Statistics Anxiety Among Undergraduate Students in the Faculty of Education, University of Calabar, Nigeria

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Abstract

The purpose of the study was to determine the level of statistics anxiety among undergraduate students, and whether the level of influenced by factor e.g gender and age. A sample of 100 third year students who enrolled for basic statistics in the University of Calabar was used for the study. A series of t-tests revealed that the sampled students displayed significantly high level statistics anxiety; and no factor differences. Recommendations were made accordingly. Limitation included the non-generalizability of results.

Introduction and Review of Literature

Until recently all trains teachers are expect to two core quantitative courses during their programme. These courses are educational test and measurement and research and statistics in education. Being a stakeholder, these two courses are enough headaches for most trainee teachers. However, living in an information age in which man is bombarded daily with quantitative information from deserve society such as media corporative, politicians and so be it became germane that quantitative skills be taught to trainees teachers to await deception, to grasp and withstand social reality and to be a more effective teachers of the 21st century.

Consequently the communication _____ the introduction of a stand-alone cruise in statistics. This Basic statistic is offered at the 300 level. The researchers interaction with this level of student for the past 5 years indicated that students do not expect to meet any course like statistics and do not seem to see it relevance in their training. Remarks such as "what am I doing with Maths" thought am through with maths "what nonsense is this" "my head is not good for calculation" are common among these student. According to Idaka (2011) the mention of the word statistics evokes, so much trepidation in some trained –teachers that one can literally see them shaking with goods principles. Of cause it is also clear to the researcher that the

anxiety experienced by student may not have arisen only from poor background or insufficient skills, but from warning of their 'servor colleagues' or from _____ they have ward whether true or false Slootmaeckers, 2017).

Incidentally, it is a compulsory core course which most be paused by all trainee teachers from the warder, through that students regard statistics as the most anxiety inducing course in their training. Statistics anxiety is the anxiety elicited whenever a student is confronted with statistical computation at any level. Onwhegbuzie and Wilson (2003) described statistics anxiety as the anxiety that occurs which approach encounters statistics of any form or at any level.

According to Cruise, cash and Bolton (1985) statistics anxiety is the feeling of anxiety encountered when taking a statistics course or doing statistical analyses" (p.92). These researchers opined that statistics anxiety is a multidimensional construct made up of six factors. These include test and class anxiety, interpretation anxiety, fear of asking for help anxiety, Wath of statistics, computation self-concept and fear of statistics lecturer. Test and clan anxiety deals with the anxiety elicited when attending statistics lectures or when taking statistics test/examination. Fear of asking for help arises the anxiety experienced when seeking help either from colleagues or teacher wath of statistics had to do with student's perception of the relevantly of statistics to his/her course of study. On the other hand, computation self-concept relates to the student's self perception of his/her ability to understand and do statistics; and finally, fear of statistics teacher refers to the student's perception of the statistics lecturer.

However, the same statistics anxiety has been conceptualised as consisting of three factors: (i) Examination, Anxiety (ii) Asking for Help (Vigil-Cold, Lorenzo-sera & Condon, 2008). In this research, the focus was on the conceptualization of Vigil-Colet et al (2008).

Of course statistics anxiety is considered a debilitative phenomenon due to its effect on students statistic achievement. Generally, a consistent negative relationship has been found between statistics anxiety and statistics achievement in many studies e.g. (Hanna and Dempoter (2009). Similarly, it has been found that students who experience higher levels of statistics anxiety tend to have lower performance on statistics examination or have failed the course at least once (Keeley, Zayac & Correia, 2008; Galli,

Ciancaleoni, Chiesi & Primi, (2008). Its existence in high _____ has been well documented in the interactions in advanced countries.

In addition to the dimensional nature of statistics anxiety, research has also documented score antecedent conditions of statistics anxiety. According to Onwuegbuzie and Wilson (2003), this can be _____into threes:- situational, dispositional and environmental.

Situational antecedents refer to factors that surround the stimulus object or event and may include _____such as Mathematics anxiety (Baloghe, 2004) and characteristics of statistics courses (Bell, 2005, DeVaney, 2010). Dispositional antecedents refer to the personality characteristic of the student such as procrastination (Onwuegbuzie, 2004) and reading ability (Collines Onwuegbuzie, 2007). On the other hand, environmental antecedents refer to events which occurred in the past and include variables such as age, gender and prior mathematics or computation experience (Chew & Dillon, 2013).

Commenting on the influence of age on statistics anxiety, Balogh (2003) and Bell (2003) reported that older students had higher statistics anxiety than their younger counterparts. However recent studies found no age differences or relationship (_____ & Alfaro, 2011; Chew & Dillon, 2004). On the factor of gender differences, some studies e.g., Baloghe (2003), Bui and Affaro (2011) and Chew and Dillon (2014) found no difference between male and female students. Conversely, others reputed gender differential for statistics anxiety (Baloghe, Deniz & Kesici, 2011, Rodarte-Luna & Sherry, 2008) Besides age and gender, prior mathematics experience has been widely investigated as statistics if often regarded as a cousin of mathematics. Generally, prior mathematics experience has been found to the negatively related to statistics anxiety (Chiesi & Primi, 2010, Lalonde & Gardner, 1993).

Unfortunately it is not to the knowledge of the researcher if a similar study has been conducted in the University of Calabar in particular and Nigeria in general. Moreso, the conflicting results regarding the influence of age and gender differentials have furthers suggested a gap in literature which this present study is poised to fill. It is therefore germane to conduct this present study in University of Calabar, Nigeria as the findings may provide clearer direction and insight.

The purpose of this study was therefore to determine the level of statistical anxiety among undergraduate students in the faculty of education; and to determine if the level was influenced by gestures such of gender, age and

prior mathematics experience. Three chapters was formatted to guide the study:-
(i)   Statistics anxiety level is not significantly high
(ii)   Male students are not significantly different from their female counterparts in their level of statistical anxiety.
(iii)   Age has no significant influence on the level of statistics anxiety.
Methodology

The study employed a descriptive survey of the statistics anxiety of education students in the University of Calabar. Survey research allows one to simultaneously measure attitudes or opinions determined the status quo of some primary phenomenon and assess relationship among variables. All will level education students (1, 850) of the 2017/2018 session offering Basic statistics made up the population of the study. A total of 150 students from Department of Library and information service, and Educational Administration and Planning who were taught by the researcher was randomly selected through the use of simple balloting technique (90 females and 60 males).

The instrument was an adaptation of Statistics Anxiety Scale (SAP) by Vigil-Colet et al 2008). It was made up of two sections:- A and B section A asked for basic demographic questions e.g. age, gender and whether one is good in calculation, section B was a 24 items SAS designed to arises three factors of statistics anxiety:

(i)   Examination Anxiety (e.g going to a statistics test without enough revision;
(ii)   Asking for Help Anxiety (e.g. going to my teacher for help in solving some problems, and
(iii)   Interpretation Anxiety (e.g., interpreting the meaning of a table or graph in the statistics text) (Vigil-Colet et al; 2008).

Respondents were asked to rate each of the items on a 5-point modified Likert Scale that ranges from 1 = No anxiety to 5 = considerable anxiety. Appropriate item scores were summed up for each factor, with higher, scores, indicating higher levels of statistics anxiety. The instrument was validated by the researcher, an expert in Educational test and measurement. A trial testing of the instrument yielded Cronbach Alpha, reliability estimates ranging from 0.85 to 0.93. The questionnaires were administered to the students during a fixed class on Saturday. Respondents were advised to be

as truthful as possible as the findings was giving to enable the researcher each them better.

Data analysis

All hypotheses was analysed using SPSS (version 16) at .05 level of significance.

Hypothesis 1:

Statistical anxiety level is not significantly high among independent students. For the level of anxiety to be considered significantly high, the researcher reasoned that the score representing such high level of statistics anxiety should be greater than 84 (which is more than the midpoint, 3.5 multiplied by the number of items, 24 measuring the variable). To analyse this hypothesis, the one-sample mean t-test was employed and the result is as shown in table 1:

Table 1: A one sample mean t-test analysis of the level of statistical anxiety is significantly high

Variable	$\overline{X}$	SD	t	sig
Statistical anxiety	87.02			
		2.50	14.738*	.004
Reference mean	84.00			

 *Significant p< .05

The result of the analysis gave a significant t-value of 14.739 which indicated that independent students sampled for the study displayed a significantly high level of statistics anxiety.

Hypothesis 2

Males students are not significantly different from their female counterparts in their statistics anxiety. This hypothesis was analysed using independent t-test, and the result was shown in Table 2.

Table 2: Independent t-test analysis of the influence of gender on statistics anxiety.

Variable	Group	N	SD	$\sum$	t	sig

Gender	Male	60	72.03	2.03		
					-1.034	0.61
	Female	90	72.33	1.24		

Significant P< .05

Table 2 shows that the calculated absolute t-value is not significantly at .0T level of portability. In steward, there is no significant difference in the level of statistics anxiety among male and female students.

Hypothesis 3: Age has no significant influence ion the level of statistics anxiety. The independent variables age was strongly categories as below 20 years and above 20 years and the two groups compared on their statistics anxiety. The independent t-test was therefore employed for the analysis, and the result is as shown in table 3.

Table 3. Independent t-test analysis of the influence of age on students statistics anxiety.

Variable	Group	N	$\overline{X}$	SD	t	Sig.
Age	20 and above	65	69.01	1.23		
					1.918	0.1
	Below 20 years	85	68.07	1.05		

Significant at P< .05, critical = 1.98

Table 3 shows that the calculated t-value is not significant at .05 level of portability. In other words, the null hypothesis of __ significant influence of age ion students statistics anxiety is accepted.

Discussion

The first purpose of the present study was to determine the level of statistics anxiety among students in the University of Calabar. The results suggest that education students sampled for this study displayed a high statistics anxiety. The result represents the norms for undergraduate students in some advanced countries e.g. USA and UK (_____ et al., 2008 & Hanna et al., 2008) when could be explained by the in conception of students in these departments Library and Information science and Education administration and planning) that their programmes is un-quantitative as such does not require a statistics course.

The second purpose of the study was to determine influence of gender a statistic anxiety. It was hypotheses that gender will have on influence on

students statistics anxiety (Hypothesis 2). The results indicated no gender influence on the sampled students' statistics anxiety. The findings was in agreement with those of their and Dillon (2014), Bui and Alfaro (2011) and Baloghi (2003). It was however, at variable with the findings of Baloghi, Deniz & Kesies (2011) and Rodarte-Luna & Sherry (2008) who reported gender, differences. The finding of the present study could be explained by taking into account that the issue of stereotyping threat is guide giving why, in other word, females can no longer be seen as few in the services where in estimation is required; and services, even perform better than males.

The third purpose was to determine the influence of age on statistics anxiety. It was hypothesized that age will serve no influence on statistics anxiety (hypothesis 3). The findings indicate no age influence at the sampled students' statistics anxiety. This finding was in consonance with those of Bui and Alfaro (2011) and Chew and Dillou (2014). But differs from the findings Baloghi (2003) and Bell (2003) is reported that older, students has higher statistics anxiety than their younger counterparts. The finding of this factor in the present study could be explained taking cognizance of the fact that the age difference among undergraduates is slim this days

Several practical implications for statistics lectures in the faculty of education can be derived from this study. Firstly, lecturers should not assessed that students in education do not experience statistic anxiety. Instead, lectures should as a matter of anxiety assess student anxiety prior to the fight class using standard scales, and adjust their teaching accordingly. For instance, lecturers could take it slowly with such student and allocate more fine for questioning.

The findings of this study however, should be taken with caution as the sample was not representative of education students and the result insight not generalize to all undergraduate students in the Faculty of Education.

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