

## TEST ANXIETY AS PREDICTOR OF SENIOR SECONDARY SCHOOL STUDENTS' ACHIEVEMENT IN ENGLISH AND MATHEMATICS IN ANAMBRA STATE

Didacus Chima ILO<sup>1</sup> and G.C. UNACHUKWU<sup>2</sup>

<sup>1&2</sup>Department of Educational Foundations, Faculty of Education,  
Nnamdi Azikiwe University, Awka, NIGERIA.

### Abstract

*This study investigated test anxiety as predictor of academic achievements of secondary school students in Anambra State. Two research questions guided the study and two hypotheses were tested at 0.05 level of significance. The study adopted a correlational survey design. The population of the study consists of 18,852 senior secondary school students (SSS II) in the 258 public secondary schools in Anambra State. The sample for the study was 943 SSII students who were drawn using multi-stage sampling. An instrument was used for the data collection of this study. The instrument was: Test Anxiety Inventory (TAI), it is a standardized instrument and has been properly validated and tested for reliability. Also termly results of students in English language and Mathematics were collected from their school records. The data collected were analysed using simple regression analysis. The finding of the study showed that test anxiety is a predictor of academic achievement of students in English language and Mathematics. Based on the findings conclusions were drawn, and the study recommended that schools, family and institutions should assist students in managing their test-anxiety through counselling, relaxation and behaviour modification techniques.*

**Key words:** Academic Achievements, Predictor and Test Anxiety

### Introduction

Education has manifold functions in man's modern society. It is for preservation, transformation, transfer and advancement of knowledge and it is also devoted to bring changes for the good of the society. The importance of education lies in the fact that it is considered as a key for bolstering human resource for sustainable economy and social change. This is in line with the Nigerian vision 2020 which recognizes education and training within the social pillar, as one of the platforms that will transform Nigeria into a large, strong, diversified, sustainable and competitive economy that effectively harnesses

the talents and energies of its people and responsibly exploits its natural endowments to guarantee a high standard of living and quality of life for its citizens (Karatas, Alei & Aydin, 2013). In education, student's educational outcomes and achievement are evaluated and graded using examinations/tests (Chinta, 2005). Testing is common in everyday life as students have to take many highly competitive centralized and high stakes examination such as the Common Entrance Examination (C.E.E.), First School Leaving Certificate Examination (F.S.L.C.E.), Junior Secondary School Certificate Examination (J.S.C.E), Senior Secondary School Certificate Examination (S.S.C.E.), Unified Tertiary Matriculation Examination (UTME), and a host of others.

These series of examinations play a dramatic role in the lives of students and their parents. In other words, achievement in these high stakes examinations is crucial for moving from one level of education to another, and also to gain access into prestigious careers. Such practices in most cases, in the view of Ibeawuchi and Iruloh (2017), put considerable pressure on the students. This form of anxiety is known as test anxiety which Spielberger (1980) defined as a situation- specific trait that refers to the anxiety states and worry conditions experienced during examinations. The level of anxiety can fluctuate over time in response to both internal and external stimulation. Ngwoke, Ossai and Obikwelu (2013) succinctly observed that many Nigerian students at all levels exhibit high level of test anxiety in testing conditions. This often resulted in debilitating anxiety, high proneness to cheating in examination and consequently low academic achievement.

Anxiety related behaviour during testing conditions may in one way or another affect academic achievement of students. Indeed, a minimal amount of anxiety is needed to mobilize human beings to respond rapidly and efficiently; but when in excess, it may foster poor response and even inhibit response. Hence, too much anxiety during test may interfere with students' concentration on the test, thus lowering their achievement in examination (Cassady & Johnson, 2002).

Recently, one of the extensive research areas has been anxiety and its related fields. Anxiety disorder has been a prominent issue on the research works done in recent times. Poorgholami and Fatehi, (2014) noted that anxiety disorders have been shown to frequently increase among all age level. One of the anxiety disorders is test anxiety which is a kind of anxiety that happens when a person is taking a test or being evaluated by a test administrator. The test anxiety literature according to Cassady and Gridley (2005) has generated the most comprehensive body of research that has explored the experience of learners in various testing conditions. This, they believed, had examined a variety of criteria and conditions that are likely to influence academic achievement positively or negatively.

Majority of research works done on the effects of test anxiety on students' academic achievement mainly indicated a negative relationship between test anxiety and achievement (Chapell, Blanding, Silverstein, Takahashi, Newman, Gubi & McCann, 2005;

Stober, 2004). The above research findings imply that increase in test anxiety lowers test achievement of students. However, the research findings in the studies carried out by Ndirangu, Muola, Kithuka and Nassiuma (2009) and Vogel and Collins (2008) found no relationship between test anxiety and academic achievement of students. The above conflicting research findings call for more empirical studies that will lead to more understanding of the relationship between test anxiety and academic achievement of students more. In addition, Yousefi, Redzuan, Mansor, Juhari and Tailib, (2010) opined that not only test anxiety, affects the achievement of the students, but many other factors which are primary parameter for measuring learning outcome. Furthermore; they believed that no single factor can be taken in isolation in predicting grades or academic achievement. They also noted that besides the mixed findings in the researches on relationship between test anxiety and academic achievement, test anxiety not only persists after test but can develop into a vicious cycle if not earlier managed, leading to situations that are recursive and complex in nature.

Rana and Mahmood (2010) conducted a study on the Relationship between Test Anxiety and Academic Achievement in Lahore, Pakistan. The major aim of this research study was to explore the relationship between test anxiety and academic achievement of students at the post graduate level. The study was guided by three purposes which were used to formulate three research questions and hypothesis. The study was a correlational descriptive survey. A sample of 414 students was randomly selected from seven different science departments in a public sector university in Lahore, Pakistan. Data were collected by using the Test Anxiety Inventory (TAI) developed by Spiel Berger. Pearson correlation, multivariate statistics and regression analyses were run for data analysis. It was found that a significant negative relationship exists between test anxiety scores and students' achievement scores. Therefore, it is concluded that test anxiety is one of the factors which are responsible for students' underachievement and low performance but it can be managed by appropriate training of students in dealing with factors causing test anxiety

The study above is same with the present study in terms of design; also both have similar target of examining the relationship between test anxiety and academic achievement. However, the present study included performance attribution which is not present in the above study, the area of both studies differ as well as instrument that will be used for data collection.

Yousefi, Talib, Mansor, Juhari and Redzuan (2010) carried out a study to examine the relationship between test-anxiety and academic achievement among Iranian adolescents. The study was guided by three purposes which formed the research question that was answered in the study. The design of the study was a correlational survey. The respondents comprised 400 students (200 boys and 200 girls) in the age range of 15-19 years old that were randomly selected from nine high schools in Sanandaj, Iran. A self-administered questionnaire was used for data collection which includes a Test-Anxiety

Inventory (TAI) (Abbolghasemi, 1988), Grade Point Average (GPA) score and personal information. Percentage and Pearson correlation was used to analyse the data collected. Result shows that there is a significant correlation ( $r = -0.23$ ,  $p = .000$ ) between test anxiety and academic achievement among adolescents. In addition, there is a significant difference ( $t = 5.47$ ,  $p = .000$ ) of academic achievement between male and female adolescents whereby female score higher in their academic achievement. The above study relates with the present study in that both studied the relationship between test anxiety and academic achievement of students. Also the design of the study is the same. But the area of the study, discipline, and instrument for data collection differ in both studies.

Onyeizugbo (2010) examined Self-Efficacy and test anxiety as correlates of academic performance among 249 undergraduate students of a university in Eastern Nigeria. One purpose was formulated in the study. The design of the study is ex-post-facto. General Self-Efficacy Scale and Westside Test Anxiety Scale were used to assess self-efficacy and test anxiety respectively, whereas average score of students in two psychology degree courses were used to assess their academic performance. Data collected were analysed using Regression analysis as well as Pearson was used for data analysis Results showed a significant positive correlation between self-efficacy and academic performance ( $.24$ ,  $p < .001$ ) and a significant negative correlation between test anxiety and academic performance ( $.43$ ,  $p < .001$ ). Also, regression analysis showed a significant model emerged,  $F_{2,246} = 31.32$ ,  $p < .001$ . Self-efficacy significantly predicted the variability in academic performance  $\beta = .151$ ,  $p < .01$ , and equally, test anxiety proves to be a significant predictor of the variability in academic performance,  $\beta = -.390$ ,  $p < .001$ . Given the observed high correlation between self-efficacy and test anxiety in academic performance, the author is concerned that the observed high prevalence of examination fraud in Nigeria may not be unconnected with students' low appraisal of their capability in academic context, and therefore recommends program that will facilitate gains in self-efficacy as well as confident posture in approaching examinations.

The above study examined test anxiety, academic achievement and self-efficacy. In this study, academic achievement and test anxiety will be considered, apart from self-efficacy which was in the above study, which will be replaced in this study with performance attributions. The above study considered all the universities in Eastern Nigeria while the present study will anchor its subjects on secondary schools in Anambra State.

Faleye (2010) conducted a study to investigate the cognitive test anxiety and learning outcome of selected undergraduate students in Obafemi Awolowo University Ile-Ife. The study sought to find out whether CTA of students vary by ability (performance) level and sex. It was a descriptive survey that was guided by three purposes which was used to formulate one research question and two hypotheses. A sample of 92 undergraduates was purposively sampled for the study. The instrument used for data collection was a

Cognitive Test Anxiety scale, which has 27 items in it. The data collected for the study were analysed using contingency table and t-test. Result showed that students' CTA was generally low. It was also discovered that CTA negatively affects performance level; the higher the level of students' CTA the lower the level of students' learning outcome and vice-versa. The above study and present study is similar in that both are on test anxiety and how it relates with performance of student.

In Rezazadeh and Tavakoli (2009) Investigated the Relationship among Test Anxiety, Gender, Academic Achievement and Years of Study: A Case of Iranian EFL University Students. It was a descriptive analytic study. Three research question and three hypotheses were formulated for the study. The population was 110 undergraduate students from the University of Isfahan. The Suinn's Test anxiety questionnaire with 48 questions was used to gather the statistical data. For analysis correlation coefficient and Chi-square test were used. The findings revealed that female students have a higher level of test anxiety in contrast to male students. The average of test anxiety score among female students was higher. Also a statistically significant negative correlation was observed between test anxiety and academic achievement. There was no meaningful relationship between test anxiety and years of study. The above study and the present study are targeted on test anxiety of student in relation to their academic achievement.

Onyekwuru and Ibegunam (2014) conducted a study to explore how test anxiety affects students' performance levels in the sciences. The population for this study comprised the Junior Secondary III (JSIII) students in Ogun State Junior Secondary Schools. The sample was One hundred and twenty (120) students drawn from intact classes of the three randomly selected Junior Secondary Schools in three Local Government Areas of Ogun state. Achievement Test for Basic Science Students, and Science Anxiety Scale were the main instruments used to collect data from students. Descriptive statistics, and Univariate Analysis of Variance (ANOVA), were used to analyse the data collected. The researcher concluded that low test anxiety students performed better than high test-anxious students.

In addition, Seng (2015) examined the relationship between mathematics test anxiety and numerical anxiety on students' mathematics achievement. The population of the study comprised the pre-university students who studied at one of the institutes of higher learning in Malaysia. The sample was One hundred and forty (140) pre-university students drawn from purposive sampling. Test anxiety Scale and Numerical Anxiety Scale were main instruments used to collect data from students. Descriptive statistics and multiple regressions analysis were used to analyse the data. The data revealed that there was a positive correlation between mathematics test anxiety and numerical anxiety on students' mathematics achievement. Results of the multiple regressions showed that all the variables of mathematics anxieties were statistically significant on students'

mathematics achievement. Non-parametric tests also revealed that mathematics anxiety was statistically significant in measuring students' mathematics achievement.

Furthermore, Ndirangu, Muola, Kithuka and Nassiuma, (2009), conducted a study which determined the relationship between test anxiety and academic performance among students in Nyeri district, Kenya. The correlational study design was used. The study was carried out among form four students together with their teachers. The target population was 83, 000 students and 600 teachers from the District. Eight students from four schools and 12 teachers were randomly sampled. Three instruments prepared by the researchers were administered, that is, a Students' Questionnaire, a Teachers' and a Students' Interview Schedules. The data collected were analysed using Pearson product moment formula for correlation and t-test. The results showed that there is a statistically significant difference ( $P < 0.01$ ,  $t = 3.736$ ) between test anxiety levels before and after examinations. High anxiety is experienced before the examination in all subjects. It was also established that both girls and boys are equally affected by test anxiety. The results showed that teachers do not adequately help students cope with test anxiety. There was no significant relationship ( $r = 0.06$ ) between test anxiety and academic performance. It was recommended that a curriculum that is inclusive of strategies of coping with test anxiety be developed. The above study correlated test anxiety and performance. In the present study, test anxiety and performance will be considered. Also the design of both studies is same.

Despite the considerable research attention focused on these constructs, it appears that in Nigeria, the comprehensive/ broad nature of these constructs as well as their relationship to academic achievement has not been attained. This may be observed in the trend of academic achievement of students in external examinations especially in English Language and Mathematics which has not necessarily improved from what it used to be (WAEC, 2018). This present study deemed it fit to examine test anxiety as predictor of academic achievements of senior secondary school students in Anambra State

Frankly speaking, efforts have been made by researchers and educators towards improving achievements of students but greater attention were given to methods and practices used in teaching and learning that will ensure a better achievement of the students. Also attention has been drawn to students' factors in dealing with the means of improving students' achievements in the school but much interests are on cognitive domain of the students with little interest on other factors that contribute to students' better achievement in school activities. Factor such as test anxiety is variable which seems to have great effect on the achievement of students. In real sense, some researchers have either considered one or two of these constructs in relation to students' achievement but none to the knowledge of the researchers has investigated specifically on test anxiety as predictor of academic achievements of secondary school students in Anambra state. Hence, the present study.

### **Purpose and Scope of the Study**

The major purpose of this study is to investigate test anxiety as predictor of academic achievements of senior secondary school students in English language and Mathematics in Anambra State. This study is specifically designed to determine: (a) The extent secondary school students' test anxiety scores predict their academic achievement in English Language. (b) The extent secondary school students' test anxiety scores predict their academic achievement in Mathematics

The study is delimited to investigation of test anxiety as predictor of public senior secondary school students' achievement in English and Mathematics in Anambra State. The students' achievement scores in English language and Mathematics for the academic year and the questionnaire were used. The study is delimited to SS II students. The SS III students were exempted because they were preparing for their final examinations while the SS I students were new in the senior class.

### *Research Questions*

The following research questions guided this study: (a) To what extent do secondary school students test anxiety scores predict their academic achievement in English Language? (b) To what extent do secondary school students test anxiety scores predict their academic achievement in Mathematics?

### *Research Hypotheses*

The following null hypotheses formulated guided the study and were tested at 0.05 significance levels. (a) Senior secondary school students' test anxiety scores do not significantly predict their academic achievement in English language. (b) Senior secondary school students' test anxiety scores do not significantly predict their academic achievement in Mathematics.

### **Method**

*Design of the Study* The study is a correlational survey. Correlation survey research aimed at establishing relationships among two or more variables without any attempt to influence them. Correlational research is used to describe the relationship between two or more naturally occurring variables (Nworgu, 2016). It is adopted for this study to establish the predictive effect of the independent variables on the dependent variable. This study is on test anxiety as predictor of academic achievement in English and Mathematics of senior secondary school students in Anambra state. The study was guided by these theories; cognitive interference theory and learning- deficit theory

*Population of the Study* The population of the study consists of 18,852 senior secondary school students (SSS II) in the 258 public secondary schools in Anambra State (PPSC, 2018). These SS II students are in the six education zones in the state.

*Sample and Sampling Techniques* The sample of this study consists of 943 SSII students. A multistage sampling procedure was employed in the selection of the sample of the study. In the first stage, simple random sampling technique was used to select three out of the six education zones in Anambra State. Proportionate stratified sampling was used to select 35 percent of the schools in each of the six education zones in the state. This gave a total of 90 secondary schools. From each of the schools selected, simple random sampling technique was used to select an intact class. But in a situation where there is only one SS II class in a selected school that class was selected and students in the class were used for the study.

*Instruments for the Data Collection* The instrument used to collect data for the study was Test Anxiety Inventory (TAI) adopted from Spielberger (1980). Test Anxiety Inventory (TAI) was also adopted for the data collection of this study. The instrument was developed by Spielberger (1980) and revalidated in Nigeria by Omoluabi (1993). The instrument was used to collect information on test anxiety of students. It has two sections. Section one contain information of the respondents such as name, age, sex, date. The section two is on Test anxiety items, made up of twenty items. It has four response options, almost always, often, sometimes and almost never. It was also structured on four point scales of (4), (3), (2), and (1). In addition, the students' academic achievement scores in English Language and Mathematics from the state standard general examination for senior secondary two students were collected from their schools and used for the study.

*Validation and Reliability of the Instrument* Test Anxiety Inventory used have been validated in Nigeria. Also Oladimeji (2005) noted that different forms of validation on test anxiety scale such as concurrent, discriminate, constrain, and convergent validity were determined when it was used on Nigeria students. Omoluabi (1993) employed test retest type of reliability and used Pearson products moment statistical technique to correlate the test-retest scores under the non-examination conditions. The coefficients of reliability obtained were 0.73, 0.79 and 0.56 for TAI-W, TAI-E and TAI-T respectively.

*Method of Data Collection* The researchers adopted face to face method of instrument administration which was done during their free periods in each school selected. This was done through the help of eight existing trained research assistants specifically Mathematics and English teachers in each of the sampled schools. The copies of the questionnaire were distributed and collected by the researchers with the help of the assistants. Then the terminal results of the students were collected from the form masters/mistresses of the schools used in the study.

The questionnaires were numbered and tagged in line with the arrangement of the students' names in the terminal result sheets to ensure that the numbering followed how the students were given the questionnaire to answer. This was to ensure that appropriate achievement scores of the students are properly tagged with their responses on the questionnaire.



*Method of Data Analysis* The data was analyzed using statistical package for Social Science (SPSS 21). Regression analysis was used to interpret both the research questions and hypothesis, where Beta standardized coefficient, t value and P value guided the decisions of the researcher.

## Results

### *Research Question 1*

To what extent do secondary school students' test anxiety scores predict their academic achievements in English language?

### *Null Hypothesis 1*

Senior secondary school students' test anxiety scores do not significantly predict their academic achievement in English language.

**Table 1:** REGRESSION ANALYSIS ON STUDENTS' TEST ANXIETY AS A PREDICTOR OF THEIR ACADEMIC ACHIEVEMENT IN ENGLISH LANGUAGE

Variable	R	R <sup>2</sup>	R <sup>2</sup> Change	B	BETA	Cal.t	Df	Pvalue	Remark
Test anxiety	.072	.005	.004	-.178	-.072	-2.346	124	.019	S

Table 1 reveals that test anxiety of secondary school students had Beta of -0.072. This indicates that test anxiety predicted -7.2 percent of academic achievement in English language of the students. Also at 124df and 0.05 level of significant, the calculated t 2.35 with Pvalue 0.019 which is less than the 0.05, the first null hypothesis is rejected. Therefore, secondary school students' test anxiety is a significant predictor of their academic achievement in English language.

### *Research Question 2*

To what extent do secondary school students' test anxiety scores predict their academic achievements in Mathematics?

### *Null Hypothesis 2*

Senior secondary school students' test anxiety scores do not significantly predict their academic achievement in Mathematics.

**Table 2:** REGRESSION ANALYSIS ON STUDENTS' TEST ANXIETY AS A PREDICTOR OF THEIR ACADEMIC ACHIEVEMENT IN MATHEMATICS

Variable	R	R <sup>2</sup>	R <sup>2</sup> change	B	BETA	Cal.t	Df	Pvalue	Remark
Test anxiety	.068	.005	.004	.178	0.68	2.228	124	.026	S

Table 2 shows that test anxiety of secondary school students had Beta of 0.068. This indicates that test anxiety predicted 6.8 percent of academic achievement in Mathematics of the students. Also at 124df and 0.05 level of significant, the calculated t 2.23 with Pvalue 0.026 which is less than the 0.05, the second null hypothesis is rejected. Therefore, secondary school students' test anxiety is a significant predictor of their academic achievement in Mathematics.

### Discussion of Results

#### *Test anxiety and achievement in Mathematics and English language*

The result findings indicated that test anxiety is a predictor of students' academic achievement in Mathematics and English language. From the result analysed there are evidences of the existence of test anxiety in the students when taking test in English and Mathematics. In English as observed the coefficient is negative, which shows that by any additional unity of text anxiety in learning, the students' academic achievement is predicted to decrease.

The findings also revealed that there is a linear relationship between Mathematics test anxiety and students' achievement in Mathematics. The study shows that test anxiety is a significant predictor of achievement of students both in English and Mathematics. This is in line with the findings of Rana and Mahmood (2010); Yousefi, Talib, Mansor, Juhari and Redzuan (2010); and Onyeizugbo (2010) who noted in their various studies that there is a significant negative relationship exists between test anxiety scores and students' achievement scores. This is also in line with the finding of Sharkir (2014) who noted that there is a positive relationship between students' Mathematics anxiety and numerical anxiety on their achievement in Mathematics. The finding revealed therefore that test anxiety is statistically significant in predicting students' achievement in English and Mathematics.

### Recommendations

Based on the findings of this study, the following recommendations are made: (a) Test anxiety significantly predicts students' academic achievement; therefore, school and family institutions must assist students in managing their test-anxiety through counselling, relaxation and behavioural modification techniques. (b) Selected preventive activities can

be proposed at high schools on targeted students with academic problems by the school administrators and teachers.

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### **Biographical Notes**

**Didacus Chima ILO**, is of the Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, NIGERIA. Email: [chydid@gmail.com](mailto:chydid@gmail.com),

**G. C. UNACHUKWU PhD.**, is a Professor of Educational Psychology, Department of Educational Foundations, Faculty of Education, Nnamdi Azikiwe University, Awka, NIGERIA. Email: [gc.unachukwu@unizik.edu.ng](mailto:gc.unachukwu@unizik.edu.ng)