

ISSN 1597-2666
Volume 15, No 1, October 2017

The Nigerian
Educational
Psychologists



Journal of
The Nigerian Society of Educational
Psychologists (NISEP)

The Nigerian Educational Psychologist

ISSN:1597-2666
Volume 15, No.1 October 2017



Journal of the Nigerian Society for Educational
Psychologists (NISEP)

The Nigerian Educational Psychologists

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RELATIONSHIP BETWEEN TEST ANXIETY AND PUPILS' ACADEMIC
PERFORMANCE IN BASIC MATHEMATICS IN LAGOS
CENTRAL SENATORIAL DISTRICT, NIGERIA

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Abstract

The society sees Mathematics as the foundation for understanding scientific and technological knowledge that is vital in socio-economic development of the nation. Despite the importance of mathematics, pupils' performance in basic mathematics has not been encouraging, and this may be due to many factors. The main purpose of this study was to examine the influence of test anxiety on pupils' academic performance in mathematics. The correlational survey research design was adopted for this study. The population for this study was all Basic Six pupils in Lagos Central Senatorial District from which 375 Basic Six pupils were selected using multi-stage sampling technique. Simple random sampling technique was used to select 20 public Basic Schools from the two selected LGEAs. Pupils' Test Anxiety Scale (PTAS) and Mathematics Performance Test (MPT) were adapted and used in carrying out this research. The instruments were subjected to test-re-test method of reliability and were found to have reliability coefficient of 0.80 and 0.87 respectively. The research questions were answered using frequency count, percentage and summated mean rating while Pearson Product Moment Correlation statistic was used to test the hypothesis at 0.05 level of significance. The findings revealed that there was a significant relationship between test anxiety and pupils' academic performance in mathematics. Among the recommendations made was that teachers should give pupils assignment from the first day of the term with adequate monitoring as this will prepare the pupils ahead of the test in order to reduce cramming and the presence of excessive test anxiety.

Key words: Test Anxiety, Pupils, Mathematics, Performance

Introduction

Nigeria is not left out of the countries that subscribe to the fact that education is a veritable means of participating in public life and effecting national development. To this end, government, private individuals and organisations have established educational institutions at all levels in order to satisfy the educational needs and aspiration of the people. Basic education is the foundation for other levels of education. The first objective of basic education as stated in NPE (2013) is the inculcation of permanent numeracy which stresses the need for every child to be mathematically numerate at the basic education level. This implies that the mathematical development of the child cannot be ignored at the basic education level.

Mathematics is an important school subject and also, in every activity of man. Mathematics is a tool for understanding and application of science and technology, which is seen by the society as the foundation of scientific and technological knowledge that is vital in the socio-economic development of the nation. Mathematics, therefore, occupies a pivotal position in Science and Technology that is needed by everybody in every aspect of human endeavours. Today, technology is the mainstay of any societal development and mathematics has been recognised as the bedrock of technology and sciences (Awofala, 2008). This seems to justify why mathematics is a compulsory subject at both basic and senior secondary school levels in Nigeria and it is also used as a basic entry requirement into tertiary institutions in Nigeria.

Regardless of the importance mathematics play in society, it is common knowledge that students at all levels of education perform very poorly in examinations (Akinsola, 2014). Also, the performance of basic six pupils in Lagos state entrance examination in mathematics between 2012 and 2014 has not been encouraging and not consistent. A close examination of basic mathematics teaching especially at the basic education level has become a source of great concern to educators and scholars. The poor performance of pupils has been attributed to

many factors, amongst which are: home environment, school environment, test anxiety or locus of control.

Educational tests are the major tools for measuring academic performance. The test would remain the most commonly used method of assessment. It is not surprising that test situations evoke anxiety for many especially when the impact of tests on one's life is considered, including the educational, vocational, emotional and other aspects. Test anxiety is an uneasiness or apprehension experienced before, during or after examination because of concern, worry or fear of uncertainty (Rothman, 2004). Test anxiety is a feeling that someone may have in a situation where performance really counts or where the pressure to do well is intense. An average level of anxiety is necessary for keeping people hardworking and responsible for what they have to do, and also helpful for people to have a more sustainable and prosperous life (Kahan, 2008 ; Donnelly, 2009). High level of anxiety threatens individuals' mental and physical health and has a negative effect on their personal, social, familial, occupational, and educational performance (Zahrakar, 2008).

A low level of test anxiety is normal and necessary among the students in order to maintain focus and to galvanise them into action preparing, plotting and perfecting strategies that will guarantee optimum success in the examinations. It is needed to motivate and help the students to stay mentally and physically alert (Birjandi & Alemi, 2010). However, high level of anxiety is dangerous and can result in emotional or physical distress, concentration difficulties and emotional worries. In schools, the incidence of anxiety is common. Cassady and Johnson (2002) reported that between 25 to 40 percent of students experience test anxiety. Students with disabilities and students in gifted education classes tend to experience higher rates of test anxiety. Pupils who experience anxiety tend to be easily distracted during a test, experience difficulty in comprehending relatively simple instructions and have trouble organising or recalling relevant information (Zeidner, 1998). 20 percent of

high anxious students quit school before graduating because of repeated academic failures (Tobias, 1979). Hembree (1998) noted that 30% of students suffer from high anxiety and that high test anxiety is associated with low self-esteem, poor readings, failing grades, disruptive classroom behaviours, negative attitudes towards school, and unpleasant feelings of nervousness and dread that stem from an intense fear of failure.

On the basis of the discussion above, it is pertinent to note that a study that examines the relationship between test anxiety and pupils' academic performance in basic mathematics in Lagos Central Senatorial District is amply justified and research-worthy. The following research questions and hypothesis were raised and tested in this study:

1. What is the general performance of pupils in basic mathematics in Lagos Central Senatorial District?
2. What is the level of pupils' test anxiety in Lagos Central Senatorial District?
3. What is the level of male and female pupils' test anxiety in Lagos Central Senatorial District?
4. There is no significant relationship between pupils' test anxiety level and academic performance in basic mathematics.

Methodology

The correlational survey design was adopted for this study. The population for this study consisted of 12,005 basic six pupils in Lagos Central Senatorial District, while the target population was 5,200 basic six pupils in the

two selected Local Government Education Authorities (LGEAs) out of five LGEAs in the District. The sample size of 375 basic six pupils was selected using multi-stage sampling techniques. At the first stage, purposive sampling technique was used to select two LGEAs from Lagos Central Senatorial District namely, Lagos Mainland and Surulere LGEAs. The two LGEAs has the highest concentration of public basic schools in the Senatorial District. At the second stage, simple random sampling technique was used to select 10 schools each from the two-sampled LGEAs and intact class of basic six pupils was randomly selected in each school that participated in this study. The instruments used for this study were pupils' test anxiety scale (PTAS) and mathematics performance test (MPT). The questionnaire consisted of 10 items placed on a four-point scale of Always (4 point), Sometimes (3 point), Rarely (2 point) and Never (1 point). The scoring key is the sum of the 10 questions. This will be the Test Anxiety score: Comfortably low (10-15), Normal or average (16-20), Moderately high (21-29) and Extremely high (30-40). The research questions were answered using frequency count, percentage and summated mean rating while Pearson Product Moment Correlation statistic was used to test the research hypothesis at 0.05 level of significance.

Findings

Demographic Data Analysis

Frequency counts and percentages were used to describe personal characteristics of the respondents.

Table 1: Demographic Characteristics of the Respondents based on Gender and LGEA

	Frequency	Percentage
GENDER		
Male	176	46.9
Female	199	53.1
Total	375	100.0
LGEA		
Lagos Mainland	185	49.3
Surulere	190	50.7
TOTAL	375	100.0

The result in table 1 indicated 176 of the respondents who participated in the study were male representing 46.9% while 199 of the respondents were female representing 53.1%. From the analysis, female respondents in the sample were found to be more in number than male respondents. Also,

185 (49.3%) respondents represented Lagos Mainland LGEA while 190 (50.7%) respondents represented Surulere LGEA.

Research Question One: What is the general performance of pupils in Mathematics in Lagos Central Senatorial District?

Table 2: General Performance of Pupils in Mathematics in Lagos Central Senatorial District

	Mean	SD	Minimum	Maximum
General Performance	63.03	20.573	16	86

The result in table 2 showed the general performance of pupils in basic mathematics. The mean score of 63.03 with a minimum score of 16 and maximum score of 86 was obtained. This showed that the academic performance of the pupils in basic

mathematics was above average with a mean score of 63.03.

Research Question Two: What is the level of pupils' test anxiety in Lagos Central Senatorial District?

Table 3: Levels of Pupils' Test Anxiety and Performance Mean in Lagos Central Senatorial District

Test Anxiety	Frequency	Percentage	Performance Mean
Comfortably Low Test Anxiety	2	.5	61.55
Normal or Average Test Anxiety	80	21.3	64.26
Moderately High Test Anxiety	261	69.6	80.50
Extremely High Test Anxiety	32	8.5	55.63
Total	375	100.0	

The result in table 3 showed the pupils' test anxiety levels in Lagos Central Senatorial. Two of the pupils representing .5 % had comfortably low test anxiety, 80 of the pupils representing 21.3% had normal or average test anxiety, 261 representing 69.6% had high test anxiety while 32 of the pupils representing 8.5% had extremely high test

anxiety. It was revealed from the finding that pupils who had moderately high test anxiety were found to be more in number than other test anxiety levels.

Research Question Three: What is the test anxiety level of male and female pupils in Lagos Central Senatorial District?

Table 4: Levels of Male and Female Pupils' Test Anxiety and Performance Mean in Lagos Central Senatorial District

Test Anxiety	Male	Female
Comfortably Low Test Anxiety	2 (0.5)	
Normal or Average Test Anxiety	42 (11.2)	38 (10.1)
Moderately High Test Anxiety	119 (31.7)	142 (37.9)
Extremely High Test Anxiety	13 (3.47)	19 (5.1)
Total	176 (46.9)	199 (53.1)

Note: The figures in parentheses are in percentages

Table 4 shows the male and female pupils' test anxiety level in Lagos Central senatorial District. 0.5% and 11.2% of male pupils had Comfortably Low Test Anxiety and Normal or Average Test Anxiety respectively while 10.1% of female had Normal or Average Test Anxiety. Also, 31.7% and 3.47% of male pupils had Moderately High Test Anxiety and Extremely High Test Anxiety respectively while 37.9% and 5.1% of female pupils had

Moderately High Test Anxiety and Extremely High Test Anxiety respectively. Apparently, female pupils were found to have more anxiety than male pupils.

Research Hypothesis Four: There is no significant relationship between test anxiety and Pupils' academic performance in Mathematics in Lagos Central Senatorial District?

Table 5: Relationship between Test Anxiety and Pupils' Academic Performance in Mathematics in Lagos Central Senatorial District

		Anxiety	Performance
Anxiety	Pearson Correlation	1	-.063
	Sig. (2-tailed)		.000
	N	375	375
Anxiety	Pearson Correlation	-.063	1
	Sig. (2-tailed)	.000	
	N	375	

Table 5 shows the relationship between test anxiety and academic performance of pupils in Mathematics in Lagos central senatorial district. There was a significant negative relationship ($r = -.063$; $P < .05$) between test anxiety and academic performance of pupils in Mathematics in Lagos central senatorial district.

Discussion of Findings

The study examined the relationship between test anxiety and pupils' academic performance in basic mathematics in Lagos Central Senatorial District.

The result in table 1 showed that the respondents were more of female pupils and Surulere LGSA had the highest respondents.

The result in table 2 showed that academic performance of pupils in basic mathematics is above average in Lagos Central Senatorial District. This implies that the problem-solving skill of basic school pupils is significantly above average. This finding supports that of Oke (2013) who found out that the academic performance of secondary school students in Ado-Ekiti was at average. However, this finding does not agree with the finding of Obafemi (2015), who found that the performance of pupils in basic

mathematics is below average. The disagreement might be caused by the difference in the curriculum and the method of teaching used by the teachers teaching mathematics in these schools.

The result in table 3 revealed that pupils who had moderate test anxiety were found to be more in number than other test anxiety levels and the performance mean is high compare to pupils with comfortably low and extremely high test anxiety. This is in support of Kahan (2008), who found that students with high test anxiety and those with low test anxiety have lower academic performance. Consequently, those students with moderate levels of test anxiety perform the best. However, the finding is not in agreement with that of Cassady and Johnson (2002), who found that, 25-40 percent of students' experience high test anxiety. The difference in the finding might have been as a result of the difference in the educational level and age of the sample that participated in the study.

Also, result in table 4 revealed that female pupils had high test anxiety compared to male pupils. This finding is in line with the finding of Olatoye and Afuwape (2003) who reported that, female students are more test

anxious than the male counterparts.

Furthermore, the result obtained in table 5 revealed that, test anxiety made a significant contribution to the prediction of academic performance of pupils in basic mathematics. A similar result was found by Peter, Ndunge and Kaula (2014) who found that test anxiety level is a significant factor contributing to academic performance. The reason for the similarity between the previous and the present studies may be as a result of the fact that everyone worries about everything and anything. Excessively worry can impair social, personal, or academic functioning. However, the finding is not in agreement with the findings of Rizwan and Nasir (2010). Rizwan and Nasir found that, no significant relationship exists between test anxiety scores and students' achievement scores.

Conclusion

The findings of this study revealed that pupils who had moderately high test anxiety were found to be more in number than other test anxiety levels. Finding also revealed that the academic performance of the pupils in basic mathematics was above average.

Finally, finding revealed that there was a significant relationship between test anxiety and pupils' academic performance in mathematics in Lagos Central Senatorial District. Based on the above findings and discussion, it is concluded that test anxiety is a factor that can predict pupils' academic performance in mathematics.

Recommendations

Based on the findings, the following recommendations were made:

1. In order to sustain the pupils' moderate test anxiety, teachers should give assignment to pupils from the first day of the term with adequate monitoring as this will prepare the pupils ahead of test and reduce cramming and the presence of extremely high test anxiety.
2. Seminars and workshop should be organised for the teachers in order to improve their knowledge and method of teaching mathematics as this can help to sustain the high performance of

the pupils and even help them to do better.

3. Educational Psychologists and Teachers should guide pupils to face test and teach them techniques of facing test as this efforts can build confidence in the female pupils and to courageously face test without fear.

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