



Test Anxiety as a Predictor of Academic Performance among Elementary School Students

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ABSTRACT

This research looked at whether test anxiety can predict academic performance of elementary school students. The study's main aims were: (i) to find out the level of test anxiety among elementary school students, (ii) to evaluate the academic performance of elementary school students, and (iii) to find out the predictive effect of test anxiety on academic performance of students at the elementary level. Quantitative research method was adopted through the use of a cross-sectional survey design. The sample consisted of 369 elementary school students who were randomly sampled from a total population of 8, 616 students in secondary schools of District Kotli, Azad Jammu and Kashmir. Primary data collection was done through a structured questionnaire using a five-point Likert scale, the scale was supported by students' academic performance records. The tool was found to be sufficiently reliable (Cronbach's $\alpha = .796$). Descriptive statistics, Pearson correlation, and simple linear regression were some of the methods used for data analysis. According to the results, students had a moderate level of test anxiety ($M = 63.91$, $SD = 5.26$) and a moderate level of academic performance ($M = 62.11$, $SD = 6.38$). The statistically significant positive correlation between test anxiety and academic performance was confirmed, $r(367) = .430$, $p < .001$. Furthermore, testing anxiety was found in regression analysis to be statistically significant in predicting academic performance, $B = 0.52$, $p < .001$, and it explained roughly 18.5% of the variation ($R^2 = .185$). These findings imply that test anxiety is a moderate, yet significant, predictor of the academic achievement of elementary students.

Introduction

Schools have increasingly depended on standardized testing as an essential aspect of decision-making for issues such as student promotion and school evaluation. Legislative acts like the No Child Left Behind Act require that all students be given standardized tests, which increases the stress associated with evaluations. Schools and students face various pressures due to testing and students at times experience very high levels of stress and test anxiety. It makes it important to first know how test anxiety affects students' academic achievement.

Test anxiety, in short, is that a combination of emotional, physiological and behavioral changing factors which will cause students to worry about the fact that they will score poorly on a test or will be measured in a negative way (Zeidner, 2020). This problem is created by a very complex mix of biological, psychological and social factors, including physiological arousal, maladaptive cognitive patterns, anxious affect, as well as social pressure such as parental expectations. Test-anxious students suffer from a range of symptoms which include distracting thoughts, unpleasant emotional states and engaging in behaviors which are irrelevant for the performance of the task at hand, most notably during examinations, especially when the student perceives the situation to be of great significance to the self.

Test anxiety, even at mild levels, may largely be detrimental to children's academic and developmental outcomes in the future (Grover, Ginsburg, & Ialongo, 2007). It also is a phenomenon that affects students of all ability levels and their performances on standardized tests (Mavilidi et al., 2020). Ünal-Karagüven (2015) has found that females generally experience more test anxiety than males.

At an epidemiological level, test anxiety affects a significant proportion of students, with different studies estimating prevalence between 10% and 40% of students struggling with this condition at different levels. It can develop as early as seven years old and continue to negatively affect students' academic performances over time. When anxiety is part of a testing experience, learning and performance often get disrupted, leading to lower test scores and academic failure (von der Embse et al., 2015).

The idea that test anxiety predicts academic performance is really gaining momentum in the field of educational psychology. While traditional correlational methods only reveal the relationship between two variables, predictive modeling enables researchers to assess how changes in test anxiety levels can potentially predict later academic results. This approach to prediction is very effective in spotting students who, because of their high levels of anxiety, might perform poorly, and thus it supports the possibility of giving them help (Hembree, 1988).

Good understanding of test anxiety and coming up with ways to tackle it have been achieved to a great extent. However, more often than not, the interventions are very flawed on the methodological front, including limited sample size and population validity issues (Putwain & Symes, 2020). Generally, intervention strategies can be divided into prevention and anxiety reduction categories. Changes in testing modalities, such as group testing or use of portfolios, appear to be effective in lowering the anxiety levels that are related to assessment.

Although people are more and more alert to the problem of test anxiety, only a very few studies have been done on the development of intervention programs suitable for elementary school situations. Hembree (1988) remarked that the problem of test anxiety is becoming more and more serious throughout the K-12 population. Therebeing a gap in the literature, this paper is mainly concerned with a study of the relationship between test anxiety and academic performance of elementary students.

Objectives

The study was guided by the following objectives:

1. To identify the level of test anxiety among elementary school students.
2. To assess the academic performance of elementary school students.
3. To determine the predictive effect of test anxiety on students' academic performance at the elementary level.

Research Questions

The following research questions were formulated to address the study objectives:

1. What is the level of test anxiety among elementary school students?
2. What is the academic performance level of elementary school students?
3. To what extent does test anxiety predict academic performance among elementary school students?

Review of Related Literature

Test Anxiety: Conceptual Framework

Test anxiety is generally thought of as a personality trait that comes out in specific situations. It includes a person's physiological, cognitive, and behavioral reactions when they are being evaluated. It is different from generalized anxiety disorder because it is related only to situations where a person feels being judged, especially based on performance. For very young kids who have not built many ways to deal with stress yet, how test anxiety presents may be totally different, even qualitatively, from the forms that one sees in teenagers and adults (Zuckerman, 2015).

The cognitive aspect of test anxiety includes negative self-talk that can occupy one mentally and thus prevent one from doing one's best. Such negative thoughts may even cause one to forget what one knows when it's time to recall. Physiological symptoms that might arise include rapid heartbeat, sweating, feeling sick to the stomach, and headache. On the behavior level, for example, one might completely pass on taking the test or even decide not to attend class on the day of the test due to anticipatory fear (Afolabi-Ige, 2016).

Prevalence and Developmental Considerations

Test anxiety is a problem for a sizable proportion of children of elementary school age. A thorough and comprehensive systematic review of test anxiety in elementary children found rates of test anxiety of moderate level or above to be anywhere from 20% to 40%, with the younger children showing higher rates of test anxiety (Talbot, 2016).

Diagnosing test anxiety in elementary school children means taking their developmental level into account. The youngest ones may not have the cognitive maturity to express verbally their feelings of anxiety. Instead, they are likely to show their anxiety through physical symptoms and behavior. Problems like stomach aches, headaches, trouble sleeping just before the tests, and being very quiet about the whole situation of testing are very typical signs of anxiety in children (Talbot, 2016).

Cultural and Demographic Variations

Meta-analytic findings have documented that demographic variations exist in the prevalence of test anxiety. Gender differences consistently come out, with female participants scoring higher on test anxiety measures than males ($d = 0.21$). These differences have been ascribed to differential socialization with regard to academic success, differential willingness to report anxiety symptoms, or actual differences in anxiety experiences (Von der Embse et al., 2018).

Geographic and cultural factors also play a role in test anxiety scores. Increased levels of anxiety have been reported in Asian populations as compared to European and North American groups. Such differences may be related to the varying academic pressure levels across cultures differential family expectations for educational attainment, and varying the consequences of test failure for future opportunities (Tibubos et al., 2025).

Academic Performance: Conceptualization and Measurement

Elementary level academic performance is a combination of several dimensions including subject knowledge acquisition skill development, and demonstration of the learned content through different assessment methods. Academic performance is most often measured by test scores, grades, and other evaluative methods.

Performance at elementary school is the outcome of a complex interplay between learner characteristics, instructional quality, parental influence, and school environment. One of the factors that influence children's academic success in elementary school is the school climate (Fakunle & Ale, 2018).

Theoretical Mechanisms Linking Test Anxiety to Academic Performance

Test anxiety is one of the most significant factors in academic performance prediction, and multiple theoretical frameworks have been proposed to explain why test anxiety results in academic performance outcomes. The interfering response strategy, initially formulated by Sarason and later supported by empirical studies, holds that test anxiety produces taskunrelated thoughts that disrupt cognitive functioning required for test taking. Because students must attend to the test as well as their personal concerns, less working memory capacity is available for recalling information and solving problems (Chin et al., 2017).

Attentional control theory suggests that test anxiety disturbs the equilibrium between the goal-directed and stimulusdriven attentional mechanisms. When individuals suffer from test anxiety, they are likely to focus their attention on threatening stimuli like challenging test questions and limited time, and thus they are unable to effectively concentrate on the test itself.

Empirical Evidence on Test Anxiety as a Predictor of Academic Performance

The meta-analysis findings revealed that test anxiety is a statistically significant predictor of academic performance even among the youngest students. The relationship between test anxiety and mathematics performance ($\beta = -.21$) as well as literacy performance ($\beta = -.20$) has been established. Although effect sizes are relatively small, the link between test anxiety and academic achievement consistently arises in different samples and methods of test anxiety and achievement measurement (Von der Embse et al., 2018).

The strength of this prediction also changes depending on the student's age. The meta-regression study pointed out that older students are more affected by test anxiety in terms of their math performance than younger students. The reasons for these different reactions could be a longer

exposure to test anxiety, a more severe impact on academic self-concept, or a higher level of importance associated with tests in higher grades (Von der Embse et al., 2018).

Moderating Variables in the Predictive Relationship

Moderating variables can change how test anxiety affects academic achievement. Academic self-concept has a significant negative relationship with test anxiety ($r = -.41$), and self-efficacy is strongly negatively correlated with test anxiety ($r = -.39$).

It means that students' perception of their academic competence influences their test anxiety levels, and on the other hand, anxiety affects student confidence, thus changing the accuracy of test anxiety in predicting academic results (Von der Embse et al., 2018).

Methodology

Research Design

Quantitative research approach was used in this study through cross-sectional survey design. The quantitative approach was chosen to allow statistical testing of the predictive relation between test anxiety and academic performance.

Population and Sampling

The entire secondary school in District Kotli, Azad Jammu, and Kashmir were considered as target population consisting of 8, 616 elementary school students. 369 students were the sample who were randomly selected with simple random sampling technique that unbiasedly gives each student an independent chance of selection. The sample size was found sufficient for statistical analysis including correlation and regression procedures.

Data Collection Instruments

The main method of data collection in this research was through a structured questionnaire, which was using a five-point Likert scale of 1 (strongly disagree) to 5 (strongly agree). The questionnaire contained items that measured the extent of test anxiety among elementary students. Academic performance was measured based on students' last semester grades that were normalized on a 0-100 scale.

Validity and Reliability

The questionnaire was first examined by a panel of three experts from the Department of Education, who assessed the clarity, relevance, and comprehensiveness of the instrument in terms of content validity. A field study was carried out before the actual data gathering with 30 students, whose opinions led to revising the instrument.

Reliability was assessed using Cronbach's alpha coefficient, which yielded a value of .796. This value exceeds the conventional threshold of .70, indicating acceptable internal consistency reliability for the instrument.

Data Analysis Procedures

Statistical Package for Social Sciences (SPSS) Version 26 was used for data analysis. Descriptive statistics (means and standard deviations) were calculated for the first two objectives. Pearson product-moment correlation was used to find out the relationship between test anxiety and academic performance. The predictive effect of test anxiety on academic performance was evaluated using simple linear regression analysis. All the statistical tests were assessed at $\alpha = .05$ level of significance.

Results

Results are given as per the research objectives.

Level of Test Anxiety Among Elementary School Students

Objective 1 required identification of test anxiety levels among elementary school students.

Table 1: Descriptive Statistics for Test Anxiety

Variable	N	M	SD
Test Anxiety	369	63.91	5.26

According to the details shown in Table 1 on average students received a score of 63.91 (SD = 5.26) when it came to test anxiety. This was based on a scale where the highest possible score was 100. This figure points out that young students still finish the basic level of their school years with a fair amount of anxiety about tests. In addition, the standard deviation being quite low (5.26) reveals that students' responses about test anxiety were quite similar with very little variation between them.

Level of Academic Performance Among Elementary School Students

Objective 2 required assessment of academic performance levels among elementary school students.

Table 2: Descriptive Statistics for Academic Performance

Variable	N	M	SD
Academic Performance	369	62.11	6.38

Table 2 presents the descriptive statistics of academic performance. The average score of academic performance was 62.11 (SD = 6.38) on a 0-100 scale, which suggests a fair level of academic performance for the students who took part in the study.

Predictive Effect of Test Anxiety on Academic Performance

Objective 3 required determination of the predictive effect of test anxiety on students' academic performance at the elementary level.

Table 3: Pearson Correlation Between Test Anxiety and Academic Performance

Variable	N	M	SD	r	p
Academic Performance	369	62.11	6.38	.430	0.000
Test Anxiety	369	63.91	5.26		

Table 3 illustrates that test anxiety and academic performance revealed a Pearson correlation coefficient of $r = .430$, and a significance of $p < .001$. This number indicates that there is average, direct, and statistically significant association between the two variables which makes the prediction analysis possible.

Table 4: Model Summary for Test Anxiety Predicting Academic Performance

Model	R	R ²	Adjusted R ²	SE
1	.430	.185	.183	5.76

Note: Predictor: Test Anxiety.

The result of the model summary concerning the regression analysis is given in Table 4. The R^2 figure of .185 demonstrates that test anxiety accounts for almost 18.5% of the differences in academic performance of elementary school students. This result confirms that test anxiety is a significant predictor of academic performance.

Table 5: ANOVA for the Regression Model

Model	SS	Df	MS	F	p
Regression	2767.89	1	2767.89	83.36	< .001
Residual	12185.77	367	33.20		
Total	14953.66	368			

Dependent Variable: Academic Performance.

The first step of the analysis of variance presented in Table 5 allowed testing the overall significance of the regression model. The analysis revealed the model produced an F value of 83.36, which is statistically significant at $p < .001$. So, this finding suggests test anxiety could still be used as a predictor of academic performance.

Table 6: Regression Coefficients for Test Anxiety Predicting Academic Performance

Predictor	B	SE	β	T	p
Constant	28.76	3.67		7.85	< .001
Test Anxiety	0.52	0.06	.430	9.13	< .001

Dependent Variable: Academic Performance.

The regression coefficients are presented in Table 6. The unstandardized coefficient for test anxiety was $B = 0.52$ ($p < .001$), which means that if test anxiety scores increase by one unit, academic performance will increase by 0.52 units. The standardized coefficient ($\beta = .430$) is another way of measuring the size of the effect. The t-value of 9.13 is yet another indication and statistical evidence that test anxiety is a significant and important predictor of academic performance.

Table 7: Summary of Results

Objective	Analysis	Key Finding
Level of test anxiety	Descriptive statistics	Moderate ($M = 63.91$, $SD = 5.26$)
Level of academic performance	Descriptive statistics	Moderate ($M = 62.11$, $SD = 6.38$)
Predictive effect of TA on AP	Correlation and regression	Significant positive prediction; $r = .430$, $p < .001$; $R^2 = .185$; $B = 0.52$, $p < .001$

Conclusions

This research paper studied how well test anxiety could predict academic performance in primary school children. Based on the data analysis that has been done, different conclusions can be made.

First off, it was found that the level of test anxiety in primary school students is moderate ($M = 63.91$). This result implies that students still do get nervous during a test but the level of anxiety does not get too intense.

Next, the level of primary school students' academic performance is moderate ($M = 62.11$). This level of performance is indicative of average academic achievement and this, on the other hand, suggests that students are basically fulfilling educational expectations.

Last, the statistical test results show that test anxiety can be a useful predictor for academic performance among primary school children. Firstly, the correlation test indicated the presence of a moderate positive correlation ($r=.430$, $p<.001$). Secondly, the regression test showed that the students' academic performance could be predicted from the test anxiety, statistically significantly ($B = 0.52$, $p <.001$). Also, 18.5% of the variance in academic performance can be explained by the model using test anxiety as a predictor ($R^2 = .185$).

Overall, results from this study highlight the necessity for adopting test anxiety as the one of the predictor variables of the elementary school education. Properly handling test anxiety can lead to better academic performance of primary school students.

Recommendations

In light of the findings and conclusions of this research paper, the following recommendations are being put forward:

Recommendations for teaching practice

Creating a classroom atmosphere where students are not afraid to express their worries about tests can be a good idea because it might lessen the degree to which anxiety predicts poor results. Teachers, thus, should be encouraged to do this.

Besides the traditional tests, a variety of assessment types such as quizzes, project assessments, and creative assignments can be used by educators in the hope of decreasing the predictive part of test anxiety in students.

One of the ways how teachers can be helped is through professional training programs that provide them with the knowledge and skills to identify test anxiety in students very early so that intervention can be done in a timely fashion in order to prevent anxiety from having a negative impact on academic performance.

Recommendations for Institutional Support

One way for schools to help students deal with test anxiety is by providing counseling sessions or guidance programs focused on equipping students with coping strategies. These would not only assist students to better face test anxiety but may also lessen the impact of anxiety on their academic performance.

Schools might want to set up and sustain realistic academic expectations for students so that they do not need to operate under very high levels of pressure, which can lead to exaggerated levels of test anxiety and strengthen the negative impact of anxiety on academic performance.

Schools may offer encouragement and training in time management, relaxation, and positive restructuring of cognition strategies based on scientific evidence in their efforts to break the predictive association between anxiety and negative performance.

Recommendations for Future Research

For their part, future research may use longitudinal methods in order to ascertain the extent and manner in which the ability of test anxiety to predict academic performance evolves and alters throughout elementary school.

Following research could identify whether some other variables like study habits and self-efficacy that would be affected by anxiety and academic performance, closely together with other variables

like gender and socioeconomic status that would be the opposite, influencing the predictive relationship between test anxiety and academic performance.

Investigations in the lab can be used today to test the efficacy of particular test anxiety treatment modalities in diminishing the strength of the predictive role of anxiety on the results of elementary school education.

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