety and academic achievement of students. A descriptive correlational and cross-sectional survey research design was utilized. 300 grade ten students and 8 teachers were selected from three secondary schools using stratified sampling procedure. Test Anxiety Inventory developed by Spielberger (1980) was used for data collection. The students' first semester 2019 academic year scores of 6 subjects were used to measure their academic achievement. Pearson correlation, percentage, the mean and standard deviation were used. It was revealed that a significant inverse relationship exists between test anxiety and students' achievement grades. Results showed that a cognitive factor contributes more in test anxiety than affective factors. The finding of the study further depicted that the female students experience significantly higher test anxiety level compared to male students. The two studies are related in terms of test anxiety which is one of the variables to both of the studies. But the present research is broader in scope and in different geographical area, it was conducted in north central, Nigeria.

Statement of the Problem

Most investigations focus on teachers' competencies, methods of teaching, materials used for teaching among others factors used for teaching Economics/Mathematics but paid less attention to anxiety, emotional intelligence, interest that are psychological factors on the side of Students that could influence their relationship with academic achievement either negatively or positively. However, there are scanty empirical studies on students' anxiety among colleges of education Nigeria, particularly, in the North Central geo-political



Zone. Nonetheless, observations suggest that the academic achievement of students appears to be unsatisfactory and raising concerns among educators and stakeholders in the education sector (Iorsugh, Christopher, Godfrey & Peter, 2021). Hence, this study assessed the relationship between test-anxiety and academic achievement of Economics/Mathematics Students in Colleges of Education in North Central, Nigeria.

Objectives of the Study

This study assessed the relationship between test anxiety and academic achievement in Economics/Mathematics students in Colleges of Education in North Central Nigeria. Specifically, the study focused on the relationship between students:

- i. test anxiety and academic achievement in Economics/Mathematics in Colleges of Education in North Central Nigeria.
- ii. test anxiety and academic achievement in Economics/Mathematics based on gender in Colleges of Education in North Central Nigeria.

Research Questions

Two research questions guided the study:

- i. What is the relationship between students' test anxiety and their academic achievement in Economics/Mathematics in Colleges of Education in North Central Nigeria?
- ii. What is the test anxiety and academic achievement in Economics/Mathematics segregated based on gender in Colleges of Education in North Central Nigeria?

Research Hypotheses

Two null hypotheses were formulated and tested at 0.05 level of significance.

1. There is no significant relationship between students' test anxiety and their academic achievement in Economics/Mathematics in Colleges of Education in North Central Nigeria.

2. There is no significant relationship among students' test anxiety and academic achievement in Economics/Mathematics based on gender in Colleges of Education in North Central Nigeria.

Methodology

The study utilised correlational survey research design to carried out the investigation using NCE 2 students of Economics/Mathematics in Colleges of Education in the North Nigeria. The population of the study was 26,344 students (NCCE, 2024 Research and Statistics). The sample size for the study was 379 NCE 2 students of Economics/Mathematics in Colleges of Education in the North Central Zone of Nigeria. The sample size comprised of 238 male students and 141 female students from six selected colleges of education in North Central Zone, Nigeria. The sample size was obtained using Krejcie and Morgan table for sample size determination using a multi-stage sampling procedure. Test Anxiety Questionnaire (TAQ) which comprised of 15 items of; Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with values of 4, 3, 2 and 1 for positively worded items and a "Profoma was designed on four-point rating scale for collection of academic achievement scores also used for data collection. The instruments were validated by five (5) experts for logical and content validities. The instruments were trial-tested on fifty (50) students, results collected, analysed using the Cronbach Alpha method and obtained a reliability coefficient of 0.76. Data collected for the research were analysed using Pearson Product Moment Correlation to obtain the correlation coefficients. The correlation coefficients of r of; 0.00 signified No Relationship (NR), 0.01 to 0.39 signified Low Relationship (LR), 0.40 to 0.69 represented Moderate Relationship (MR) and 0.70 to 1.00 implied High Relationship (HR). Also, the correlation coefficients -0.01 to -0.39 signified Low Negative relationship (LNR), - 0.40 to -0.69 represented Moderate Negative Relationship (MNR) and -0.70 to -1.00 implied



High-Negative Relationship (HNR) (Anikweze et al, 2016).

Research Question 1: What is the relationship between students' test anxiety and their academic achievement in Economics/Mathematics in North Central Nigeria?

Table 1: Correlation Coefficient on Students Test Anxiety and Academic Achievement

Variables	N	r	R ²	Relationship
Test Anxiety				Inverse Relationship
Academic Achievement	379	-.649	.421	Moderate

N= Number of Students, r = Pearson's Product Moment Correlation Coefficient, R²= Coefficient of Determination

academic achievement in Economics/Mathematics in North Central Nigeria.

Table 1 revealed that $r = -.649$, $R^2 = .421$ (42%) of the change that occurred at 0.05 level of significance. This indicates that there is a moderate negative relationship between students' test anxiety and their

Research Question 2: What is the relationship between students' test anxiety and academic achievement in Economics/Mathematics segregated based on gender in Colleges of Education in North Central Nigeria?

Table 2: Correlation Coefficient on Students' Test anxiety and Academic Achievement based on Gender

Variables	Gender	N	R	R ²	Relationship
Academic Achievement & Test Anxiety	Male	238	-.543	.295	Moderate Negative Relationship
	Female	141	-.649	.136	Moderate Negative Relationship

N= Number of Students, r = Pearson's Product Moment Correlation Coefficient, R²= Coefficient of Determination.

The result from Table 2 reveals that $r = -.543$, $R^2 = .295$ for male and $r = -.649$, $R^2 = .136$ for female of the change that occurred at 0.05 level of significance. This shows moderate negative relationships between test anxiety and the academic achievement of both male and female students in Economics/Mathematics in the Colleges of Education in North Central Nigeria. However, the test anxiety of female students is



than that of male students as depicts by $r = -.649$, $R^2 = .136$ for female and $r = -.543$, $R^2 = .295$ for male respectively.

Test of Hypothesis 1: There is no significant relationship between students' test anxiety and their academic achievement in Economics/Mathematics in Colleges of Education in North Central Nigeria.

Table 3: Correlation Analysis for Relationship between Students' Test Anxiety and their Academic Achievement

Variables	N	DF	Prob. Value (sig)	Decision
Test Anxiety				
	379	377		Significant
Academic Achievement		.031		

N= Number of Students, $p < 0.05$

The result in table 3 reveals the Pearson's Product Moment Correlation Analysis for significant relationship between students' test anxiety and their academic achievement with a probability value (sig) of .031 in Colleges of Education in North Central Nigeria. This result shows that there was existence of a significant relationship between Colleges of Education students' test anxiety and their academic achievement. This is due to the fact that the sig value of .031 is less than the 0.05 level of significance. Hence, the null hypothesis which states that there is no significant relationship between students' test anxiety and their academic achievement in Economics/Mathematics in Colleges of Education in North Central Nigeria is rejected and the alternative hypothesis of significant relationship of students' test anxiety and academic achievement is upheld.

Test of Hypothesis 2: There is no significant relationship among students' test anxiety and academic achievement in Economics/Mathematics based on gender in Colleges of Education in North Central Nigeria.

Table 4: Correlation Analysis for Relationship between test anxiety and their Academic Achievement based on Gender

Variables	Gender	N	DF	Probability Value Sig	Decision
Academic Achievement & Test-wiseness	Male	238	236	.000	Significant
	Female	141	139	.000	Significant

The result in table 4 shows the Pearson's Product Moment Correlation Analysis for significant relationship between students' test anxiety and their academic achievement with a

probability value (sig) of .000 in Colleges of Education in North Central Nigeria based on male or female. This result shows that there existed a significant relationship between



Colleges of Education students' test anxiety and their academic achievement based on their gender. This is due to the fact that the sig value of .000 is less than the 0.05 level of significance. Thus, the null hypothesis which states that there is no significant relationship between students' test anxiety and academic achievement in Economics/Mathematics in Colleges of Education in North Central Nigeria based on gender is rejected and the alternative hypothesis of significant relationship of students' test anxiety and academic achievement based on gender is sustained.

Discussion of Findings

First, the findings of research question one and hypothesis one unveiled that there is a moderate negative correlation between test anxiety and academic achievement of Economics/Mathematics students in Colleges of Education in North Central Nigeria. This is reflected on table 1 and table 3 which revealed that $r = -.649$, $R^2 = .421(42\%)$ of the change that occurred at 0.05 level of significance and also supported by the tested hypothesis on table 3 with the sig value of .031 is less than the 0.05 level of significance. Therefore, the null hypothesis which states that there is no significant relationship between students' test anxiety and their academic achievement in Economics/Mathematics in Colleges of Education in North Central Nigeria is rejected and the alternative hypothesis of significant relationship of students' test anxiety and academic achievement is upheld. We state that test anxiety has a moderate negative relationship with students' academic achievement in Economics/Mathematics in the Colleges of Education in North Central Nigeria. The present study aligns with the study conducted by Nadeem, Ali, Maqbool and Zaidi (2018) which revealed that anxiety has negative impact on academic achievement of students. The study by Rizwan and Nasir (2023) also supported this study. The findings revealed that a significant negative relationship exists between anxiety scores and students' achievement scores and a cognitive factor (worry) contributed more in anxiety than affective factors (emotional). These

results imply that when anxiety increases, academic achievement decreases, there is an inverse relationship between test anxiety and academic achievement of students' academic achievement in Economics/Mathematics in Colleges of Education in North Central Nigeria.

Second, the evidence of analysis displayed in table two and hypothesis two revealed that that $r = -.543$, $R^2 = .295$ for male and $r = -.649$, $R^2 = .136$ for female of the change that occurred at 0.05 level of significance. This indicates moderate negative relationships between test anxiety and the academic achievement of both male and female students in Economics/Mathematics in the Colleges of Education in North Central Nigeria. However, the test anxiety of female students is higher than that of male students as depicts by $r = -.649$, $R^2 = .136$ for female and $r = -.543$, $R^2 = .295$ for male respectively. The tested hypothesis on table 4 also attests that there is existence of negative relationships between Colleges of Education students' test anxiety and their academic achievement based on male and female with the sig values of .000 is less than 0.05 level of significance for both male and female students, the null hypothesis is rejected and the alternative hypothesis based on gender is sustained. However, female students, test anxiety is higher than their male counterparts. This study agrees with the findings of the study by Birhanu and Tilahun (2020), which revealed that a significant negative relationship exists between test anxiety and students' achievement scores, and that a cognitive factor contributes more in test anxiety than affective factors. The results of the study further depicted that the female students experience significantly higher test anxiety level compared to male students.

Conclusion

Conclusion was drawn based on findings that test anxiety has moderate negative relationship with Economics/Mathematics students' academic achievement in Colleges of Education in North Central Nigeria. However, female students, test anxiety is higher when compared to their male counterparts.



Recommendations

1. Teachers/lecturers should employ different methods to encourage students on the need to prepare very well for tests and not to fear during tests as this will facilitate and improve their academic achievement.
2. School management should always organize orientation for students on the adverse effects of anxiety and on how it relates negatively with their academic achievement as this will guide when writing tests to enable them obtain better grades.

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