ACADEMIC PROCRASTINATION, TEST ANXIETY AND SELF-ESTEEM AS CORRELATES OF SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT IN CHEMISTRY IN ANAMBRA STATE, NIGERIA

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Abstract
This study determined academic procrastination, test anxiety and self-esteem as correlate of secondary school students' academic achievement in chemistry. Four research questions guided the study and four null hypotheses were formulated and tested. A correlational research design was adopted for the study. This study was carried out in Anambra State. The population of the study consisted of all the 8,081 Senior Secondary School II (SS2) Chemistry students in the 263 public secondary schools in the six education zones in Anambra State. The sample size consisted of 1,500 SS2 chemistry students. Multi-stage sampling technique was used in selecting the sample size. Data for this study was collected by means of structuredquestionnaire. The first instrument is titled Tuckman Procrastination Scale, TPS (adapted) which was originally developed by B. W. Tuckman. The second instrument is titled Test Anxiety Scale, TAS (adapted) which was developed by Sarason (1980). The third instrument is titled Rosenberg's Self-esteem Scale, RSES. The fourth instrument is an achievement test measured using the cumulative/average score of SS 2 students' internal (termly) examination scores. The instruments were subjected to face and content validation by three experts. TPS and TAS were subjected to test of internal consistency using Cronbach Alpha method and reliability values of 0.87 and 0.81 respectively were obtained. In answering the research questions, Pearson Product Moment was used while t-test of correlational analysis was used to test the null hypotheses at 0.05 alpha level. It was found out that there is a strong positive relationship among academic procrastination, test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry. Based on the findings, it was recommended amongst others that teachers and school administration should enlighten students to practice how to manage their time as precisely as possible to reduce the anxiety associated with rushing to meet up with deadlines at the last minute due to purposeful delays in carrying out academic tasks.
Keywords: Academic Procrastination, Test Anxiety, Self Esteem, Academic Achievement, Chemistry

Introduction
Chemistry is a subject of universal interest in human development with regards to the utility of its knowledge in real-life situations to be faced by many students someday. According to Ojokuku (2017), Chemistry is concerned with the utilization of natural substances and the creation of artificial ones. Chemistry knowledge gives us indepth knowledge of our mineral resources like limestone, columbite, tin ore and agricultural products like animal

hides and skin and how they can be properly processed and harnessed for optimum use. Chemistry also serves as a prerequisite subject for studying professional courses like nursing, medicine, pharmacy.

The importance of chemistry to national development cannot be over-emphasized. However, despite this importance, the performance of chemistry students in West African Senior School Certificate Examination (WASSCE) has continued to fluctuate over the years.(WAEC chiaf examiners report, 2015-2019)Academic achievement is generally regarded as the outcome of learning. Okoli and Egbunonu (2012) opined that achievement in teaching-learning means the attainment of set objectives of instruction. Academic achievement according to Steinmayer, Meibner, Weidinger and Wirthwein (2018) can determine whether a student will have the opportunity to continue his or her education; it will define whether one can take part in higher education based on what he/she attains. Academic achievement is therefore one of the major variables that is used to measure an individual's success or failure in school activities.

The WAEC Chief Examiner's report revealed that students' Chemistry performance over the years (2015 – 2019) has not been consistent with the highest score of 61.98. This has become a worrisome situation for education stakeholders, teachers, researchers and students alike, thus giving rise to a plethora of studies on possible ways of improving students' academic achievement in various science subjects especially in chemistry particularly in Anambra State. However, some common factors like availability of qualified and seasoned chemistry teachers, teaching methods and techniques adopted, non-availability of conducive learning environment, infrastructureal decay, and parental influence have been identified by researchers as contributing to the fluctuating and not-so-good achievement of students in chemistry in Anambra State, on the other hand, there seem to be a lot of other things in recent times with evolving technologies that distracts students from paying rapt attention to studies hence influencing academic achievement. High rate of procrastination among students in going about their academic endeavours maybe one of such factors influencing academic achievement. The unregulated use of smart phones, easy internet access to download and view all sorts of videos, pictures and articles unrelated to academic work, presence of many social media handles, access to play stations, poor value system (emphasis on money! Money!!, money!!!, regardless of how it is made) and other pleasurable and time consuming activities are factors which in recent times have increased procrastination tendencies among students in Anambra state.

Procrastination is seen as the lack of intention or willingness to take action (Ryan & Deci, as 8cited in Yilmaz, 2017). According to Ozer, Demir and Ferrari (2018), procrastination affects 46 to 95% of students. Onwuegbuzie (2014) indicated that approximately 40% to 60% of Nigerian secondary school students always or often procrastinate in such academic tasks as preparing for tests and examinations and reading assignments weekly.Academic procrastination is considered to be the pervasive and permanent desire on the part of a student to postpone academic activities. It is the delaying of academic work that must be completed or the failure to complete an academic task within the expected time frame. Several studies (Akinsola, Tella, & Tella, 2017; Savithri, 2014; Kim & Seo, 2015) have attributed undergraduates' poor academic performance to

academic procrastination. Procrastination has received many empirical attentions especially within the field of psychology. Procrastinators are more likely going to defer studies to barely few days to examination hence may not cover the whole course content, thus entering the exam hall unprepared. This makes them shaky, unstable and less confident in their ability to perform well in the exam hence resulting in test anxiety.

Test anxiety is a psychological disorder that makes one anxious before, during or after a test or other assessment to such an extent that this anxiety causes poor performance or interferes with normal learning. Futhermore, Spilberger and Sarason (2019) saw test anxiety as a situation specific trait that refers to the anxiety states and worry conditions that are experienced during examinations. Test anxiety comes with positive and negative connotations. Positive, in the sense that, a little bit of test anxiety motivates students to work hard. A low level of stress is necessary but limits students' performances in test and leads to a behavioural disorder or low confidence (Okoye and Onokpaunu, 2020). More so, Ilo and Unachukwu (2020) stressed that students with low test anxiety do not worry and are able to concentrate on their test performance, therefore, they are likely to perform better than those with high levels of anxiety. The authors further remarked that students do poorly because they are anxious and their poor performance increases their anxiety.

Student's level of test anxiety can cause a student's academic performance to suffer even more depending on the length of time they suffer from test anxiety (Zadeh, Ebrahimi and Mahdinejad, 2012). However, test anxiety according to some researchers, may be influenced by varied factors such as environmental factors (Aremu and Sokan cited in Owonwami, Sakiyo and Filgona, 2017); teacher factor and psychological factors (Ngwoke, 2010). Ngwoke, Ossai and Obikwelu (2013) observed that many Nigerian students at all levels exhibit high level of test anxiety in test conditions. This often resulted in debilitating anxiety, high proneness to cheating in examination and consequently low academic achievement. Symptoms of test anxiety include headache, nausea, sweaty palms and forehead, boredom, fear, nervousness, loss of appetite or sleep. Sense of helplessness, fainting, mental blocks, panic and so on. Extreme case of test anxiety promotes a sense of self defeat in students making them believe they'll perform poorly, leading to a negative self-image and an incorrect perception of self, the result of this is a low self-esteem.

In addition to the above, Covington and Omelich as cited by Tuncay (2018), found that individuals with a strong motive to achieve generally see themselves as highly capable individuals, therefore feel more optimistic with respect to their chances of academic success than individuals low in achievement. Informal interaction with students in some secondary schools in Anambra state has revealed to the researcher the disturbing rate of academic procrastination among students as most students agree to reading only when exam time tables are out and the accompanying test anxiety and self esteem issues associated with this prevalent lifestyle. Although, literature abounds on self-esteem, academic procrastination, test anxiety and academic achievement in western climes, the researcher observed that there seems to be paucity of empirical investigations in which academic achievement is used as a dependent variable against academic procrastination, test anxiety and self-esteem as independent variables among secondary school students in Anambra state. It is against this backdrop, the researcher sought to determine academic

procrastination, test anxiety and self-esteem as correlate of secondary school chemistry students' academic achievement in Anambra state.

Purpose of the study

The purpose of this study is to determine academic procrastination, test anxiety and self-esteem as correlates of secondary school students' academic achievement in Chemistry. Specifically, the study sought to determine:

1. Academic procrastination as a correlate of academic achievement of secondary school students in Chemistry
2. Test anxiety as a correlate of academic achievement of secondary school students in Chemistry
3. Self-esteem as a correlate of academic achievement of secondary school students in Chemistry
4. Academic procrastination, test anxiety, self-esteem as correlates of academic achievement of secondary school students in Chemistry

Research Questions

The following research questions guide the study

1. What is the correlation between academic procrastination scores and academic achievement scores of secondary school students in Chemistry in Anambra State?
2. What is the correlation between test anxiety scores and academic achievement scores of secondary school students in Chemistry in Anambra State?
3. What is the correlation between self-esteem scores and academic achievement scores of secondary school students in Chemistry in Anambra State?
4. What is the joint correlation among academic procrastination, test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry in Anambra State?

Hypotheses

1. There is no significant correlation between academic procrastination scores and academic achievement scores of secondary school students in Chemistry.
2. There is no significant correlation between test anxiety scores and academic achievement scores of secondary school students in Chemistry.
3. There is no significant correlation between self-esteem scores and academic achievement scores of secondary school students in Chemistry.
4. There is no significant joint correlation among academic procrastination test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry.

Methods

A correlational research design was adopted for the study. The population of the study consisted of all the 8,081 Senior Secondary School II (SS2) Chemistry students in the 263 public secondary schools in the six education zones in Anambra State. The sample size

consisted of 1,500 SS2 chemistry students. Multi-stage sampling technique was used in selection of the sample size.Data for this study was collected by means of structured questionnaire after extensive review of literature. The first instrument is titled Tuckman Procrastination Scale, TPS (adapted) which was originally developed by B. W. Tuckman. The second instrument is titled Test Anxiety Scale, TAS (adapted) which was developed by Sarason (1980). The third instrument is titled Rosenberg's Self-esteem Scale, RSES. The forth instrument is an8 achievement test measured using the cumulative/average score of SS 2 students' internal (termly) examination scores.

TPS and TAS were validated through face and content validity.TPS and TAS were subjected to test of internal consistency using Cronbach Alpha Method and reliability values of 0.87 and 0.81 were obtained. The third instrument titled RSES was adopted from Rosenberg Self-esteem Scale.Data relating to research questions 1 - 3 was answered using Pearson Product Moment Correlation Coefficient while research questions 4 was answered using multiple regression. In testing null hypothesis 1 - 3, t-test for correlation analysis was employed to determine the test of significant correlation between two variables of interest. In testing the null hypothesis 4, multiple regression was employed to ascertain the interactive significant level of correlation among all the variables.

Results
Table 1: Pearson r academic procrastination scores and academic achievement scores of secondary school students in Chemistry

Sources of variance	N	Academic procrastination scores (r)	Acad. achiev (r)	Remark
Academic procrastination scores	1185	1.00	0.66	
				Strong positive relationship
Acad. achievement	1185	0.66	1.00	

Table 1 shows that there is a strong positive relationship of 0.66 existing between academic procrastination scores and academic achievement scores of students in Chemistry

Table 2: Pearson r test anxiety scores and academic achievement scores of secondary school students in Chemistry

Sources of variance	N	Test anxiety scores (r)	Acad. achiev (r)	Remark
Test anxiety scores	1185	1.00	0.73	
			Strong positive relationship	
Acad. achievement	1185	0.73	1.00	

Table 2 shows that there is a strong positive relationship of 0.73 existing between test anxiety scores and academic achievement scores of students in Chemistry

Table 3: Pearson r self-esteem scores and academic achievement scores of secondary school students in Chemistry

Sources of variance	N	Self-esteem scores (r)	Acad. achiev (r)	Remark
Self-esteem scores	1185	1.00	0.54	
				moderate positive relationship
Acad. achievement	1185	0.54	1.00	

Table 3 shows that there is a moderate positive relationship of 0.54 existing between self-esteem scores and academic achievement scores of students in Chemistry

Table 4: Summary of regression analysis on joint relationship among academic procrastination test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry

N	R	R^2	%	Df	Cal. t	p-value	α	Remark
1185	0.61	0.44	44	1183	11.065	0.000	0.05	Significant

Table 4 shows an R value of 0.61 which means that there is a strong positive relationship among academic procrastination test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry. The r square value of 0.44 shows that academic procrastination, test anxiety, self-esteem account for 44% of academic achievement scores of secondary school students in Chemistry.

Data in Table 4 revealed that at 0.05 level of significance and 1183 df, the calculated t 11.06 with p-value 0.000 which is less than 0.05, (t= 11.06; df 1183; p< 0.05) the null hypothesis is rejected. This means that there is a significant joint relationship among academic procrastination test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry

Table 5: t-test on the significant of Pearson r of academic procrastination scores and academic achievement scores of secondary school students in Chemistry

N	Cal. r	Df	Cal. T	p-value	Remark
1185	0.66	1183	3.488	0.001	Significant

Table 5 indicated that at 0.05 level of significance and 1183 df, the calculated t 3.248 with p-value 0.001 which is less than 0.05 (t= 3.488; df 1183; p < 0.05), the first null hypothesis is rejected. This means that there is a significant relationship between academic procrastination scores and academic achievement scores of secondary school students in Chemistry.

Table 6: t-test on the significant of Pearson r of test anxiety scores and academic achievement scores of secondary school students in Chemistry

N	Cal. r	Df	Cal. T	p-value	Remark
1185	0.73	1183	4.04	0.000	Significant

Table 6 indicated that at 0.05 level of significance and 1183 df, the calculated t 11.04 with p-value 0.00 which is less than 0.05, (t= 4.04; df 1183; p< 0.05), the null hypothesis is rejected. This means that there is a significant relationship between test anxiety scores and academic achievement scores of secondary school students in Chemistry

Table 7: t-test on the significant of Pearson r of self-esteem scores and academic achievement scores of secondary school students in Chemistry

N	Cal. r	Df	Cal. T	p-value	Remark
1185	0.54	1183	9.66	0.13	Not significant

Table 7 indicated that at 0.05 level of significance and 1183 df, the calculated t 9.66 with p-value 0.12 which is greater than 0.05, (t= 9.66; df 1183; p> 0.05) the null hypothesis is not rejected. This means that there is no significant relationship between self-esteem scores and academic achievement scores of secondary school students in Chemistry.

Discussion

The finding revealed that there is a strong positive relationship between academic procrastination scores and academic achievement scores of students in Chemistry. This finding agreed with that of Asghar, Moein, Leila and Nasrin (2020) that there is a strong relationship between academic procrastination among medical students and their academic achievement. On the other hand, this finding disagreed with the finding of Okoye and Onokpaunu (2020) that there was a negative relationship between academic procrastination and academic achievement of PGDE students in university of Delta, Abraka. The difference between both findings could be hinged on varying perception of respondents and level of education. The corresponding hypothesis revealed that there is a significant relationship between academic procrastination scores and academic achievement scores of secondary school students in Chemistry. This finding supported that of Okoye and Onokpaunu (2020) and Ashghar et al. (2020) there is a significant relationship between academic procrastination and academic achievement.

The finding revealed that there is a strong positive relationship between test anxiety scores and academic achievement scores of students in Chemistry. This finding agreed with the finding of Ilo and Unachukwu (2020) which showed that test anxiety is a predictor of academic achievement of students in English language and Mathematics. Also, the finding supported that of Effiom and Bassey (2018) that there was a positive relationship between test-anxiety and academic achievement among secondary school students in Cross-River State; thus test anxiety has a strong influence on academic achievement. Conversely, this finding opposed that of Harish and Lakshmi (2020) which stated test anxiety is not a strong predictor of academic achievement in case of university students. The difference between both findings could be hinged on varying perception of respondents and level of education. The corresponding hypothesis revealed that there is a significant relationship between test anxiety scores and academic achievement scores of secondary school students in Chemistry. This finding was in tandem with that of Ilo and Unachukwu (2020) that there is a significant predictor between test anxiety and academic achievement of students in

English Language and Mathematics. The finding of Eman, Hind, Rufa, Nadiah and Brouj (2016) and Harish and Lakshmi (2020) opposed that test anxiety has negative and non-statistical significant relationship with academic achievement. The difference between both findings could be hinged on varying perception of respondents.

The finding revealed that there is a moderate positive relationship between self-esteem scores and academic achievement scores of students in Chemistry. This findings therefore disagreed with the finding of Effiom and Bassey (2018) that self-esteem significantly influenced academic achievement among secondary school students in Cross-River State. The corresponding hypothesis revealed that there is no significant relationship between self-esteem scores and academic achievement scores of secondary school students in Chemistry. This finding agreed with that of Abubakar (2018) that there is no significant relationship in the students' self-esteem and academic achievement in Federal Government Colleges in North West, Nigeria.

The finding revealed that there is a strong positive relationship among academic procrastination, test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry. This means that academic achievement of students in Chemistry was influenced jointly by procrastination, test anxiety and self-esteem. This finding agreed with the finding of Effiom and Bassey (2018) that test anxiety and Self-esteem directly significantly influenced academic achievement. This finding opposed the finding of Okoye and Onokpaunu (2020) which revealed a negative low correlation among academic procrastination, test anxiety, self-esteem and academic achievement of PGDE students. The difference between both findings could be hinged on varying perception of respondents and their level of education. The corresponding hypothesis revealed that there is a significant joint relationship among academic procrastination, test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry. This finding disagreed with that of Okoye and Onokpaunu (2020) that there is no joint correlation among academic procrastination test anxiety, self-esteem and academic achievement scores of PGDE students. The difference between both findings could be hinged on varying perception of respondents.

Conclusion

Based on the finding of the study, it was concluded that a strong positive relationship among academic procrastination test anxiety, self-esteem and academic achievement scores of secondary school students in Chemistry is significant.

Recommendations

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

1. Since academic procrastination influence students' academic achievement in Chemistry, it is recommended that teachers and school administration should enlighten students to practice how to manage their time as precisely as possible by carrying out assignment quickly, optimizing their effort to deal with assessment scenarios and have confidence in their skills.

2. Teachers should ensure that students concentrate during Chemistry theories and practical sessions, take notes, ask questions and engage in group discussion as these measures could help students get familiar with their subject of study and overcome anxiety.

3. Since academic self-esteem influenced secondary school students' academic achievement in Chemistry, it is recommended that teachers/parents should boost students' or their wards' desire to learn so as to achieve higher academically. Even at that, teachers may help the learners develop their high self-belief to perform in Chemistry by employing creative teaching and learning strategies that will make the learners more interested to learn Chemistry concepts and practical.

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