Determinants of General Test-Anxiety among Preservice Teachers in Colleges of Education, Ghana

By

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Abstract

The main aim of this research was to explore the relationship between the sources and manifestation of anxiety and the general test anxiety among preservice teachers. A sample of 100 female preservice teachers was randomly selected from three different programme groups in a public sector college of education, Ghana. Data were collected by using an adapted version of the Test Anxiety Inventory (TAI) developed by Spielberger and Vagg. Descriptive statistics, zero-order correlations and univariate statistics were run for data analysis. A key finding is that, external agents such as future job security tend to be the major source of teacher trainees test anxiety. This finding was found to be at variance with what literature seems to suggest that students who experience test anxiety tend to be the type of people who put a lot of pressure on themselves to perform well. Also, the findings seem to suggest that the premium and how high the stakes are for a test tend to kindle anxious moments for preservice teachers. It was recommended that appropriate training should be given to preservice teachers on how to deal with factors associated with general test anxiety.

Introduction

The introduction of the diploma in basic education and its accompanying end-of-semester examinations for an initial teacher certification in Ghana in 2004 was met by varied reactions from preservice teachers. Many were wondering about the form and nature of the programmes to be offered and others were skeptical as to the nature of the end-of-semester examination that was introduced. The new assessment is different from the teachers' Certificate 'A' examinations that were administered twice over a three-year span. With the end-of-semester system examination, students are expected to write at least five externally organised examinations from the Institute of Education, University of Cape Coast, which is the awarding body.

The new examinations have a high-stake characteristic because of the decisions that emanated from the results (Anane, 2010; Wilson, 2007). They are used as the major determinant of a student's progress to the next stage of preservice training (i.e., to the second year) of the three-year training. Above all, scores from end-of-semester-examinations, students' scores from teaching practice and scores from project works are used to determine their Cumulative Grade Point Averages (CGPA), which in turn helps in determining their classifications and hence, the awards of their diploma certificates. These certificates serve two main purposes: one, as an academic award which could be used by the awardees to seek admission for training for a higher degree (usually a bachelor's degree in education) and two, as a sole determinant of professional qualification, which allows preservice teachers to secure teachers' numbers to make them professional teachers.

In the light of these, until the preservice teacher passes all of his/her papers, he/she remains a 'pupil' teacher and will continue to receive training allowance as salary until the time he/she is able to redeem the failed paper(s).The examination, therefore, fits in Zollar and Ben-chain's (1990) description that we are living in a test-conscious age in which the lives of many people are not only greatly influenced, but are also determined by their test performance. Therefore, the uses of the end-of-semester examination results and its inherent implications appear to have placed a huge responsibility on the

student. As Rana and Mahmood (2010) put it, tests and examinations at all stages of education, especially at higher education levels have been considered an important and powerful tool for decision making in our competitive society, with people of all ages being evaluated with respect to their achievements, skills and abilities; such tests and examinations come with it, stress, which is thought to prevent some individuals from reaching their academic potential. As a result of the antecedents and the consequences of the teacher trainee examinations, it is my view that, it is likely to evoke and perpetuate anxiety, pressure and caution, as the stakes get higher and higher; students are constantly prompted about the possibility of failure (Pekrun, Elliot & Maier, 2009).

The construct of test anxiety has been used for well over four decades to describe the behaviour and emotions of students who consider preparing for and taking tests stressful (Elliot, Kratochwill, Cook & Travers 2002). Test anxiety is defined as the predisposition to respond with concern, trepidation, and physiological arousal to situations in which one's knowledge is being formally evaluated (Spielberger & Vagg, 1995). Test anxiety is one form of performance anxiety. In situations where the pressure is on students, implicitly or explicitly to put up their optimal best, and where a good performance counts for future opportunities, students can become so anxious that they are actually unable to do their best.

Test anxiety also seems to bring about symptomatic bodily reactions. Studies on test anxiety (Joiner, Steer, Beck, Schmidt, Rudd, & Catanzaro, 1999; Beidel, 1998) have named this aspect of test anxiety as physiological hyperarousal. Beidel (1998) contends that, in test anxiety, physiological hyperarousal produces physical symptoms such as sweaty palms, increased heart-beat rate, or shallow and rapid breathing when an individual prepares for and takes a test. Researchers have stated that the test anxiety construct is complex, consisting of multiple dimensions (Zeidner, 1998). Dimensions proposed to be part of the current conceptualization of the test anxiety construct, based on nearly a century of research on test anxiety, include emotionality and a lack of self-confidence (Hodapp, 1995; Mckeachie, 1984; Tyron, 1980).

In addition to physical reactions to anxiety, there is a mental component as well, which often manifest itself in the form of cognitive interference. Cognitive obstruction is viewed as the degree to which test anxiety disrupts the ability of an individual to organize his or her thoughts or to concentrate on the task at hand (Hodapp, 1995). Anxiety can be created by a person's expectations concerning what is likely to happen before, during and after tests. These expectations may be expressed in words to oneself, mental pictures, or physical symptoms. If a student believes, for example, that he or she is going to perform poorly, has not studied enough, or will appear foolish, that person will have an emotional reaction consistent with that expectation. The mental state of the student produces a corresponding emotional reaction (McDonalds, 2001). In general, literature suggests that most anxious situations are brought about by the pressures an individual brings on his or herself in their quest to perform well.

Most researches conducted are carried out at the level of examining the effect of test anxiety on performance to the neglect of the sources of such anxious situations and how students express such anxieties before and during examinations. It has been found that students consistently perceive examination as a source of increase in anxiety and a situation engulfed with uncertainty/unfairness in letting them demonstrate their true achievements (Rana & Mahmood, 2010; Zollar & Ben-chain, 1990). Such feelings among students seem to stem from the fact that they are thinking of how they would pass these examinations to secure their jobs in the future, and/or because of the normative nature of the tests, they are comparing their

performances with their colleagues. To Elliot, Murayama and Pekrum (2011), these aversive processes tend to prompt self-worth concerns that preclude full investment and interfere with attention to task; cognitive activity in the service of failure and often interferes with academic performance (Mendes, Major, McCoy & Blascovich, 2008). In the case of preservice teachers where the stakes and accountability pressures seem to be higher, the aversive behaviour could be more severe.

Test anxiety seems to have become most upsetting and a disruptive factor for students (Rana & Mahmood, 2010). There are a number of researches reporting test anxiety as one of the major causes for students' low achievements and poor performances at different levels of their educational life (Oludipe, 2009) and has been shown to affect students' ability to profit from instruction (Schonwetler, 1995). Investigations into the effects of students' test anxiety and teacher's evaluation practices on students' achievement and motivation at the post secondary level by Hancock (2001) have shown that all students, especially students with high anxiety level**,** performed poorly and were less motivated to learn. Thus he concluded that when students who are particularly test-anxious are exposed to a highly evaluative assessment environment in their educational institution, they perform poorly and are less motivated to perform (Hancock, 2001).

In 2002, Cassady and Johnson investigated the effect of cognitive test anxiety on students' academic achievement. They found that cognitive test anxiety brings to bear a significant steady and negative brunt on academic achievement measures. This could have serious implications for learners as phenomenologists such as McCombs (2009) have espoused that the eventual source of motivation to self-regulate during learning is to augment or actualise one's self-concept with the basic aim of generating motivation to approach and persist in learning activities. The individual does this through the evaluation of the personal meaningfulness of the task he or she is involved in and the relevance of learning activities relative to perceptions of his or her competencies and goals. These evaluations of self-concept, task value and test anxiety, and how to handle them are necessary in initial teacher preparation, since they are being prepared to, as in the words of Claxton and Carr (2004) develop young people's ability to be skilful and confident when faced with complex predicaments of all kinds, including test anxiety. Literature suggests that general test anxiety is prevalent among preservice teachers and this is the cause for concern, as it is feared that teachers who possess higher levels of test anxiety may inadvertently pass on these negative feelings to their students. This calls for greater attention to the test anxiety phenomena in order to identify the root cause of general test anxiety among teachers in order to address them properly.

However, not much has been done in terms of research on pre-service teachers test-anxiety; especially within the settings of teacher education most especially in developing countries. Test anxiety is known to have a deleterious effect on students and with preservice teachers in this situation, they are likely to be under considerable pressure to perform which could affect their emotional and physical wellbeing (Tymms & Merrell, 2007), learning dispositions, self-regulation and their performance in the end-of-semester examinations. Again, reviews from literature indicate that few studies concentrate on the root sources of test anxieties among students, and studies which have tried mostly report of the overt symptoms exhibited by students leaving the embryonic variables.

This study was conducted in a female institution, because, substantial evidence

indicates that women report greater fear and are more likely to develop anxiety disorders than men (McLean & Anderson, 2009). Several studies have reported a significant difference in anxiety levels between males and females. Results from these researches show that females have higher levels of overall test anxiety than males (Chapell, Blanding, Takahashi, Silverstein, Newman, Gubi & McCann, 2005; Cassady & Johnson, 2002; Bandalos et al., 1995; Mwamwenda, 1994; Pintrich & D Groot, 1990). Cassady and Johnson (2002) explained that "differences in test anxiety on the basis of students' gender is that males and females feel same levels of test worry, but females have higher levels of emotionality"(p. 270) and reaching the inherent sources of test anxiety rather than the observable variables will contribute meaningfully to literature. The present study, therefore, sought to explore the existence, implicit sources of test anxiety, and how anxieties manifest among preservice teachers in a female college of education.

Research Questions

1. How does test anxiety manifest itself among preservice teachers?
2. What are the sources of test anxiety among preservice teachers?
3. What are the relationships among the sources and general test anxiety?
4. What is the interactive effect of the sources of anxiety on students' general test anxiety?
5. What is the relationship between academic level and students' general test anxiety?

Significance of the Study

This study served as the basis for future plans of action by teacher educators such as college tutors, administrators and assessors with regard to the necessary actions for the identification of, and recovery from test anxiety among preservice teachers.

Materials and Methods

This study being descriptive in nature utilised survey techniques. This section describes the participants (population and sample) and measures (research instrument and procedure of the data collection and coding).

Participants

The sample included 100 first and second year female preservice teachers drawn from a population of 613 students in a medium size college of education in Ghana. Out of the population, 50 students each were selected from first and second year cohorts through a systematic random sampling procedure. Of the 100 students, 46% attended general related courses, 26%, science related courses and 28%, early childhood courses.

Measures

The sample responded to a self-report questionnaire (a modified Test Anxiety Inventory-TAI). The 51-item questionnaire, with a 3-point Likert scale (1 = Not True of Me, 2 = True of Me and 3 = Very True of Me) was designed to assess the preservice teachers test anxiety and how anxiety manifest among student teachers. The 51 observed variables were grouped into 7 latent scales. Scales one (how others will view you if you do poorly) and five (bodily reactions) were made up of 8 items each; scale two (concerns about your own self-image) was made up of 7 items; scales three (concerns about future security), four (concerns about not being prepared for the test) and six (general test anxiety) had 6 items each. Scale seven, which measured students' thought disruptions, had 10 items making the scale. The following cut-off-points based on mean values, were established for interpretation of results: 1-1.4 = Not true of me; 1.5-2.4 = True of me and 2.5-3 = Very true of me. The instrument was administered to 100 preservice teachers in person. The items yielded a Cronbach alpha value of .82.

Data Analysis and Results

The first question of the study concerned how test anxiety manifests among teacher trainees. Table 1 displays the summary of the descriptive statistics of the signs of test anxiety among preservice teachers.

Table 1: Descriptive Statistics of how Anxiety Manifest among Preservice Teachers

	Mean	Std. Deviation
Bodily Reactions	1.46	.378
Thought Disruptions	1.76	.330
General test-taking anxiety	1.92	.446

As indicated in Table 1, students appear not to have much to show in terms of bodily reactions (M = 1.46, SD =.38), it is worthy to note that preservice teachers in the study indicated that they did experience thought disruptions (M = 1.76, SD = .33). With a mean of 1.92 and a standard deviation of 0.44, the results show that preservice teachers in the study experienced a moderate amount of test anxiety, generally.

The second research question concerned the potential sources of test anxiety among preservice teachers. Descriptive statics were computed and the results are shown in Table 2.

Table 2: Descriptive Statistics of Sources of Teacher Trainees' Test Anxiety

Source	Not True of Me	True of Me	Very True of Me	Mean	SD
1. How others will view me if I do poorly	-	74%	26%	2.26	.305
2. Concerns about my own self-image	1%	92%	7%	2.05	.302
3. Concerns about my future security	10%	71%	19%	1.96	.488
4. Concerns about not being prepared for the test	41%	54%	5%	1.58	.469

N = 100

On the whole, the results from the analysis of data show that, preservice teachers' anxiety stem from their perception of how others will think of them if they do not perform well in tests and examinations. Concerns about how others will see them when they perform poorly was their highest source of anxiety (M = 2.26, SD = .31). A follow-up analysis of the external sources (how others will view me if I do poorly) was conducted to find out the specific sources of anxiety. Of the external sources of students' anxiety, respondents indicated that, people such as family members and friends counting on them to do well in examinations serve as a major source of worry (M = 2.77, SD = .51). Respondents were of the view that their parents would become disappointed if they got low scores. Another thing that emerged from students' responses were that they were worried of the fact that some people will be amused if they [students] had low scores in examinations (M = 2.29, SD =.77). Of the 100 students who took part in the study, 92% of them expressed concern about thinking about their own self-image during tests (M = 2.05, SD = .302). About half of the respondents (54%) said it is true of them having concerns

about not being prepared for tests, but a mean of 1.58 and standard deviation of .469 shows that it was the least thing they are bothered about during tests and examinations.

The third question of the study concerned the relations between the sources of test anxiety and general test anxiety. To test the relationship between the variables, zero-order correlations were calculated and the results are summarised in Table 3.

Table 3: The Zero order Correlations of Sources of Preservice Teachers Test Anxiety

Sources	1. How others will view you if you do poorly	2. Concerns about self-image	3. Concerns about future security	4. Concerns about not being prepared for a test
Concerns about self-image	.352*			
Concerns about future security	.058	.225*		
Concerns about not being prepared for a test	.134	.099	.457*	
General test anxiety	.434*	.218*	.240*	.236*

***p< 0.05; N=100**

Results in the Table 3 show that with r = .457 between students' concerns about their future and not being prepared for a test, 21% of the variation in preservice teachers' apprehensions about not being prepared for a test is explained by the fact that they are thinking about their job security in the future. The results also show that students' level of uneasiness about how others, such as family and friends would view them when they failed in tests relate to their self-concept (r = .352). However, notwithstanding the fact that concerns about future security showed some significant relationship with not being prepared for a test and self-image, there was no statistically significant relationship between concerns about their self-image and not being prepared for the test (r = .099). The students concern on how others will view you if they performed poorly was not associated with concerns about future security. There was a statistically significant positive relationship between students general test anxiety and their concerns about how others will view them if they do poorly (r = .434) as well as the fact that they are not prepared for the examinations (r = .236).

The fourth research question looked at the potential interactions between the four sources of test anxiety on the general test anxiety variable.

Table 4: Interaction Effects of Sources of Test Anxiety and General Test-Taking Anxiety

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	19.638[a]	94	.209	18.802	.002
Intercept	355.217	1	355.217	31969.544	.000
source1 * source2 * Source3 * Source4	19.638	94	.209	18.802	.002[s]
Error	.056	5	.011		
Total	388.333	100			

Corrected Total	19.693	99

Dependent Variable: General test-taking anxiety; **a.** R Squared = .997 (Adjusted R Squared = .944)
$^{s}p < .05$

The results from the univariate test shows a significant interaction effect between students concern about how others will view them if they do poorly; their own self-image; future security and not being prepared for a test and general test-taking anxiety, $F(1, 94) = 18.80$, $p < .05$, $MS_e = .011$. With an effect size of $r = .41$, the four sources of anxiety interactively predict students' general test anxiety. Thus students who were reporting high on how others will view them if they do poorly; their own self-image; future security and not being prepared for a test were more likely to report high on general test-taking anxiety than those who reported low on these sources.

Research question five sought to find out whether there was a significant relationship between students' academic level and their general test anxiety.

Table 5: Correlation between Preservice teachers academic level and general test anxiety

		Academic Level
General test-taking anxiety	Pearson Correlation	-.090
	Sig. (1-tailed)	.186
	N	100

Results of the statistical analysis of the general test anxiety show that the academic level of a student does not relate to his or her general state of anxiety toward end-of-semester examinations ($r = -0.09$, $p > 0.05$).

Discussion

These results suggest that preservice teachers are worrying about how other people perceive their performance in college examinations and tests. This confirms Elliot, Murayama and Pekrum (2011) assertion that test anxiety and its aversive processes tend to prompt self-worth concerns that preclude full investment. The predominant source of test anxiety, which is external to the students, presupposes that preservice teachers seem to have low self-efficacy and therefore, do not believe in themselves and may not act proactively (Zimmerman, 2009; Tschannen-Moran & Woolfolk-Hoy, 2001). Their motive of performance was to please people such as parents, friends and tutors and thus seem to have devoted interest toward other people's assessment of their performance in college. Although my correlation data cannot address causality, yet, this outcome suggests that, should external agents remove their interest in students, they would be reduced to low consciousness and ineffectuality. The results also indicate that, the process that leads to students' selection of teaching as a career is mostly influenced by social pressures rather than students own volition.

The results revealed that students who showed some anxiety because they are not prepared enough for a test were likely to show concern about their future security. This might develop from the fact that, students' perceived ill-preparation as a tell-tale sign of failing the test, which in turn will lead to them not getting the requisite certificate for professional practice. This finding is in line with Pekrun, Elliot and Maier's (2009) point that, antecedents and

the consequences of a test is likely to evoke and perpetuate anxiety, pressure and caution, as students are constantly reminded of the possibility of failure and more especially, when the test is a high-stakes one (Anane, 2010). The finding on the relationship between students' academic level and general test anxiety is at variance with what Sarason (2010) found in his study that with an increase in number of years in college the negative correlation between test anxiety and achievement disappeared, which means that as students progressed in academic levels, they tend to be less anxious of test, which is not what this study suggests. This finding may be due to the differences in setting as preservice teachers may have different reaction patterns towards test than high school students.

Conclusion

In sum, it is evident from the study that, stakeholders need to look beyond the obvious when it comes to test anxiety since there is more of association between the expectations from students, which is driven by external sources such as how others will perceive them when they perform poorly and their concerns about job security and fear for test in preservice teachers. This goes to explain test anxiety's detrimental impact on aggregate ability measures, rather than isolated assessments (Zeidner & Safir, 1989; Newbegin & Owens, 1996). The empirical work of Pintrich and De Groot (1990) demonstrated this phenomenon as they found test anxiety to significantly predict overall grades and exam performance, but not performance on class work and essays, which were perceived as low-stakes. This is so, because people tend to be much focused on external examinations, which are often summative and high stakes, and its intended uses and consequences than formative assessments which are often low stake in nature. Test takers are therefore pressurised and thus feel anxious to please families and friends, and in the case of preservice teachers, to secure their professional status as teachers.

Recommendations

With this finding, there is the need to take a second look at how preservice teachers are admitted into colleges of education to ensure that people who are motivated from within are recruited and trained as prospective teachers to bring about a high sense of efficacy so as to lower the levels of anxiety. Again, those who are already in colleges need to be given counselling and training on developing self-regulatory strategies in order to minimise test anxiety tendencies.

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