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TEST ANXIETY AND LEARNED HELPLESSNESS AS PREDICTORS OF SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN MATHEMATICS IN ANAMBRA STATE

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ABSTRACT

Educators are faced with the need to look out for strategies that will reduce test anxiety and learned helplessness so as to enhance learning and bring about improved academic achievement among secondary school students. This study examined test anxiety and learned helplessness as predictors of secondary school students' academic achievement in Mathematics in Anambra State. Five research questions guided the study and five hypotheses were tested. The study adopted a corelational research design. The population consisted of 4,767 (1,729 males and 3,038 females) Senior Secondary School Two (SS2) students from all the 44 public secondary (33 Co-educational and 16 single sex) schools in Nnewi Education Zone of Anambra State in 2023/2024 academic session. A sample of 400 Senior Secondary School Students (SS2) offering Mathematics in 16 out of the 44 Government owned secondary schools in the zone was selected purposively. Test anxiety Scale (TAS) and Learned Helplessness Scale (LHS) were used for data collection. These instruments were validated by three experts and tested for reliability. Cronbach alpha was used to establish the reliability of TAS and LHS which yielded reliability indices of 0.86 and 0.89 respectively. Ordinary Least Square simple and multiple regressions using Statistical Package for Social Sciences (SPSS) version 26 were used to answer the research questions and test the hypotheses at 0.05 level of significance. The findings of the study revealed among others that there was a positive prediction between test anxiety and secondary school students' poor academic achievement in Mathematics. Also, there was a low prediction of male and female students' high

academic achievement by their test anxiety in Mathematics. The study recommended among others that Mathematics teachers, and school guidance counselors should make concerted efforts to reduce test anxiety and learned helplessness among students through proper teaching and conditioning and modeling the behaviour for better Mathematics performance.

Keywords: Test Anxiety; Learned Helplessness; Prediction; Students; Academic Achievement; Mathematics.

Introduction

Education has manifold functions in man's modern society. It is for preservation, transformation, transfer and advancement of knowledge. Education 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 economic 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 talents and energizes its people and responsibly exploits its natural endowments to guarantee a high standard of living and quality of life for its citizens (Algani, 2022). The overall sustainable development of any nation depends on the level of scientific and technological literacy of her citizens (Selvarani and Saroja, 2022). In the current era, there is an urgent need to emphasize on actualization of scientific and technological developments because of their global advancement. As a result, students are being encouraged to develop an interest in science and pursue science-related subjects and courses since they will exponentially increase the level of growth in these critical fields in the near future (Algani, 2022), thus Mathematics is crucial in this direction.

Mathematics is a broad field of study that involves numbers, quantities, shapes, and patterns. It is the bed rock of all sciences. Mathematics is a tool of basic sciences, such as physics, chemistry, biology, and even social sciences such as geography, economics, banking, and finance (Okoi and Esomonu, 2021). The role of Mathematics in physical and agricultural sciences, engineering, aircraft, computer, textile, industries, and weather forecasting are numerous. It is therefore very difficult to imagine a world without Mathematics. Mathematics as a subject is relevant virtually in everyday activities of man. Mathematics as a subject is an important component of modern education as it is essential for developing problem solving skill, critical thinking, and analytical reasoning for the students/learners. It plays a vital role in assessing students' learning.

Despite the importance of Mathematics to students, the state of poor achievement among students who enroll for Mathematics at external examinations such as West African Senior School Certificate Examination (WASSCE) has continued to be a thing of worry to teachers and educators. Based on the Chief Examiner's report, it was observed that the percentage of students who

passed at the credit level in Mathematics, ranged from 33.37% to 35.66% from 2013 - 2016, while the period between 2017 to 2019, witnessed a significant rise in the percentage (37.6%-40.5%) of students who achieved a credit level in the examination. In 2020, there was a decline in achievement of Mathematics students which was rated 38.2%pass. This decline was attributed to students being out of school because of COVID-19 outbreak. However, in 2021 and 2022, students' achievement in mathematics increased to 42.13%, and 47.19% respectively. In 2023 however, the achievement of students declined to 43.7% which signifies a problem that needs to be resolved.

This poor, fluctuating and unimpressive academic achievement among students in Mathematics has been a thing of worry to many researchers and efforts to identify major factors with the aim of addressing them have proved abortive (Ayodele and Adeola, 2020). Several researchers have pointed out different reasons for students' poor achievement in Mathematics compared to other subjects which among others are abstractness of certain concepts in Mathematics, lack of understanding of the subject by the students, ambiguity of some terminologies in the subject (Esomonu and Okeaba, 2021; Esomonu and Okoi, 2021). However, there are student-related variables that could be responsible for students' poor achievement in Mathematics. Some of these variables as detailed by Anikpe, Agu and Ikeanumba (2024) could be poor study habit, students' attitude, test anxiety, academic self-concept, achievement motivation, learned helplessness, achievement goal orientation, academic motivation, academic self-resilience, academic self-confidence, and test-taking skills, among others. The present study however, will focus on test anxiety, learned helplessness, and test-taking skills and determine the extent to which they predict academic achievement of students in Mathematics.

Test anxiety is a subjective feeling of tension, apprehension, nervousness, fear and worry when faced with a test/examination. Mathematics Test Anxiety, according to Nandhini and Subramanian (2021), is defined as feeling of anxiousness that one cannot perform efficiently in situations that involve the use of Mathematics. Test anxiety is a psychological concern that could motivate cheating in academic engagements, including examinations, presentations, and debates in subjects such as Mathematics (Nnaji, 2022). Research suggests that examination anxiety increases at the thought of the examination (Lotz and Sparfeld, 2017), thus divulging most students to sharp practices to cope with the outcomes. Because, many students experience some degree of stress and anxiety before and during examination, test anxiety can actually impair learning and affect Mathematics examination achievement negatively. Test anxiety is a situation of uneasiness, worry or feeling of uncertainty about impending or on-going evaluation programme, like examination. It is an undesirable reaction toward examination or evaluation. In situations where the pressure is on and a good performance count, students can become so anxious that they are actually unable to do their best (Morin, 2023).

Students with high level of test anxiety have high possibility or tendency to achieve poor academically in examination in Mathematics unlike students with low level of test anxiety. Test anxiety is a unique attribute that students possess and this uniqueness make them develop learned helplessness which could also play an important role in academic achievement of students in Mathematics.

Learned helplessness is a condition in which an individual feels unable to control or change a situation, leading to a sense of powerlessness and a lack of motivation to try. This condition typically develops after repeated exposure to uncontrollable and adverse events, where the individual learns to believe that their actions have no effect on the outcome. Learned helplessness occurs when individuals experience repeated failure or adversity, leading them to believe that they have no control over their situation, and subsequently giving up trying to change it (Okonkwo, Ekweoba and Okemmiri, 2023; Adeyemi, 2020). Learned helplessness is a condition associated with the feelings of loss of control, and it creates students who disengage from effort, even if the effort is within reach and will clearly lead to success. It is the mindset when people believe that they are powerless to control a series of negative situations (Cook and Hurst, 2021; and Myers, 2020). Learned helplessness is a behaviour exhibited by examinees or students after enduring repeated aversive stimuli beyond their control most especially when learning subjects like Mathematics. As a result, they stop trying to change their circumstances, even when they do have the ability to improve the outcome. It is a disruption in motivation and learning following exposure to non-contingent (uncontrollable) outcomes. If we are really interested in improving the quality of education, proper attention should be paid to test anxiety and learned helplessness as these variables under study play critical roles in students' academic achievement.

Academic achievement according to Berkley and Chang (2022) refers to the extent to which a student, teacher or institution has attained the short or long-term educational goals. It describes academic outcomes that indicate the extent to which a student has achieved their learning objectives (Inyang, 2022). Achievement is often measured through a standardized or teacher made test and often denote a students' grade in an examination or test. To improve students' achievement, there is a general agreement among researchers and authors that teacher must adopt innovative teaching methods that centre instruction on the students. Nwuba (2021) defined it as the gain in knowledge of a student which occurs as a result of taking part in a learning activity or programme. Hence, academic achievement maybe defined as a statistic report of a student's achievement in an engaged educational (academic) programme. Most studies carried out in Nigeria have asserted that academic achievement of learners depend mostly on learners' hard work and interaction between other personal (psychological) and environmental variables involved in the learning process. Academic achievement as explained by Okafor, Obi and Oguzie (2018), is how well an individual has done in his cognitive tasks. The differences in academic

achievements of students can be attributed to various factors like intelligence, creativity, self-esteem, achievement motivation, instructional strategy, gender, personality and many others (Sharma and Pooja, 2018). In this paper therefore, the prediction of academic achievement as regards to students' personal variables such as test anxiety and learned helplessness in Mathematics as it relates to gender were studied.

Gender refers to social construct regarding culture-bond conventions, roles and behaviours as well as relations between and among women and men, boys and girls (Okoli and Osuafor, 2020). Gender is defined as the behavioural, cultural, or psychological traits typically associated with one sex (Galle, Audi and Egya, 2024). Gender is a socially constructed term depicting the system of relations between males and females, and designates behaviours, attitudes, roles, status and other processes that govern relationship among sexes in a given educational, socio-economic and political context (Esomonu and Ikeanumba, 2021). It is a social construct that differentiates male and female in the society. Nwuba, Egwu and Osuafor (2022) defined gender as simply an attribute ascribed to male and female based on biological characteristics. In the context of Education, gender issues are referred to as the difference, both real and perceived, between boys and girls in opportunities and the direction of achievement for either males or females (Mbaegbu, Ikeanumba and Anazodo, 2023). Apart from gender, the interaction of the identified variables may also predict the academic achievement of students in Mathematics.

Literature showed that most researchers concentrated on separate prediction of students' variables such as test anxiety and learned helplessness with other variables on academic achievement giving little attention to how the combination of these psychological variables (test anxiety and learned helplessness) may jointly predict academic achievement in Mathematics. Most of these studies were done based on correlation or simple linear regressions. For example, Okonkwo, Ekweoba and Okemmiri (2023) conducted a study on influence of self-esteem and learned helplessness on academic achievement of Chemistry students in Awka Education Zone of Anambra State; Suleiman (2021) also conducted a study on influence of learned helplessness and home background on academic performance among senior secondary school students' in Federal Capital Territory Abuja, Nigeria; Ayodele and Adeola (2020) carried out a research on test-taking strategies used before and during test and the academic performance of Secondary School Students in Chemistry tests and also the relationship between test-taking strategies before test and students' academic performance in Chemistry; Shafiq, Erum and Muhammad (2021) conducted a research to explore the effects of test anxiety on student's academic achievement at secondary school level in Lahore. These approaches are not capable of determining prediction of the students' achievement by the independent variables in Mathematics as it involves more than one independent variable and one dependent variable. Thus, the problem of this study put in question form is; how do test anxiety and

learned helplessness predict secondary school students' academic achievement using multiple linear regression?

Research Questions

The following research questions guided the study

1. What is the predictive power of test anxiety on secondary school students' academic achievement in Mathematics?
2. To what extent does test anxiety predict male and female secondary school students' academic achievement in Mathematics respectively?
3. What is the predictive power of learned helplessness on secondary school students' academic achievement in Mathematics?
4. To what extent does learned helplessness predict male and female secondary school students' academic achievement in Mathematics respectively?
5. Do test anxiety, learned helplessness and test-taking skills jointly predict secondary school students' academic achievement?

Hypotheses

The following hypotheses were tested at 0.05 level of significance

1. The predictive power of test anxiety on secondary school students' academic achievement in Mathematics is not significant.
2. Test anxiety does not significantly predict male and female secondary school students' academic achievement respectively.
3. The predictive power of learned helplessness on secondary school students' academic achievement in Mathematics is not significant.
4. Learned helplessness does not significantly predict male and female secondary school students' academic achievement in Mathematics respectively.
5. Test anxiety, learned helplessness, and test-taking skills do not jointly predict secondary school students' academic achievement significantly.

Materials and Method

The study adopted a corelational research design. The population consisted of 4,767 (1,729 males and 3,038 females) Senior Secondary School Two (SS2) students from all the 44 public secondary (33 Co-educational and 16 single sex) schools in Nnewi Education Zone of Anambra State in 2023/2024 academic session. A sample of 400 Senior Secondary School Students (SS2) offering Mathematics in 16 out of the 44 Government owned secondary schools in the zone was selected purposively. Test anxiety Scale (TAS) and Learned Helplessness Scale (LHS) were used for data collection. These instruments were validated by three experts and tested for reliability. Cronbach alpha was used to establish the reliability of TAS and LHS which yielded reliability indices of 0.86 and 0.89 respectively. Ordinary Least Square simple and multiple regressions using Statistical Package for Social Sciences (SPSS) version 26 were used to answer the research questions and test the hypotheses at 0.05 level of significance.

Presentation of Results

Research Question 1: What is the predictive power of test anxiety on secondary school students' academic achievement in Mathematics?

Table 1: *Linear Regression Analysis on the Predictive Value of Test Anxiety on Academic Achievement of Secondary School Students in Mathematics*

Model	R	R Squared	Adjusted R Squared
1	.424	.847	.845

Data in Table 1 indicated a positive relationship between test anxiety and secondary school students' poor academic achievement in Mathematics. This is shown by the calculated r of .424 and the calculated R^2 of .847 indicating that 85% of the variance observed on the secondary school students' academic achievement in Mathematics was accounted for by their test anxiety. This means that an increase in test anxiety predicted low academic achievement of secondary school students in Mathematics in Nnewi Education Zone of Anambra State.

Research Question 2: To what extent does test anxiety predict male and female students' academic achievement in Mathematics respectively?

Table 2: *Linear Regression Analysis on the Predictive Power of Test Anxiety on Academic Achievement of Male and Female Secondary School Students in Mathematics*

Gender	Model	R	R Squared	Adjusted R Squared	Fchange	Std. Error of the Estimate
Male	1	0.26[a]	.510	.512	.420	6.64204
Female	1	0.24[a]	.472	.637	.822	6.37861

a. Predictor: (Constant), Test Anxiety in Mathematics

The regression analysis presented in Table 2 examined the relationship between the test anxiety of male and female students and their achievement in Mathematics. The table displayed the linear regression model of Mathematics acquired for 127 male and 273 female Mathematics students. The data demonstrated that there is a low positive correlation of 0.26 between the test anxiety of male students and their achievement in Mathematics. This indicated a relatively low positive prediction, with a coefficient of determination (r^2) of 0.510 indicating that 51.0% of the variance observed on male students' academic achievement was predicted by their test anxiety. Furthermore, there exists a low positive correlation of 0.24 between the test anxiety of female students and their achievement in Mathematics. This correlation suggested a somewhat low

prediction, with a coefficient of determination (r^2) of 0.472 indicating that 47.2% of the variance observed on female students' academic achievement was predicted by their test anxiety. These findings suggested that male students' test anxiety is not a significant predictor of high academic achievement compared to female students in Nnewi Education Zone of Anambra State.

Research Question 3: What is the predictive power of learned helplessness on students' academic achievement in Mathematics?

Table 3: *Linear Regression Analysis on the Predictive Value of Learned Helplessness on Academic Achievement of Secondary School Students in Mathematics*

Model	R	R Squared	Adjusted R Squared
1	.366	.732	.721

Data in Table 3 indicated a positive low prediction between learned helplessness and secondary school students' academic achievement in Mathematics. This is shown by the calculated r of .366 and the calculated R^2 of .732 indicating that 73.2% of the variance observed on the secondary school students' academic achievement in Mathematics was accounted for by their learned helplessness. This means that an increase in learned helplessness predicted poor academic achievement of secondary school students in Mathematics in Nnewi Education Zone of Anambra State.

Research Question 4: To what extent does learned helplessness predict male and female students' academic achievement in Mathematics respectively?

Table 4: *Linear Regression Analysis on the Predictive Power of Learned Helplessness on Academic Achievement of Male and Female Secondary School Students in Mathematics*

Gender	Model	R	R Squared	Adjusted R Squared	Fchange	Std. Error of the Estimate
Male	1	.285[a]	.570	.542	.371	3.25410
Female	1	.262[a]	.523	.535	.443	4.13521

a. Predictor: (Constant), Learned Helplessness in Mathematics

The regression analysis presented in Table 4 examined the relationship between the learned helplessness of male and female students and their achievement in Mathematics. The table displayed the linear regression model of Mathematics acquired for 127 male and 273 female Mathematics students. The data demonstrated that there is a low prediction of 0.285 between the learned helplessness of male students and their achievement in Mathematics. This indicated a relatively good prediction, with a

coefficient of determination (r^2) of 0.57 indicating that 57.0% of the variance observed on male students' academic achievement was predicted by their learned helplessness. Furthermore, there exists a low positive prediction of 0.262 between the learned helplessness of female students and their achievement in Mathematics. This suggested a good prediction, with a coefficient of determination (r^2) of 0.523 indicating that 52.3% of the variance observed on female students' academic achievement was accounted for by their learned helplessness. These findings suggested that male students' learned helplessness is not a significant predictor of high academic achievement compared to female students in Nnewi Education Zone of Anambra State.

Research Question 5: Do test anxiety and learned helplessness jointly predict students' academic achievement?

Table 5: *Linear Regression Analysis on the Joint Predictive Power of Test Anxiety and Learned Helplessness on Academic Achievement of Male and Female Secondary School Students in Mathematics*

Model	R	R Squared	Adjusted R Squared
1	.493	.243	.241

Data presented in Table 5 indicated a positive relationship test anxiety and learned helplessness on secondary school students' academic achievement in Mathematics. This is shown by the calculated r of .493. The calculated R^2 of .243 also indicates that 24% of the variance observed on the academic achievement of students in Mathematics was accounted for by the combined effect of their test anxiety and learned helplessness in Nnewi Education Zone of Anambra State.

Hypothesis 1: The predictive power of test anxiety on secondary students' academic achievement in Mathematics is not significant.

Table 6: *Multiple Regression Analysis on the Significant Prediction of Test Anxiety on Secondary School Students' Academic Achievement in Mathematics*

Model	Sum of Squares	Df	Mean Square	F	t-cal	Sig.
Regression	16.463	1	16.463	44.427	-6.665	.000
Residual	333.878	399	.371			
Total	350.341	400				

Data in Table 6 revealed that test anxiety significantly predicts secondary school students' low academic achievement in Mathematics. This is shown by the F- value

of 44.427 which is significant at 0.000 level and also significant at 0.05 level of probability. This is further shown by the calculated t value of -6.665 which is also significant at .000 and at 0.05 level. Therefore, the null hypothesis that the predictive power of test anxiety on secondary students' academic achievement in Mathematics is not significant was rejected and the alternate hypothesis retained. Thus, test anxiety is a significant predictor of secondary school students' negative academic achievement in Mathematics in Nnewi Education Zone of Anambra State.

Hypothesis 2: Test anxiety does not significantly predict male and female students' academic achievement respectively.

Table 7: *Regression Analysis of the Prediction of Male and Female Students' Test Anxiety on Academic Achievement in Mathematics*

Gender	Model	Unstandardized Coefficients	Standardized Coefficients		t	Sig
		B	Std. Error	Beta		
Male	Test Anxiety	.314	.484	.0708	.518	-.644
Female	Test Anxiety	.330	.340	.0610	.333	-.341

Table 7 shows the result of the regression analysis of the prediction of male and female students' test anxiety on academic achievement in Mathematics. The analysis shows a significant prediction for male and female students respectively F (1, 126) = .420, P > 0.05, Adj. R^2 = .003, R^2 change = .003; F (1, 272) = .941, P > 0.05, Adj. R^2 = .005, R^2 change .005. The analysis shows that male (β = 0.26, t = .518, P > 0.05) and female (β = 0.24, t = .333, P > 0.05) in Mathematics, hence, hypothesis 2 was not rejected. This implies that male and female secondary students' academic achievements in Mathematics were not significantly predicted by test anxiety in Nnewi Education Zone of Anambra State.

Hypothesis 3: The predictive power of learned helplessness on secondary students' academic achievement in Mathematics is not significant.

Table 8: *Multiple Regression Analysis on the Significant Prediction of Learned Helplessness on Secondary School Students' Academic Achievement in Mathematics*

Model	Sum of Squares	df	Mean Square	F	t-cal	Sig.
Regression	14.994	1	14.994	40.285	-6.347	.21
Residual	335.347	399	.372			
Total	350.341	400				

Data in Table 8 revealed that learned helplessness does not significantly predict secondary school students' better academic achievement in Mathematics. This is shown by the F- value of 40.285 which is not significant at 0.21 level and also significant at 0.05 level of probability. This is further shown by the calculated t value of -6.347 which is also significant at .21 and at 0.05 level. Therefore, the null hypothesis that the predictive power of learned helplessness on secondary students' academic achievement in Mathematics is not significant is accepted and the alternate hypothesis rejected. Thus, learned helplessness is not a significant predictor of secondary school students' high academic achievement in Mathematics in Nnewi Education Zone of Anambra State.

Hypothesis 4: Learned Helplessness does not significantly predict male and female students' academic achievement respectively.

Table 9: *Regression Analysis of the Prediction of Male and Female Students' Learned Helplessness on Academic Achievement in Mathematics*

Gender	Model	Unstandardized Coefficients	Standardized Coefficients		t	Sig
		B	Std. Error	Beta		
Male	Learned Helplessness	.439	.331	.0719	.211	-.661
Female	Learned Helplessness	.433	.352	.0822	.321	-.401

Table 9 shows the result of the regression analysis of the prediction of male and female students' learned helplessness on academic achievement in Mathematics. The analysis shows a non-significant model summary for male and female students respectively F (1, 126) = .371, P > 0.05, Adj. R^2 = .003, R^2 change = .003; F (1, 272) = .443, P > 0.05, Adj. R^2 = .005, R^2 change .005. The analysis shows that male ($\beta = 0.285$, $t = .211$, $P > 0.05$) and female ($\beta = 0.262$, $t = .321$, $P > 0.05$), hence, hypothesis 4 was not rejected. This implies that male and female secondary students' high academic achievements in Mathematics were not significantly predicted by learned helplessness in Nnewi Education Zone of Anambra State.

Hypothesis 5: Test anxiety and learned helplessness do not jointly predict students' academic achievement significantly.

Table 10: *Multiple Regression Analysis on the Significant Joint Prediction of Test Anxiety and Learned Helplessness on Secondary School Students' Academic Achievement in Mathematics*

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	85.308	1	17.362	96.456	.000
Residual	265.033	399	.295		
Total	350.341	400			

Data in Table 10 showed that test anxiety and learned helplessness significantly predict academic achievement jointly in Mathematics. This is shown by the F- value of 96.456 which is significant at 0.000 level and also significant at 0.05 level of probability. Therefore, the null hypothesis which states that test anxiety and learned helplessness do not significantly predict academic achievement of secondary school students in Mathematics is rejected in Nnewi Education Zone of Anambra State.

Discussion of Findings

Findings from research question one indicated a positive low prediction between test anxiety and secondary school students' academic achievement in Mathematics. The findings also revealed that 85% of the variance observed on the secondary school students' poor academic achievement in Mathematics was accounted for by their test anxiety. This could be as a result of their anxiety or anxiousness before and during Mathematics examination. The finding of the study was in agreement with the findings of Okigbo and Onoshakpokaiye (2023) who revealed a low prediction between test anxiety and academic achievement in Mathematics. In addition, the study of Merzaq, *et al.*, (2023) agreed with the findings of the current study as their findings revealed a low prediction between test anxiety and high academic achievement. The findings of Nwafor, Eke and Ibe (2023) and Wakeh, Ijale and Samson (2023) were in conformity with the current study as their findings revealed a negative correlation between academic performance and test anxiety. In addition, there was no correlation between test anxiety and academic performance of students in Chemistry. More so, the findings of research question two revealed a low positive prediction of male and female students' academic achievement by their test anxiety in Mathematics. This means that test anxiety of male and female students did not predict their academic achievement in Mathematics. The findings of Okigbo and Onoshakpokaiye (2023) agreed to this as their result revealed a low prediction of students' academic achievement by their test anxiety in Mathematics. The findings of this study were also in consonant with the findings of Fullido (2023); Okobia and Oji (2021) and Rehman, Javed and Abiodullah (2021) whose studies revealed a low or negative prediction between male and female students' academic achievement and their test anxiety in different subjects.

Findings from hypothesis one revealed that test anxiety significantly predict

secondary school students' poor academic achievement in Mathematics. The null hypothesis that the predictive power of test anxiety on secondary students' academic achievement in Mathematics is not significant is rejected and the alternate hypothesis accepted. Thus, test anxiety is not a significant predictor of secondary school students' high academic achievement in Mathematics. This result conforms to the findings of Merzaq, *et al* (2023) who revealed a significant prediction of students' poor academic achievement by their test anxiety. This was also in agreement with the findings of Rehman, et al., (2021), Apiah, *et al*., (2021), and Mittu and Nandana (2020) whose studies revealed a negative prediction between test anxiety and high academic achievement of students. Findings from hypothesis two revealed that male and female secondary students' academic achievements in Mathematics were not significantly predicted by their test anxiety. The findings of this study are in line with Okigbo and Onoshakpokaiye (2023), who posited from the findings of their study that gender is insignificant in moderating the relationship between students' test anxiety and their academic achievement in Mathematics. Again, the findings of Fullido (2023); Hameed, et al (2023); Okobia and Oji (2021) and Rehman, Javed and Abiodullah (2021) revealed a significant prediction between male and female students' test anxiety and their poor academic achievement. The findings of Obioma and Ogbu (2019) also agreed with the findings of the current study. This could be because as test anxiety increases, students' high academic achievement in Mathematics reduces, vice versa.

Findings from research question three indicated a low positive prediction between learned helplessness and secondary school students' academic achievement in Mathematics. This is shown by the calculated r of 0.366 and the calculated R^2 of .534 indicating that 53.4% of the variance observed on the secondary school students' academic achievement in Mathematics was accounted for by their learned helplessness. This means that an increase in learned helplessness predicted poor academic achievement of secondary school students in Mathematics. The finding of this study was in agreement with the result of Okonkwo, Ekweoba and Okemmiri (2023) revealed that an increase in learned helplessness led to a decrease in students' academic achievement in Chemistry. This means that learned helplessness predicted low to academic achievement of students in Chemistry. The findings also agreed with the findings of Suleiman (2023) and Gesinde, Adejumo and Eyisi (2020) whose studies revealed a low positive relationship between learned helplessness and secondary school students' academic achievement in school subjects. This could be as a result of feeling hopeless, not able to do better, and laziness. Again, findings from research question four revealed that male students' learned helplessness is not significant predictor of high academic achievement compared to female students. This means that male and female students' academic achievement was not predicted by their learned helplessness in Mathematics. This was in agreement with the findings of

Opera and Nwanze (2018) who revealed that learned helplessness predicted examination phobia and did not predict male and female students' academic achievement in school. The findings of Okonkwo, Ekweoba and Okemmiri (2023) agreed with the result of the current study as it revealed that learned helplessness did not predict male and female students' academic achievement in Chemistry.

The result from hypothesis three revealed that learned helplessness significantly does not predict secondary school students' high academic achievement in Mathematics. The null hypothesis that the predictive power of learned helplessness on secondary students' academic achievement in Mathematics is not significant is accepted and the alternate hypothesis rejected. Thus, learned helplessness is not a significant predictor of secondary school students' high academic achievement in Mathematics. Also, the findings from hypothesis four revealed that male and female secondary students' high academic achievements in Mathematics were not significantly predicted by learned helplessness. This means that the null hypothesis was rejected. These conforms with the findings of Okonkwo, Ekweoba and Okemmiri (2023), Suleiman (2021), and Gesinde, Adejumo and Eyisi (2020) whose results revealed that students' learned helplessness did not predict their academic achievement. Their findings also revealed that gender is insignificant in moderating the prediction between students' learned helplessness and their academic achievement.

Findings from research question five revealed a positive relationship test anxiety and learned helplessness on secondary school students' academic achievement in Mathematics. This is shown by the calculated r of .493. The calculated R^2 of .244 also indicates that 24% of the variance observed on the academic achievement of students in Mathematics was accounted for by the combined effect of their test anxiety and learned helplessness. Also, findings from hypothesis five revealed that test anxiety and learned helplessness significantly predict academic achievement jointly in Mathematics. These are in consonance with the findings of Okigbo and Onoshakpokaiye (2023), Hameed, et al., (2023), Okonkwo, Ekweoba and Okemmiri (2023) and Adeosun and Okonkwo (2024) who revealed a positive joint prediction between test anxiety and learned helplessness skills on students' academic achievement. Their findings also revealed a significant positive joint prediction between test anxiety and learned helplessness on students' academic achievement.

Conclusion

This study established the predictive power of academic achievement in Mathematics by students' test anxiety and learned helplessness separately and jointly. Based on the findings from the result, it can be concluded that the investigated test anxiety and learned helplessness predicted students' poor academic achievements in Mathematics. However, the prediction for test anxiety and learned helplessness was not significant. The study further concluded that gender influence was not significant in the

prediction of achievement by test anxiety and learned helplessness in Mathematics. These findings indicated that students' test anxiety and learned helplessness negatively affect their academic achievement in Mathematics in Nnewi Education Zone of Anambra State.

Recommendations

The following recommendations were made for the study;

1. Mathematics teachers, school guidance counselors should make concerted efforts to reduce test anxiety and learned helplessness among students through proper teaching and conditioning and modeling the behaviour for better Mathematics performance.
2. Interventions and support systems targeting the issue of learned helplessness should be implemented as well as provide support to enhance students' overall well-being so as to improve their academic achievement.
3. Government and education stakeholders should organize workshops, seminars and conferences for teachers to educate them on the need to help students reduce test anxiety and learned helplessness by engaging them actively in class activities.
4. Mathematics teachers should integrate the teaching of testing skills as part of classroom instructional activities in order to support the students, especially weak ones, through constant practice and regular engagement with learning materials.

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