Effects of Test Anxiety on Academic Achievement at Secondary School Level in Lahore

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Abstract

Test anxiety is the fear of students about negative results of the evaluative procedures. Low to moderate level of test anxiety is often thought beneficial for students. Test anxiety has two components worry and emotionality that are found in test anxiety research work. Academic Achievement encompasses students' academic potential. It is a common practice to promote students to next grades on the basis of their academic achievement scores. It aids in classifying students as pass or fail in examination. Present study was conducted to explore the effects of Test Anxiety on student's Academic Achievement at Secondary school level in Lahore. Causal Comparative research design was used to determine the causes of differences that were already therein the population. The population of study consisted of all secondary school students enrolled in district Lahore. A total of 840 students from 30 schools were selected as a sample from Lahore district. Test Anxiety Inventory Questionnaire was adapted and translated into Urdu in the study for data collection from secondary school students. The findings of the study indicate a negative relationship between test anxiety and academic achievement. Results showed that girls have higher test anxiety scores as compared to boys.

Keywords: Test anxiety, Academic achievement, Secondary school, Graduate and undergraduate level.

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Introduction

Tests are important tools for decision making in this competitive world and students are assessed as for their achievement, aptitudes and capacities with tests and examinations (Nasir & Rizwan, 2010). Test anxiety is referred as the students' fear of showing poor results in tests or examinations. Coon and Mitter (2008) suggested that low to moderate level of test anxiety is often considered beneficial for students and serves as a positive motivator by motivating them to put more efforts for achieving academic excellence However, aggravated test anxiety level is considered a threat for students' psychological and physical well-being**.** High test anxiety level severely effects students private, sociallife, as well as their educational achievements (Zahrakar, 2008). Since Text anxiety influences students' achievement it is needed to understand various aspects of Test anxiety and their roles on students' achievement. Sharma and Sud (1990) described that Test anxiety has two components worry and emotionality. The physiological indications of test anxiety are associated with the emotionality component and the psychological indications are associated with worry component (Harris & Coy, 2003).

Academic Achievement encompasses students' academic potential. It is a common practice to promote students to next grades and classify them as pass or fail on the basis of their academic achievement scores. The students' academic achievement scores are influenced by various factors and test anxiety is one of these. Test anxiety is most widely recognized cognitive issue affecting students' academic achievement scores. It can influence students', sense of pride, companion connections and social practices (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). In Pakistan academic achievement of students at secondary level is measured by matriculation examinations conducted by different Boards of Intermediate and Secondary Education at provincial level.

Even subclinical levels of test anxiety can have a negative effect on the prospective academic achievements and outcomes related to the development of students (Grover, Ginsburg, & Ialongo, 2007). Students of different academic potential can be affected by test anxiety and it is reflected through their achievement in the examinations (Mavilidi, Hoogerheide, & Paas, 2013**).** Unal-Karaguven (2015) reported that girls have high levels of test anxiety scores as compared to boys. Zeidner (1990) stated that the difference in test scores of boys and girls is due to the differences in their academic potential. Moreover, girl students were found anxious and self-conscious as compared to the boy students during exams. Societal and parental pressures on students for higher academic achievements can also increase their anxiety about examinations (Gherasim & Butnaru, 2012).

Components of Test Anxiety

Sharma and Sud (1990) had explained Worry as a cognitive component. It is related to mental perceptions and thinking about personal academic achievement scores. It comprises thoughts about bad achievement scores and failure in examinations. On the other hand emotionality component refers to physiological elements for example fright, stress, and increased heart beat and inhalation rates. Both worry and emotionality component synthesize to impact test achievement in various circumstances.

According to Tennant's (2005) characterization of anxiety, the students' perception of test anxiety determines whether the result is positive or negative. Although taking a test is generally regarded as an anxious situation the severity of test anxiety varies from student to student. Although emotionality and worry components of test anxiety are separate concepts but these have combined effect on the students' test anxiety level. Berk and Nenda (2006) suggested that the Worry component is more influencing than Emotionality component.

Academic Achievement

Academic Achievement is taken as an important aspect of the system of formal education. Academic achievement is generally referred to as how many marks a student is achieving in his academics. It is usually measured through conducting assessments or continual evaluations. Students go through different examinations through their whole academic life. Anxiety issue standout amongst most widely recognized mental issue effecting students' academic achievement scores. It can influence students, sense of pride, companion connections and social practices (Costello, et al., 2003). Even subclinical levels of test anxiety can have a negative effect on the prospective academic achievements and outcomes related to the development of students (Grover, Ginsburg, & Ialongo, 2007). Students of every academic potential can be affected by test anxiety. The way of everyone expressing it is different from another. Few students become terrified in tests or examination because of the apprehensions of the reaction of their parents in case of their low academic achievement or failure (Hill, 1980). Many researchers have investigated that students that are suffering from test anxiety normally required more time period to finish an exam. They also require more effort to reach the degree of academic achievement shown by students which are not suffering from test anxiety (Mavilidi, Hoogerheide, & Paas, 2014**).**

Gender Effect

An important aspect that impact on test anxiety level is gender. Girls constantly scored higher as compared to boys in terms of test anxiety (Unal-Karaguven 2015). Comparison of test anxiety levels of both genders indicated that, girls scored higher as compared to boys (Paul, 2013). This can be because of girls' more willingness to describe test anxiety

indications (Hill & Sarason, 1966). Girls are focused on putting more efforts on getting higher academic achievement score on the other hand boy are more inclined towards the reasoning ability, while striving for higher academic achievement (Zember & Blume, 2011). The effect of gender on students' academic achievement scores have been widely explored for centuries (Etile, 2005). When comparison is made in the gender differences of boy and girl students, girl students found to be showing more achievement scores in certain instances (Chambers & Schreiber, 2004).

Effect of Age

Another factor that impacts test anxiety scores of students is there age (McDonald, 2001). Studies conducted by Ollendick, King and Frary (1989) indicated in findings of their research work that fear of failure in exams rises with their ages in students of American and Australia. The researches which used particular scales to measure test anxiety levels shows that with the increase in age test anxiety level usually increases. This could be due to demands of parents and teachers for high academic achievement scores (Hill & Sarason 1966). In case of challenging content and difficulties in learning it increases the test anxiety among students (Zeidner, 1998). While comparing with same age level but still comparatively younger students, a study conducted Stipek and Byler (2001), summarized that older age group students achieve better academically as compared to their younger classmates. De Meis and Stearns (1992), stated that no correlation exist between student age groups and academic achievement scores at significant level. May, Kundert and Brent (1995), Quinlan (1996), and Morrison (1997) also accorded with the above research, outcomes reporting no relationship between student ages and high academic achievement scores.

Effect of Test Anxiety

Some of the consequences are of test anxiety are natural and detectable for example weeping, becoming sick, or unethical conduct like deceiving. There are also many precise consequences that can have a long run impact on students. Few of them are academic motivation, students' behavior towards academics, and on the student's self- respect. It can inhibit student from giving his full potential. Test anxiety level of students reduces their enthusiasm for learning. If a student considers a test to be more frightening, the more would be the increase in anxiety level before the examinations (Amiri & Ghonsooly, 2015). Students with test anxiety problems have inappropriate working styles and are short of test solving techniques. Variety of study strategies should be taught because of the individual differences in students (Bass, Burroughs, Gallion & Hodel, 2002). Such techniques aid students to keep themselves calm, attentive and motivated while preparing for examinations. Moreover, teachers can communicate with parents about developing of good study habits. Handling to cope with test anxiety is an integral research areas. Right coping strategy according to student particular test anxiety issues promote positive functioning and additional outcomes (Stober, 2004).

Paul (2013) suggested that students should indulge themselves in self-talk to motivate themselves to achieve high scores in exams and stay focused. They should also write down regarding their thinking patterns and emotions ahead of solving a test. Students should also be motivated by teachers to clarify thoughts about of their anxiety issues. It can done by providing opportunities for verbal expressions (Hernandz, Menchchaca & Huerta, 2011).

Occurrence of Test anxiety in students

Researchers have shown that test anxiety is widespread in the general population, particularly among girl students (Ergene, 2003). According to an estimate an average 2-3 students in every class are highly test anxious. They are not achieving results according to their academic potential. Another research also estimated that about 10% to 40% of all students' experience issues of test anxiety (Unal-Karaguven, 2015). These issues can start as early as age 7. Girl students, minorities and students with disabilities are more likely to suffer from it (Ergene, 2003).

Research Objectives

The objectives of the study were to:
1. Investigate relationship between test anxiety total scale scores, Worry sub scale scores and emotionality sub scale scores and academic achievement scores of students at secondary school level.
2. Investigate differences in the correlation between test anxiety total scale scores, Worry sub scale scores and emotionality sub scale scores and academic achievement scores on the basis of demographic variables age, gender and SES.

Research Questions of the Study

In this study following research questions are answered
1. Is there any significant relationship between test anxiety total scale scores, worry sub scale scores, emotionality sub scale scores and the academic achievement scores of secondary school level students?
2. Are there any significant differences in the relationship between test anxiety total scale scores, worry sub scale scores, emotionality sub scale scores with academic achievement scores on the basis of gender and age groups of secondary school students?
3. Are there any significant differences in test anxiety scores of secondary school students on the basis of gender?
4. What is the best predictor of test anxiety? Age or gender? How much variance in test anxiety scores of secondary school level students are explained by any of these predictors?

Research Design

The study was descriptive and quantitative in nature. Causal Comparative research design was used in the study to determine the causes of differences that already exists in the population. The basic causal comparative research design is retrospective, it means that it starts with the effects and investigates causes. In the causal comparative research design the population groups are different on some variable and the causes of these differences are investigated. Fraenkel, Wallenand Hyun (2012) expressed that, "In Causal Comparative research, investigators attempted to determine the causes or consequences of differences that already existed between or among group of individuals" (p.366). In this study the effect was compared on the basis of demographic variables of age, gender and socioeconomic status. Relationship between test anxiety scores and academic achievement scores was explored through calculating Pearson product moment correlation coefficient. Independent variable of this study was test anxiety score. Dependent variable was academic achievement score. Demographical variables in the study were students' age and gender.

The research study was delimited to 10th class secondary school students of Lahore district due to financial constraints. Test anxiety scores of the students were identified by data collection through structured questionnaires. Academic achievement scores were gathered through their 9th class secondary school examination (BISE) results. This study did not take into account racial or socioeconomic background.

Sampling of the study

Population of the study consisted of all the public sector secondary schools students of Lahore district. There are 332 secondary schools in Lahore (School Education Department, 2016).

Proportionate stratified and random sampling techniques were used to collect the sample of the study. At 1st stage all Tehsils of Lahore with secondary schools were selected. At 2nd stage according to proportionate stratified sampling formula 10% of schools were selected from the stratums of boy and girl stratums. Therefore, 30 schools were selected as a sample. At 3rd stage, 30 students were randomly selected from each randomly sampled school. Through this process, total 840 students were selected as a sample as shown in table below.

Table 2

Sampling of the study

Tehsils in Lahore	Total		10 % Secondary Schools Stratum		Secondary Students
	Boys	Girls	Boys	Girls	(30 from each school)
City	72	38	7	4	330
Cantonment	10	14	1	1	60
Model Town	31	34	3	3	180
Raiwind	13	10	1	1	60
Shalimar	29	36	3	4	210
Total					840

Ethical considerations

The test anxiety inventory was used and adapted with the permission of author. Further data was collected with consent of relevant authorities and concerned students and their parents.

Data Collection

The list of all schools of was obtained from the office of School education department. Thirty schools were contacted for data collection. After getting their consent, researchers visited these schools according to planned schedule. The responses on test anxiety questionnaire were collected from students in 15 working days by the researchers through school visits. The achievement scores of these students were obtained from Website of BISE Lahore.

Adaption and Validation of Test Anxiety of Test anxiety Inventory Questionnaire

Iowa State university test anxiety inventory was also translated in Urdu language for the convenience of secondary school students. Both English and translated Urdu statements were included in the questionnaire. In the adapted questionnaire 14statements measuring Worry and 15 statements measuring Emotionality components were included. 6 statements for the measurement of socioeconomic status (SES) of students according to local context is included by researcher. In the demographics section age, gender and school name was asked from the students. 9th class roll numbers were also asked from students to get their 9th grade results from the official BISE Lahore website. The results of students were used as achievement scores in the study.

The adapted questionnaire of Iowa State University was validated by 3 experts of the field of Teacher Education.

Table 3

Reliability Coefficient Values of different Scales and Subscales of Test anxiety inventory

Scales	No. of items	Alpha Reliability
Worry Scale	14	0.70
Emotionality Scale	15	0.71
Test anxiety Inventory	29	0.75

Table 3 shows reliability of scale and subscales of Test anxiety inventory calculated on the basis of sample data. The acceptable value for reliability is 0.7, reliability scale and subscale of the test anxiety inventory is within acceptable range.

Data Analysis

Data analysis was conducted in two sections. In the first section Descriptive techniques were applied to analyze the data. Descriptive techniques were applied to calculate the exact percentage according to their demographic representation of subjects. The Frequencies, Mean and Standard Deviation were calculated to describe the results.

In the Inferential statistics Pearson correlation was used to determine the relationship between test anxiety scores, worry sub scale scores, emotionality sub scale scores with academic achievement scores to determine whether there is significant relationship between. Pearson correlation was also used to compare the differences in the relationship between test anxiety scores, worry scale scores, emotionality scale scores and academic achievement scores on the basis of gender and age groups. Independent sample t test was applied on gender to test its impact on test anxiety scores at secondary school level. One way ANOVA was applied on age group to test its impact on test anxiety scores. Standard multiple regression analysis test was applied to assess for variable that predict more academic achievement.

Table 5
Relationship between Test Anxiety Scores and Academic Achievement Scores

Scales	Mean	SD	r	p
Total Anxiety Scores	103.12	12.4	-0.18	0.02[*]
Worry Scores	51.03	6.12	-0.16	0.04*
Emotionality Scores	52.31	7.07	-0.10	0.00*

*p < 0.05

Pearson Product Moment Correlation was used to determine the relationship between test anxiety (total scores, worry scores and emotionality scores and academic achievement. The results showed that there was negative and small correlation between test anxiety and academic achievement scores (r = -0.18, -0.16, - 0.10. n =806, p <. 05).

Table 6
Comparison of the relationship Worry Scores and Academic Achievement Scores on the basis of Demographic Variables (N=804).

Demographic Variables	r	p	Z_{obs}
Gender			0.14
Boy	-0.10	0.13	
Girl	-0.11	0.03[*]	
Age Groups			
≤ 15 years	-0.04	0.47	0.61
16 years	-0.09	0.15	0.15
≥ 17 years	-0.04	0.62	0.62

*p < 0.05

The results of the findings shows that there is a negative and small correlation between worry scores and academic achievement for gender groups as r = -0.10, -0.11 respectively. For age groups r = - 0.04, - 0.09, - 0.04 respectively. Z_{obs} was also calculated to test for statistical significance of the results. Not any result was outside the specific bounds of - 1.97 to +1.97. So, it was concluded that there was not any statistically significant difference on the basis of strength of correlation.

Table 7

Comparison of differences in the relationship Emotionality Scores and Academic Achievement Scores on the basis of Demographic Variables (N=804).

Demographic Variables	r	p	Z_{obs}
Gender			0.56
Boys	-0.12	0.16	
Girls	-0.16	0.01*	
Age Groups			
≤ 15 years	-0.08	0.16	0.79
16 years	-0.12	0.04*	0.11
≥ 17 years	-0.07	0.31	0.57

*$p < 0.05$

The results of the findings shows that there is a negative and small correlation between emotionality scores and academic achievement for gender groups as r = -0.12, -0.16 respectively. For age groups r = - 0.08, - 0.12, - 0.07 respectively. Z_{obs} values were also calculated to test for statistical significance of the results. Not any result was outside the specific bounds of 1.97. So, it was concluded that there was not any statistically significant differences on the basis of the strength of correlation.

Table 8

Differences in Test Anxiety Scores of Secondary School students on gender basis.

Gender	N	Test Anxiety Scores	SD	t	df	p
Boy	399	102.89	12.18	-2.89	8.01	0.00*
Girl	404	105.37	12.09			

*$p < 0.05$

To make comparison of test anxiety scores of boy and girl students, Independent sample t test was applied on test anxiety scores of boy and girl students. There was statistically significant difference found in scores for boy (M = 102.89, SD = 12.18) and girl students, (*M* = 105.37, *SD* = 12.09; *t* (801) = -2.89; *p* = 0.00 for test anxiety scores. Despite reaching statistical significance, the eta squared statistics indicated a small effect size = 0.010.

Table 9

Differences in Test Anxiety Scores of students on the basis of Age Groups.

Age in years	N	Test Anxiety Scores	SD	df	F	p
Upto15	341	103.57	13.19	2	1.62	0.19
16	269	103.94	11.57	801		
17 and above	194	105.50	11.14			

*$p < 0.05$

To explore the effect of age group on test anxiety scores of students, one way between group analysis of variance tests was applied. Students according to their age groups were divided into three groups (Group1: 15 or less years; Group 2: 16 years of age to 112; Group 3: 17 and above). There was not any statistically significant difference at the $p >.05$ level were found in test anxiety scores for all age groups' $F (2,801) =1.62\ p =0.19$. The effect size calculated using eta squared, was $= 0.004$.

Table 11
Standard Multiple Regression Analysis for variables predicting variance in Test Anxiety Scores (N=804)

Variables	β	$SE\ \beta$	β	p	R^2	F
Constant	87.39	6.23		0.00*	1.7	7.03
Age	0.81	0.38	0.07	0.03*	.00	
Gender	2.69	0.83	0.12	0.00*	.01	

*$p< 0.05$

Multiple regression test was used to assess the ability of two control measures (Age variable, Gender Variable) to predict levels of test anxiety scores. Model as a whole explained total variance 1.7%, F (803) =7.03, p < .05. Age variable recorded beta value (beta=0.07, p < .05), the gender scale reported the highest beta values (beta= 0.12, p < .05)

Conclusion

Test anxiety is well liked topic of research, initiating since early 1900s. Fear of exams and testing situations is widespread and appears to becoming more prevalent possibly may be, due to increasing frequency of testing and the importance placed testing" (McDonald, 2001, p.96). The research study on the basis of data analysis provided proof that Test anxiety and Academic Achievement are correlated with each other. To explore the effect of Test anxiety on Academic Achievement scores, the Pearson Product Correlation was calculated. According to findings of the present study on the basis of data analysis, Test anxiety has moderate negative correlation with academic achievement. As the test anxiety scores of Secondary school students' increases academic achievement scores decreases. Demographic factors have major impact on test anxiety scores of students (Stober & Pekrun, 2004). So, the impact of demographic of secondary school students' age, gender and SES was tested on their academic achievements scores. Research findings on the basis of data analysis suggest that gender is the only demographic variable affecting test anxiety scores. Female students have higher level of Test anxiety as compared to Male students. The demographic variable of students' age and Socioeconomic Status (SES) had no effect on test anxiety scores of Secondary school students. There are less studies administered to examine the effects of test anxiety scores on academic achievement scores in school years (Sapp 1996). The study filled the research gap by conducting research on effects of test anxiety on academic achievement at secondary school level.

Discussion

The objective of the present study was to investigate the effects of Test anxiety on academic achievement at Secondary school level in Lahore. The total 840 students were selected using Stratified random sampling technique. The findings of the study on the basis of data analysis stated that Test anxiety had moderate negative correlation with academic achievement at secondary school level. Gender was the only demographic variable effecting Test anxiety scores. Students Age and Socioeconomic Status (SES) had no effect on test anxiety Scores. The findings of the present study contradicted with the findings of Jeynes, 2002; Mitchell and Collom, 2001 and Ma & Klinger, 2000 who stated that Socioeconomic Status was positively correlated with academic achievement.

Results of the present study were related with the findings of Keogh, et al (2004) and Chapel et al (2005) who found a negative relationship between Test anxiety and Academic Achievement Scores. The results of the present study also differed from the research findings of Stipek and Byler (2001), DeMeis and Stearns (1992), Gullo and Burton (1992), Trapp (1995) and Parks (1996) who stated that older students achieve better academically than younger students. On the other the study was in agreement with the findings of Dietz and Wilson (1985), and De Meis and Stearns (1992) who stated that no correlation exists between students' ages and their academic achievement scores. The findings of the present study were also related with the findings of Chambers & Schreiber, (2004); Peng and Hall, (1995); Boardman (2006) Thompson and Cunningham; (2000) who stated that gender was the demographic factor impacting Test anxiety Scores. Thus, it was concluded that gender was the only factor impacting test anxiety Scores and test anxiety had moderate negative correlation with academic achievement scores.

Recommendations

Following recommendations were suggested on the basis of study findings
1. School should organize training workshops for parents by experienced psychologists to advise parents to reduce anxiety level of students at home. A positive and soothing home environment at younger age of children saves them from anxiety problems later in life (Casbarro, 2005).
2. Teachers should teach students effective study strategies. Most of the time wrong study habits are basic cause of test anxiety.
3. Students should avoid cramming the exam content and should indulge in conceptual learning.

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