Coping Strategies, Anxiety, Gender and Achievement of Students in College Science in North East, Nigeria

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Abstract

This study investigated coping strategies, anxiety, gender and achievement of students in college science in North East, Nigeria. One hundred and fifty two students participated in the study. An ex post facto design was employed in the study. The instruments used for data collection were a Coping Strategies Rating Scale (CSRS), A Self Anxiety Rating Scale (SARS) and Students' Examination Scores in Science Achievement Test (SESSAT). The Coping Strategies Rating Scale was adapted from Conor Davidson's Rating Scale while the Anxiety Rating Scale was adapted from Zung's Self Anxiety Rating Scale. The validity of the instruments were determined by experts in tests and measurements, educational psychology and science education in the Faculty of Education, University of Jos. The internal consistencies of the CSRS and SARS were determined as 0.77 and 0.52, respectively, with the split half method. Three research questions and four hypotheses were used to guide the study. Frequencies, means and standard deviations were used to answer the research questions while t-test and Pearson product moment correlation were used to test the hypotheses at 0.05 level of significance. The findings of the study showed significant correlations among coping strategies, anxiety and achievement scores of students in college science. Significant differences were not found between the following: achievement of male and female students in college science, and, anxiety mean scores of male and female students. From the findings of the study, it was concluded that coping strategies, anxiety and achievement of students in college science were significantly related, among others. The   implication is for students, particularly in traumatized regions of the country to develop adaptive coping strategies to enable them achieve well in science and its related courses. It was therefore recommended that educators should employ innovative and effective teaching strategies capable of enhancing students' coping strategies and science achievement while at the same time reduce anxiety in science classrooms**.**

Keywords : Coping strategies, anxiety, gender, achievement, science

Introduction

Studies show that students exposed to traumatic experiences such as ethno religious conflicts and terrorism experience difficulties which hinder their achievement in school subjects, such as science. Science plays a significant role in the technological development of any nation. So, anything that interferes with its effective teaching/learning, truncates sustainable national development. Nigeria as a developing nation needs an abundant science educated workforce to keep pace with advances in science and technology globally. This is why the national policy on education emphasizes the provision of science education to Nigerians at all levels of education irrespective any real or imagined differences [1]. Provision of science education to Nigerians also expands the social and economic opportunities of individuals from disadvantaged groups such as students in troubled regions of northern Nigeria which have been besieged by terrorism for the past six years.
Despite the relevance of science education to national development evidences that students perform consistently poorly in science in public examinations in Nigeria have been documented [2,3,4,5]. Several factors have been advanced as being critical in achievement of students in science, such as, inadequate laboratory facilities and ineffective teaching method.
Furthermore, studies have shown that socio-cultural factors play a critical role in limited human diversity found in science, technology and mathematics fields [6].The issue of gender being implicated in science

achievement has been reported in literature too even though findings of such studies seem inconclusive. Other critical issues that require urgent attention include coping strategies and anxiety as they affect students' achievement in traumatized regions of the world, such as north east, Nigeria. This is because there appears to be dearth of studies in these areas.

Coping strategies are specific tasks which students can employ to alleviate stress or trauma when events in their environments seem over bearing. Coping strategies have been categorized as adaptive or maladaptive by [7] who posit that gender is not implicated in the use of coping strategies. This is at variance with the finding of [8] which indicates a gender difference in students' coping strategies. It is also in line with the general opinion that gender is one of the demographic factors that affect coping strategies in students. In the view of [8], girls tend to use maladaptive coping strategies unlike their male counterparts. It has also been documented that students with poor coping strategies experience problems when learning or reviewing content and are easily distracted during study periods [9] and that on the contrary, students with adaptive or positive coping strategies have been shown to fare better in school. Studying coping strategies is important because it appears to be a strong predicator of achievement outcomes of vulnerable students.

On the influence of gender on anxiety, findings from studies appear to be inconclusive. For instance, [10] indicate a significant difference between males and females' levels of anxiety with female students being more anxious than their male counterparts. In a related study by [11] no significant difference between students' gender and anxiety was found. Anxiety is an emotional dimension in human beings that manifests itself in life in form of worry and restlessness. There is no gain saying the fact the more people get anxious or worried about possible threat to self, the more apprehensive and fearful they become. A high anxiety level has been linked to poor learning outcome in school [13] while a low, negative but significant relationship between anxiety and science achievement has been reported by research. The extent to which these variables affect achievement in school subjects, particularly science in regions of the world traumatized by violence such as terrorist attacks, does not appear to have been established. It is against this background that this study investigated coping strategies, anxiety, gender and achievement of students in college science in north east Nigeria.

Methods

The study employed an ex post facto design .One Hundred and fifty two students (87 males and 65 females) in Federal College of Education Technical, Potiskum, Nigeria participated in the study. The instruments used for data collection were a Coping Strategies Rating Scale (CSRS), a Self Anxiety Rating Scale (SARS) and students' Examinations Scores in Science Achievement Test (SESSAT). The CSRS had 26 items with 4 point rating from 1, indicating a little of the time to 5, indicating most of the time. The SARS was adapted from Zung's Self Anxiety Rating Scale with 20 items. SESSAT was obtained from the examination records of the Department of Integrated Science Education of the college. The construct validity for the CSRS and SESSAT were determined by an expert in tests and measurement in the Faculty of Education University of Jos. The internal consistencies were found to be 0.77 and 0.52, respectively with the split half method. The research questions were answered with frequencies, means and standard deviations while the hypotheses were tested for significance at 0.05 level using t-test statistics and Pearson product moment correlation coefficient.

Findings

The findings are presented as follows:

Research Question 1: What are the coping strategies mean scores of male and female students?

Table 1: Coping strategies mean scores of male and female students

Variable	Gender	N	Mean	SD	Std error mean
Coping strategies	Male	87	58.86	12.175	1.305
Score	Female	65	61.74	15.118	1.875

Table 1 shows that the copying strategies mean scores of male and female students are 58.86 and 61.74, respectively. This means that the female students had more adaptive coping strategies than their male counterparts.

Research Question 2: What are the anxiety mean scores of male and female students?

Table 2 :Anxiety mean scores of male and female students

Variable	Gender	N	Mean	SD	Std Error Mean
Anxiety	Male	87	42.49	6.5557	0.70
	Female	65	42.27	6.552	0.82

Table 2 shows that the anxiety mean scores of male and female students are 42.49 and 42.47, respectively, meaning that they had low anxiety.

Research Question 3: What are the achievement mean scores of male and female students?

Table 3: Achievement mean scores of male and female students?

Variable	Gender	N	Mean	SD	Std Error Mean
Achievement	Male	85	52.98	10.249	1.112
	Female	60	51.90	9.993	1.290

Table 3 shows that the achievement mean scores of male and female students are 52.98 and 51.90, respectively, meaning that they were the same in terms of their achievement in science.

Hypothesis 1: There is no significant difference between the coping strategies mean scores of male and female students.

Table 4: t – test of difference between the coping strategies mean scores of male and female students

Variable	Gender	N	**Mean**	**SD**	**df**	**t**	**p-value**
Coping strategies	Male	87	58.86	12.175	150	-1.20	.196
Score	Female	65	61.74	15.118			

Table 4 shows the calculated value of t (-1.20) at 0.05 level of significance. The null hypothesis was retained since there was no significant difference between the coping strategies mean scores of male and female students.

Hypothesis 2: There is no significant difference between the anxiety mean scores of male and female students.

Table 5: t–test of difference between anxiety mean scores of male and female students used in the study:

Variable	Gender	N	Mean	SD	df	t	p-value
Anxiety	Male	87	42.49	6.557	149	0 .21	.833

Score	Female	64	42.27	6.552

Table 5 shows the calculate value of t (0.21) at 0.05 level significance. The hypothesis was retained, meaning that there was no significant difference between the anxiety mean scores of male and female students.

Hypothesis 3

There is no significant difference between the achievement mean scores of male and female students.

Table 6 t-test of Difference between achievement mean scores of male and female students

Variable	Gender	N	Mean	SD	df	t	p-value
Achievement	Male	85	52.98	10.249	143	0 .63	.530
Score	Female	60	51.90	9.993			

Table 6 shows the calculated t-value of 0.63 at 0.05 level of significance. The hypothesis was retained since there was no significant difference between the achievement mean scores of male and female students.

Hypothesis 4: There is no significant correlation among coping strategies, anxiety and achievement scores of students in college science.

Table 7: Correlations among coping strategies anxiety and achievement scores of students in college science

variable	Coping strategies score	Self anxiety score	Achievement score
coping strategies	1		
self-anxiety	0.07	1	
achievement	0.14	-0.18*	1

Table 7 shows a significant correlation among coping strategies anxiety and achievement scores of college students in science at the 0.05 level of significance. The hypothesis was therefore rejected.

Discussion of Findings
This study showed no significant mean difference between the coping strategies scores of male and female students. The finding is consistent with the findings of [5] which indicate that gender is not implicated in the use of coping strategies. However, the finding is at variance with those of [8] and [2]. The results of the study on Table 5 show that there was no significant mean difference in the anxiety scores of male and female students, meaning that gender had no influence on the students' anxiety. The findings further show that both male and female students had low anxiety. Table 6 shows no significant mean difference in the achievement scores of male and female students. This implies that male and female students experience science to the same degree. This finding is at variance with findings upholding males supremacy over females in science achievement. It further refutes the commonly held view that males have a higher cognitive ability to study science than females. The findings further showed a significant correlation among coping strategies, anxiety and achievement of students in college science.

Conclusion and Recommendations

The findings of this study have shown that coping strategies, anxiety and achievement of students in college science are related. The implication is for students, particularly in traumatized regions of the country and elsewhere to develop adaptive coping strategies to enable them achieve well in science. Science educators should therefore employ innovative and effective teaching techniques in science classrooms to enhance students' coping strategies, and, reduce anxiety in students, among others.

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