

Impact of test Anxiety and Gender on Academic Performance of Nigerian Pre-Service Science Teachers

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Abstract

Tests and examinations' anxiety could be stumbling blocks in some students' attainment of academic excellence. It has been found that tests and examinations are the sources of increase in anxiety which prevent students from demonstrating their true achievements. This study examined the impact of test anxiety and gender on Nigerian pre-service science teachers' academic performance. The sample for the study was 450 pre-service science education students in intact classes of a College of Education in South-West Nigeria. Penultimate (200 level) and final year (300 level) students from the seven departments (Biology, Chemistry, Computer Science, Integrated Science, Mathematics, Physical and Health Education and Physics) in the school of science education participated in the study. The instruments for data gathering were the Test Anxiety Inventory scale, and students' CGPA obtained from the aforementioned departments. Data were analysed using both descriptive and inferential statistics. Major findings of this study are that at low test anxiety, pre-service science teachers performed better with higher CGPAs than their high test anxiety colleagues, female pre-service science students exhibited lower test anxiety than male pre-service science students. Based on the findings, useful recommendations were made.

Keywords: test anxiety, academic performance, gender, pre-service teacher, examination

INTRODUCTION

Tests and examinations at all stages of education, especially at higher education level, 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 achievement, skills and abilities (Rizwan and Nasir, 2010). Zollar and Ben-chain (1990) have the opinion that "the era in which we live is a test-conscious age in which the lives of many people are not only greatly influenced, but are also determined by their test performance". Test and examination stress is thought to prevent some individuals from reaching their academic potential. 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 (Zollar and Ben-chain, 1990; Spielberger, 1980).

Such feelings among students limit their potential performance during the test situation, resulting in higher test anxiety directly causing drop in the student's achievement (Hill and Wigfield, 1984). Anxiety is a basic human emotion consists of fear and uncertainty. Emotion produces string feeling of fear, anger sexual desire, and affection and so on. It is often accompanied by physical sensations such as

heart palpitations, nausea, chest-pain, shortness of breath or tension and headache.

Test Anxiety

You've participated in class, done all of your homework, studied hard, and you think you have a grip on the material. But then the day of the test comes. Suddenly, you blank out, freeze up, zone out, or feel so nervous that you can't get it together to respond to those questions you knew the answers to just last night. If this sounds like you, you may have a case of test anxiety — that sometimes nervous feeling in people when they're about to take a test. Test anxiety is a multidimensional construct that has been defined as "the set of phenomenological, physiological, and behavioural responses that accompany concern about possible negative consequences or failure on an exam or similar evaluative consequences or failure of an exam (Zeidner, 1990). Test anxiety is actually a type of performance anxiety — a feeling someone might have in a situation where performance really counts or when the pressure is on to do well (Aysan, Thompson and Hamarat, 2001). For example, a person might experience performance anxiety when he or she is about to try out for the school play, sing a solo on stage, get into position at the pitcher's mound, step onto the platform in a diving meet, or go into an important interview.

Like other situations in which a person might feel performance anxiety, test anxiety can result in a tension headache. Some people might feel shaky, sweaty, or feel their heart beating quickly as they wait for the test to be given out (Sieber, 1980). A student with strong test anxiety may even feel like he or she might pass out or throw up. Test anxiety is not the same as doing poorly on a certain test because your mind is on something else. Most people know that having other things on their minds — such as a breakup or the death of someone close — can also interfere with their concentration and prevent them from doing their best on a test.

All anxiety is a reaction to anticipating something stressful. Like other anxiety reactions, test anxiety affects the body and the mind. When you're under stress, your body releases the hormone adrenaline (Keogh and French, 2001), which prepares it for danger (you may hear this referred to as the "fight or flight" reaction). That's what causes the physical symptoms, such as sweating, a pounding heart, and rapid breathing. These sensations might be mild or intense. Focusing on the bad things that could happen also fuels test anxiety. For example, someone worrying about doing poorly might think thoughts like, "What if I forget everything I know?" or "What if the test is too hard?" Too many thoughts like these leave no mental space for thinking about the test questions (Eysenck and Calvo, 1992; Sarason, 1988; Zatz and Chassin, 1983; Peleg-Popko, 2004).

People with test anxiety can also feel stressed out by their physical reaction and think things like "What if I throw up?" or "Oh no, my hands are shaking" (Zeidner, 1998). Just like other types of anxiety, test anxiety can create a vicious circle: The more a person focuses on the bad things that could happen, the stronger the feeling of anxiety becomes. This makes the person feel worse and, because his or her head is full of distracting thoughts and fears, it can increase the possibility that the person will do worse on the test. People who worry a lot or who are perfectionists are more likely to have trouble with test anxiety (Ellsworth and Smith, 1988; Lazarus, 1991). People with these traits sometimes find it hard to accept mistakes they might make or to get anything less than a perfect score. In this way, even without meaning to, they might really pressure themselves. Test anxiety is bound to thrive in a situation like this. Students who aren't prepared for tests but who care about doing well are also likely to experience test anxiety (Culler and Holahan, 1980; Wittmaier, 1972). If you know you're not prepared, it's a no-brainer to realize that you'll be worried about doing poorly. People can feel unprepared for tests for several reasons: They may not have studied enough; they may find the material difficult, or perhaps they feel tired because didn't get enough sleep the night before.

Test Anxiety and Academic Performance

There are number of researches reporting text anxiety as one of the major cause for students' underachievement and low performances at different levels of their educational life (Oludipe, 2009) and has been shown to affect students' ability to profit from instruction (Schonwetter, 1995). Gaudry and Spielberger (1971) discussed that high test anxiety is considered as one of the main factor for low performance of students at university level. A study conducted by Nicholson (2009) explored the effects of test anxiety on student achievement of grade 11 students, revealed that anxiety and achievement are related to each other. Khalid and Hasan (2009) conducted a study on a purposively selected sample of 187 undergraduate students to explore the relationship between test anxiety and academic achievement and found that students with academic achievement have low test anxiety scores and vice versa. Chapell, Blanding, Takahashi, Silverstein, Newman, Gubi, and McCann (2005) conducted a research study to explore the relationship between test anxiety and academic performance. They collected data from a large sample of graduate and undergraduate students and found a significant and negative relationship between test anxiety and academic achievement.

Hancock (2001) investigated the effects of students' test anxiety and teacher's evaluation practices on students' achievement and motivation at post the secondary level. He found statistically significant results which revealed 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). Cassidy and Johnson (2002) investigated the effect of cognitive test anxiety on students' academic performance and found that cognitive test anxiety exerts a significant stable and negative impact on academic performance measures. Albero, Brown, Eliason and Wind (1997), on the basis of their research study, concluded that students having high test anxiety had significantly lower scores. Oludipe (2009) conducted a study to explore how test anxiety affects students' performance levels in the sciences, especially in Physics, and concluded that "low test anxious students performed better than high test-anxious students on both numerical and non-numerical tasks in Physics". On the other hand, Schonwetter (1995) by relating this phenomenon to classroom instruction submitted that high test-anxious students were unable to benefit directly from organized instruction, which ultimately affected their performance in class.

Test Anxiety and Gender

Several researchers explored gender differences with respect to test anxiety and found that females have higher levels of overall test anxiety than males (Chapell, Blanding, Takahashi, Silverstein, Newman, Gubi, and McCann (2005); Cassady and Johnson, 2002; Bandalos, Yates and Thorndike-Christ, 1995; Mwamwenda, 1994; Hembree, 1988; Volkmer and Feather, 1991; Zeidner, 1990). Cassady and Johnson (2002) explained “that one explanation for 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”. Zeidner (1990), on the basis of his research, concluded that difference in test anxiety scores of male and female is due to gender difference in scholastic ability. Previous researches have also shown that males typically score lower on measurements of test anxiety than females (Lashkaripour, 2006; Berger and Schecter, 1996; Mehregan, Najjarian and Ahmadi 2001; Ferrando et al, 1999; Chang, 1997; Feingold, 1994). The different test anxiety constructs affect males and females in different ways. Results show that: (a) worry was related to task-orientation and preparation and low avoidance coping in females; (b) emotionality was related to seeking social support in male students and to task-orientation and preparation in female students; and (c) interference was related to avoidance coping in females (Stober, 2004). There was a gender effect on worry and emotionality test anxiety for high achieving students. Overall, females were reported to be more subject to test anxiety than males; and females experienced higher worry than emotionality, while males reported little difference between the two dimensions

Statement of the Problem

Anxiety is often described as having cognitive, somatic, emotional and behavioural components. Psychologically, anxiety is a feeling of dread, fear or apprehension often with no clear justification. A lot of studies had been carried out on the students’ anxiety levels, effect of anxiety on students’ academic achievements at the different levels of their educational life which may be transferred and have influence on the pre-service science teachers teaching learning process in the classrooms. However, not much research has been done on the possible effect of test anxiety and gender on the academic performance of the pre-service science teachers in Nigeria. Hence, this study.

Objectives of the Study

- i. determine the main effect of test anxiety on academic performance of pre-service science teachers in the colleges of education in Southwestern Nigeria.
- ii. examine the differential effect of test anxiety level of gender on academic performance of

pre-service science teachers in the study area.

- iii. determine the interaction effect of test anxiety on academic performance of pre-service science teachers in the study area

Hypotheses

The following null hypotheses were formulated and tested for this study:

Ho₁: There is no significant main effect of test anxiety on academic performance of pre-service science students.

Ho₂: There is no significant effect of test anxiety level of gender on academic performance of pre-service science students.

Ho₃: There is no significant interaction effect of gender and test anxiety on academic performance of pre-service science students.

Significance of the Study

The study examined the impact of test anxiety and gender on Nigerian pre-service science teacher’s academic performance in colleges of education. Information gathered helps the stakeholders, evaluators on how to reduce test anxiety so as to improve teaching learning process in Nigerian classrooms.

METHODOLOGY

The research adopted descriptive survey design for this study. It afford the researchers to elicit information from a large number of sample. It is also relatively inexpensive and less time consuming. Therefore, the researchers considered the design appropriate for the present study.

The target population for the study was the science education students in all Colleges of Education in Southwestern Nigeria. Though there are several colleges of education in Southwestern Nigeria with science department (Federal, State and Private), the researcher worked on with only a college of education in Southwestern Nigeria. Science education students in a college of education were purposively selected because the researchers were science educators. 200 level and 300 level students respectively from the seven departments (Biology, Chemistry, Computer Science, Integrated Science, Mathematics, Physical and Health Education, and Physics) in the school of science education participated in the study. Intact classes of each of the aforementioned departments were purposively used which brought about sample of 450 students (250 female students, 200 male students).

Research Instruments

The main instruments for data gathering were the Test Anxiety Inventory scale (Smith, 2000) and students' CGPA obtained from the aforementioned departments. Several instruments have been developed by various researchers for measuring test anxiety but they all use text anxiety as unitary construct. Hence they insist on finding a unitary number representing text anxiety level of students. Researcher preferred using Test Anxiety Inventory (TAI) because researcher believed that test anxiety is at least bi-dimensional construct comprising emotionality and worry scale. The same argument is put forward by the Smith (2000) while using this instrument for his study. The researchers then compared different test anxiety scales (Test anxiety scale by Sarason, 1990; Test anxiety questionnaire by Mandler Rizwan, Nasir and Sarson, 1952; and the State-trait anxiety inventory by Spielberger, Gorsuch, and Luschene, 1970) to conclude that they yield global test anxiety scores that combine components, emotionality and worry, of test scores". Hence researchers are of the view that when someone intends to study the influence of test anxiety on academic performance, it is expedient to study both components of test anxiety because of the fact that these components are related to academic performance (Berk and Nanda, 2006; Chapell et al., 2005; Cassady and Johnson, 2002; Hancock, 2001; Smith, 2000; Pintrich and Schunk, 1996; Bandlos, Yates, and Thorndike-Christ, 1995; Williams, 1991, Humber, 1988).

Chapell, Blanding, Takahashi, Silverstein, Newman, Gubi, and McCann (2005) reported that test anxiety inventory is extensively used to explore students test anxiety at different levels of education all over the world. According to them, TAI comprised 26 Likert Scale type self-report items (1= *Not at all typical of me*, 2= *Only somewhat typical of me*, 3= *Quite typical of me*, and 4 = *Very typical of me*) which are designed by its author (Spielberger, 1980) to measure test anxiety symptoms. The scale is further divided into two subscales: Worry Scale (8 items), and Emotional Scale (8 items). Cronbach alpha (α) reliability coefficient reported for total scale (TAI-Total) ranged from 0.92 to 0.96 and for its two sub-scales: Worry scale (0.83 to 0.91) and Emotional scale (0.85 to 0.91). For present study, the Cronbach Alpha (α) for total scale was 0.87, while the reliability for emotional scale items was 0.76 and for worry scale items was 0.75. The difference in the reliability found in other studies and present study is due do difference in sample size as reliability is directly proportional to number of subjects in sample. Despite difference in reliability on each sub-scale, the values of alpha (α) are reasonably high and statistically acceptable. Students of 200 and 300 levels respectively were

chosen because their examination questions and scripts were moderated by competent external moderators; hence their scores used to compute their CGPA were valid and reliable.

The researcher and six research assistants (lecturers in the aforementioned departments) administered the Test Anxiety Inventory (TAI) to the students in their intact classes and waited to collect them back. After the collection of the administered TAI, the researchers calculated the TAI scores of each of the students and group them according to their TAI scores; students with high TAI scores were assigned to high test anxiety group, while those with low TAI scores were assigned to low test anxiety group. The researcher, having grouped the students to test anxiety groups, contacted their departments to request for the students' omnibus for firsthand information on their CGPAs. Descriptive statistics, Univariate Analysis of Variance (ANOVA) and Post Hoc tests (Scheffe) were used to analyze the data collected using SPSS 15.0 statistical package.

RESULTS

Table 1: Means and Standard Deviations according to Test Anxiety and Gender

| | TAIsum | Mean | Std. Deviation | N |
|--------|--------|------|----------------|-----|
| Male | 44 | 3.00 | .000 | 100 |
| | 83 | 1.00 | .000 | 57 |
| | 86 | 1.00 | .000 | 43 |
| | Total | 2.00 | 1.003 | 200 |
| Female | 44 | 3.19 | .396 | 150 |
| | 83 | 1.20 | .406 | 35 |
| | 86 | 1.05 | .211 | 65 |
| | Total | 2.36 | 1.089 | 250 |
| Total | 44 | 3.12 | .321 | 250 |
| | 83 | 1.08 | .267 | 92 |
| | 86 | 1.03 | .165 | 108 |
| | Total | 2.20 | 1.065 | 450 |

Source: Research Survey, 2015

In table 1, it is revealed that low test anxiety students had the higher mean score (3.12) than their colleagues in the high test anxiety group whose mean scores were 1.08 and 1.03 respectively (high test anxiety implies low mean scores, while low test anxiety implies high mean scores). Similarly, male students with low test anxiety had a lower mean score (3.00) than the low test anxiety female students with the mean score of (3.19). The male students in the high test anxiety had lower mean scores (1.00 and 1.00) than their female colleagues in the high test anxiety group (1.20 and 1.05).

Table 2: Univariate Analysis of Variance on the Academic Performance subscale of the TAI and Gender

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|-----------------|-------------------------|-----|-------------|-----------|------|---------------------|
| Corrected Model | 477.543(a) | 5 | 95.509 | 1331.219 | .000 | .937 |
| Intercept | 1074.545 | 1 | 1074.545 | 14977.234 | .000 | .971 |
| Gender | 1.904 | 1 | 1.904 | 26.544 | .000 | .056 |
| TAIsum | 441.296 | 2 | 220.648 | 3075.437 | .000 | .933 |
| Gender * TAIsum | .437 | 2 | .218 | 3.044 | .049 | .014 |
| Error | 31.855 | 444 | .072 | | | |
| Total | 2683.000 | 450 | | | | |
| Corrected Total | 509.398 | 449 | | | | |

Source: Research Survey, 2015: R Squared = .937 (Adjusted R Squared = .937)

Ho₁: There is no significant effect of test anxiety on academic performance of pre-service science students. It is revealed in table 2 that there was significant difference in the mean scores of low and high test anxiety pre-service science students ($F_{(1,449)} = .000$, statistically significant). Hence hypothesis 1 is not accepted.

Ho₂: There is no significant effect of test anxiety level of gender on academic performance of pre-service science students.

It is also revealed in table 2 that there was a significant difference in the mean scores of low and

high test anxiety male and female pre-service science students ($F_{(1,449)} = .000$), statistically significant). Hence hypothesis 2 is not accepted.

Ho₃: There is no significant interaction effect of gender and test anxiety level on academic performance of pre-service science students. Talking about the interaction effects of anxiety and gender, it is revealed in table 2 that there was no significant interaction effect of gender and test anxiety on students' academic performance ($F_{(2,449)} = .049$, statistically not significant).

Table 3:

Multiple Comparisons

Dependent Variable: CGPA

Scheffe

| (I) TAIsum | (J) TAIsum | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|------------|------------|-----------------------|------------|------|-------------------------|-------------|
| | | | | | Lower Bound | Upper Bound |
| 44 | 83 | 2.040* | .034 | .000 | 1.96 | 2.12 |
| | 86 | 2.088* | .032 | .000 | 2.01 | 2.17 |
| 83 | 44 | -2.040* | .034 | .000 | -2.12 | -1.96 |
| | 86 | .048 | .040 | .478 | -.05 | .15 |
| 86 | 44 | -2.088* | .032 | .000 | -2.17 | -2.01 |
| | 83 | -.048 | .040 | .478 | -.15 | .05 |

*. The mean difference is significant at the .05 level.

Source: Tia Solarin College of education Science department.

Table 3 above shows the multiple comparisons of pre-service science teachers' CGPAs according to their various levels of test anxiety.

DISCUSSION

Total test anxiety score was calculated from the 26 items on the TAI scale in order to ascertain the

prevalence of anxiety within each of the two groups. The minimum possible score was 27 and the maximum 108. A score of 67.5 is the middle point; hence higher scores indicate more test anxiety, while lower scores indicate less (or no) test anxiety. It was revealed from the data analysis that 250 pre-service science teachers representing (55.55%) had 44 as

scores less than the 67.5 mid-point; 100 out of these 250 pre-service teachers were male, while 150 of them were female. 92 pre-service science teachers scored 83 (20.44%); 57 of them were male, 35 of them were female, 108 pre-service science teachers scored 86 (24.11%); 43 were male, while 65 were female; all of which were higher than the mid-point (67.5). This result indicates that 250 of the prospective science teachers in this sample had low test anxiety, while 200 of them had high test anxiety. 221 out of the 250 low anxiety pre-service science teachers had CGPAs at credit level, while the remaining 29 of the 250 low anxiety pre-service science teachers had CGPAs at distinction level. Similarly, 190 out of the 200 high anxiety pre-service science teachers had CGPAs at Pass level, while the remaining 10 of the 200 high anxiety pre-service science teachers had CGPAs at merit level.

Results in table 3 above revealed that when pre-service science teachers with low test anxiety (44) were compared with those with high test anxiety (83 and 86) pre-service science teachers, there were significant differences in their academic performance (.000), the low test anxiety pre-service science teachers performed better than their colleagues with highest anxiety. When the CGPAs of 83 pre-service science teachers with high test anxiety were compared with those of the low test anxiety pre-service science teachers (44), it was found that the low test anxiety pre-service science teachers performed significantly better academically (.000) than their colleagues in the low anxiety groups. When compared with the high test anxiety pre-service science teachers (86), there was no significant difference in their academic performance (.533). The same results similar to the aforementioned were obtained when the high test anxiety (86) pre-service teachers' CGPAs were compared with other levels of pre-service science anxiety. This study has established the influence of science anxiety and gender on the academic performance of the pre-service science teachers in Nigeria, which is in line with the findings of (Oludipe, 2009; Schonwelter, 1995; Gaundry and Spielberger, 1971; Nicholas, 2009; Khalid and Hassan, 2009; Hancock, 2001; Cassady and Johnson, 2002; Chapell et al., 2005; Bandalos et al., 1995; Lashkaripour, 2006; Berger and Schecter, 1996).

CONCLUSION

The study revealed that text anxiety is very crucial on the academic performance of Nigerian pre-service science teachers in the area of study. There is therefore, a need to build confidence in the pre-service science teacher to improve teaching and learning process in Nigerian classrooms.

RECOMMENDATIONS

Test anxiety can be a real problem if you're so stressed out over a test that you can't get past the nervousness to focus on the test questions and do your best work. Readiness to meet the challenges, though, can keep test anxiety at a manageable level. In view of the above, the following recommendations are hereby made:

- 1. Use a little stress to your advantage.** Stress is your body's warning mechanism — it's a signal that helps you prepare for something important that's about to happen. So use it to your advantage. Instead of reacting to the stress by dreading, complaining, or fretting about the test with friends, take an active approach. Let stress remind you to study well in advance of a test. Chances are, you'll keep your stress from spinning out of control. After all, nobody ever feels stressed out by thoughts that they might do well on a test.
- 2. Ask for help.** Although a little test anxiety can be a good thing, an overdose of it is another story entirely. If sitting for a test gets you so stressed out that your mind goes blank and causes you to miss answers that you know, then your level of test anxiety probably needs some attention. Your teacher, your school guidance counselor, or a tutor can be useful resources to talk to if you always get extreme test anxiety.
- 3. Be prepared.** Some students think that going to class is all it should take to learn and do well on tests. But there's much more to learning than just hoping to soak everything up in class. That's why good study habits and skills are so important — and why no amount of cramming or studying the night before a test can take the place of the deeper level of learning that happens over time with regular study. Many students find that their test anxiety is reduced when they start to study better or more regularly. It makes sense — the more you know the material, the more confident you'll feel. Having confidence going into a test means you expect to do well. When you expect to do well, you'll be able to relax into a test after the normal first-moment jitters pass.
- 4. Watch what you're thinking.** If expecting to do well on a test can help you relax, what about when people expect they **won't** do well? Watch out for any negative messages you might be sending yourself about the test. They can contribute to your anxiety. If you find yourself thinking negative thoughts ("I'm never any good at taking tests" or "It's going to be terrible if I do badly on this test"), replace them with positive messages. Not unrealistic positive messages, of course, but ones that are practical and true, such as "I've studied hard and I know the material, so I'm ready to do the best I can."

(Of course, if you haven't studied, this message won't help!)

5. **Accept mistakes.** Another thing you can do is to learn to keep mistakes in perspective — especially if you're a perfectionist or you tend to be hard on yourself. Everyone makes mistakes, and you may have even heard teachers or coaches refer to mistakes as "learning opportunities." Learning to tolerate small failures and mistakes — like that one problem you got wrong in the math pop quiz — is a valuable skill.
6. **Take care of yourself.** It can help to learn ways to calm yourself down and get centered when you're tense or anxious. For some people, this might mean learning a simple breathing exercise. Practicing breathing exercises regularly (when you're not stressed out) helps your body see these exercises as a signal to relax. And, of course, taking care of your health — such as getting enough sleep, exercise, and healthy eats before a test — can help keep your mind working at its best. Everything takes time and practice, and learning to beat test anxiety is no different. Although it won't go away overnight, facing and dealing with test anxiety will help students learn stress management, which can prove to be a valuable skill in many situations besides taking tests.

REFERENCES

- Albero, P., Brown, A., Eliason, S. & Wind, J. (1997). Improving Reading through the Use of Multiple Intelligences. *Master's Action Research Project*, Saint Xavier University & IRI Skylight. U. S.
- Aysan, F., Thompson, D. & Hamarat, E. (2001). Test Anxiety, Coping Strategies, and Perceived Health in a Group of High School Students: A Turkish sample. *The Journal of Genetic Psychology*, 162(4), 402-411.
- Bandalos, D. L., Yates, K. & Thorndike-Christ, T. (1995). Effect of Mathematics Self-Concept, Perceived Self-Efficacy, and Attribution for Failure and Success on Test Anxiety. *Journal of Educational Psychology*, 11, 351-360.
- Berger, R. & Shechter, Y. (1996). Guidelines for Choosing an "Intervention Package" for Working with Adolescent Girls in Distress. *Adolescence*, 31, 709-717.
- Berk, R.A. (2000). Does humor in course tests reduce anxiety and improve performance? *College Teaching*, 48 (4), 151-158.
- Cassady, J.C. & Johnson, R.E. (2002). Cognitive Test Anxiety and Academic Performance. *Contemporary Educational Psychology*, 27, pp. 270-295.
- Chang, J. I. (1997). Contexts of Adolescent Worries: Impacts of Ethnicity, Gender, Family Structure, and Socioeconomic Status. *Paper presented at the annual meeting of NCFR Fatherhood and Motherhood in a Diverse and Changing World*, Arlington, VA.
- Chapel, M.S., Blanding, Z.B., Takahashi, M., Silverstein, M.E., Newman, B., Gubi, A. & Mccann, N. (2005). Test Anxiety and Academic Performance in Undergraduate and Graduate Students. *Journal of Educational Psychology*, 97 (2), pp. 268-274.
- Culler, R.E. & Holahan, C.J. (1980). Test Anxiety and Academic Performance: The Effects of Study-related Behaviors. *Journal of Educational Psychology*, 72, 16-20
- Ellsworth, P. C. & Smith, C. A. (1988). From Appraisal to Emotion: Differences among Unpleasant Feelings. *Motivation and Emotion*, 12, 271-302.
- Eysenck, M. & Calvo, M.G. (1992). Anxiety and Performance: The Processing Efficiency Theory. *Cognition and Emotion*, 6(6), 409-434.
- Feingold, A. (1994). Gender Differences in Personality: A Meta analysis. *Psychological Bulletin*, 16, 429-456.
- Ferrando, P. et al. (1999). A Psychometric Study of the Test Anxiety Scale for Children in a Spanish Sample. *Personality and Individual Differences*, 27(1), 37-44.
- Gaudry, E. & Spielberger, D. C. (1971). *Anxiety and Educational Achievement*. Wiley, New York.
- Hancock, D. R. (2001). Effect of Test Anxiety and Evaluative Threats on Students' Achievement and Motivation. *The Journal of Educational Research*, 94 (5), 284-290.
- Hill, K.T. and Wigfield, A. (1984). Test Anxiety: A Major Educational Problem and what can be Done about it. *Elementary School Journal*, 85, 105-126.
- Humbree, R. (1988). Correlates, Causes, Effects, and Treatment of Test Anxiety. *Review of Educational Research*, 58 (1), 47-77.
- Keogh, E. and C. C. French (2001). Test Anxiety, Evaluative Stress, and Susceptibility to Distraction from Threat. *European Journal of Personality*, 15, 123-141.
- Khalid, R. & Hasan, S. (2009). Test Anxiety and Low Achievers. *Pakistan Journal of Psychological Research*, 24(3-4), 97-114.

- Lashkaripour, K. (2006). The Relationship between Test Anxiety and Academic Achievement in Students of Guidance Schools in Zahedan. *Tabib Shargh Journal*, 8th year, No 4, winter 85.
- Lazarus, R. S. (1991). *Emotion and Adaptation*. New York: oxford University Press.
- Mandler, G. & Sarason, S. B. (1952). A study of Anxiety and Learning. *Journal of Abnormal & Soc. Psychology*, 47, 166-173.
- Mehregan F., Najjarian B. & Ahmadi A. (2001). The Relation Between Test Anxiety and Performance among Ahvaz University Students. *Ferdowsi J Psychol*, 2, 7-24.
- Nicholson, A. M. (2009). Effects of Test Anxiety on Student Achievement (ACT) for College bound Students. *Dissertation Abstract International*. DAI-A-70/07, AAT 3366126,
- Oludipe, B. (2009). Influence of Test Anxiety on Performance levels on Numerical Tasks of Secondary school physics students. *Academic Leadership: Online Journal*, 7 (4),
- Peleg-Popko, O. (2004). Differentiation and test anxiety in adolescents. *Journal of Adolescence*, 27, 645-662.
- Pintrich, P.R. & Schunk, D. (1996). *Motivation in Education: Theory, Research, and Applications*. Upper Saddle River, NJ, Erlbaum,
- Rizwan, A.R. & Nasir, M. (2010). The Relationship between Test and Anxiety and Academic Achievement. *Bulleting of Education and Research*, 32 (2), 63-74.
- Sarason, I. G., Sarason, B.R., & Pierce, G.R. (1990). Anxiety, Cognitive Interference and Performance. *Journal of social behavior and personality*, 5, 1-18.
- Sarason, I.G. (1988). Anxiety, Self-Preoccupation and Attention. *Anxiety Research* 1, 3-7.
- Schonwetter, D.J. (1995). An Empirical Investigation of Effective College Teaching Behaviors and Student Differences, lecture Organization and Test Anxiety. *Paper presented at the annual meeting of the American Educational Research Association* (San Francisco) Canada.
- Smith, K. H. (2000). The Self-Concept and Verbal Academic Achievement of Primary and Secondary Teachers. *Unpublished Doctoral Dissertation*, University of Melbourne, Australia,
- Spielberger, C. D., Gorsuch, R. L. & Lushene, R. E. (1970). *STAI Manual for the State-Trait Anxiety Inventory*, Consulting Psychologist Press, CA.
- Spielberger, C. D. (1980). *Preliminary Professional Manual for the Test Anxiety Inventory (TAI)*, Consulting Psychologists Press, Palo Alto, CA,.
- Sieber, J.E. (1980). Defining Test Anxiety: Problems and Approaches. In: Sarason, I.G. (Ed.), *Test Anxiety: Theory, Research and Applications*. Lawrence Erlbaum Associates, Hillsdale, /NJ, pp. 15-42.
- Williams, J. F. (1991). Modeling Test Anxiety, Self-Concept and High School Students' Academic Achievement. *Journal of Research & Development and Education*, 25, 51-57.
- Wittmaier, B.C. (1972). Test Anxiety and Study Habits. *Journal of Educational Research*, 65, 352-354.
- Zatz, S., & Chassin, L. (1983). Cognitions in Test Anxious of Children. *Journal of Consulting and Clinical Psychology*, 51, 526-534.
- Zeidner, M. (1990). Does Test Anxiety Bias Scholastic Aptitude Test Performance by Gender and Socio-Cultural Group? *Journal of Personality Assessment*, 55, 145-160.
- Zeidner, M. (1998). *Test Anxiety: The State of the art*. Plenum Press: New York.
- Zoller, U. & Ben-Chain, D. (1990). Gender Differences in Examination Type, Test Anxiety, and Academic Achievement in College Science: A case study", *Science Education*, 74(6), 597-608.