Test Anxiety and Academic Achievement among Non-English Major Students at a University in Hanoi

Le Quang Dung

Thang Long University, Nghiem Xuan Yem Rd., Hoang Mai Dist., Ha Noi

ABSTRACT: The present quantitative study examines the levels of test anxiety among 75 non-English major students of different disciplines at Thang Long University, Hanoi, Vietnam. The study adapted a survey on test anxiety developed by Dennis H, Division of Student Development and Enrollment Services (2011), University of Central Florida. The findings reveal the level of anxiety was medium M=1.77 (SD = 0.81, SEM = 0.09, Min = 1.00, Max = 3.00, Skewness = 0.43, Kurtosis = -1.34). Regarding levels of test anxiety by gender, the result of the two-tailed independent samples *t*-test was significant based on an alpha value of .05, t(73) = -3.11, p = .003. There was a significant difference between male and female students in the levels of test anxiety; M=1.5 for male and M=2.05 for female (Min=1.00, Max=3.00). With regard to the relationship between levels of test anxiety and academic achievement, the ANOVA was examined based on an alpha value of .05. The results of the ANOVA were significant, F(2, 72) = 17.72, p < .001, indicating there were significant differences in academic achievement among the levels of test anxiety. The mean of academic achievement for low test anxiety (M = 6.67, SD = 0.93) was significantly larger than for medium test anxiety (M = 5.75, SD = 1.51), p = .008. For the main effect of levels of test anxiety, the mean of Academic achievement for low test anxiety (M = 6.67, SD = 0.93) was significantly larger than for high test anxiety (M = 4.81, SD = 0.72), p < .001. For the main effect of levels of test anxiety, the mean of academic achievement for medium test anxiety (M = 5.75, SD = 1.51) was significantly larger than for high test anxiety (M = 4.81, SD = 0.72), p = .022.

KEYWORDS: Test anxiety, levels of test anxiety, gender, academic achievement

I.   INTRODUCTION
1.1.   Background to the Study
Tests or examinations are commonly believed the best methods to evaluate learning outcomes. Sattler and Wiegle (2013) claim that the most effective means of classroom evaluation was through examination and taking of test structured and administered by teachers. They further described examination as a set of structured questions that are gotten from previous or present study given to students to answer in order to determine their level of comprehension of what is being taught. Besides, tests are widely used by the industrial, government, and military sectors to help make decisions for enrolment, employment and recruitment. However, the overemphasis of tests for evaluation may bring negative impacts on education. Sarason & Sarason (1990) suggests that high scores in evaluation do not necessarily imply or describe learning outcomes at the end of lessons. Unusual test-taking strategies, such as random guessing, cheating and plodding may yield wrong evaluations. Black (2005) believe that students usually experience fear and nervousness during evaluation periods and believed that through open-book test, assignments, or projects, nervousness, fear or test anxiety can be controlled in order to erase bias and errors witnessed in evaluation.

One of the noticeable burdens that university students are suffering today is the overload of tests and examinations. In fact, contemporary society is best described as test-oriented and test consuming (Zeidner & Most, 1992). As the result, universities use tests to measure their training quality. However, the exceeded frequency of testing may cause the so-called test anxiety, which reduces the accurate performance in many cases. Thus, test anxiety is frequently cited among the factors at play in determining a wide array of unfavourable outcomes and contingencies, including poor cognitive performance, scholastic underachievement, and psychological distress and ill health (Gaudry & Spielberger, 1971; Hembree, 1988; Powers, 1986; Zeidner, 1990). The effects of test anxiety may not be noticed by some students until their mind goes blank when encountering a challenging objective test problem or until they freeze up on an important oral exam (Emery & Krumboltz, 1967). Test-anxious students tend to be easily distracted on an exam, experience difficulty in comprehending relatively simple instructions, and also have difficulty organizing or recalling relevant information during the test. High test anxious students express concern about the consequences of not performing at a satisfactory level on major exams and embarrassment at probable failure (Sarason & Sarason, 1990).

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1.2. Research Problem

Test anxiety has become an issue in most educational system in the world for the increased impact it has on educational outcomes. Due to the essence of evaluation in education, most experts and researchers have suggested that there is need for more researches to be carried on this issue of test anxiety with the intent of discovering possible ways of curbing this menace or completely eradicating it in our educational facilities. To this end, many empirical studies have emerged on test anxiety and its impact on academic performances of student in colleges and tertiary institutions. Research worldwide has proved that test anxiety influences students' academic achievements and it have affected their cognitive functioning and emotional wellbeing (Berk & Nanda, 2006; Chapell et al., 2005; Cassady & Johnson, 2002). Many students usually develop fright and anxiety during test scenarios. This obviously does not help in evaluating students appropriately as this issue in most cases result in errors in measurement and evaluation of learners. Along with other studies that have been conducted worldwide confirming the negative backwash of too many examination, the present study aims at investigating the effects of test anxiety towards academic achievements of undergraduate students at a university in Hanoi, Vietnam.

1.3. Research Purposes

Bearing the negative effects of test anxiety in mind, the primary purpose of this paper is to measure the levels of test anxiety among students of non-English major at a university in Hanoi. The secondary purpose is to determine the levels of test anxiety by genders. Finally, it is to figure out the relationship between levels of test anxiety and their academic achievement

1.4. Research question(s)

With the above mentioned purposes, the present study attempts to answer the following research questions

1.4.1. What are the self-perceived levels of test anxiety among non-English major students at Thang Long University?

1.4.2. Is there a statistically significant difference between levels of test anxiety by gender?

1.4.3. What is the relationship between levels of test anxiety and their academic achievement?

II. LITERATURE REVIEW

2.1. Test Anxiety

Anxiety, a basic human emotion, signalling uncertainty or threat in the environment, has figured prominently in the literature as one of the most pervasive and important reactions to stress experienced by man (I. G. Sarason, 1986; I. G. Sarason & Sarason, 1990). Asadullapoor, Fati, & Gharaee, 2010 defined anxiety as feeling that undesirable and unclear like when person predicts a danger situation. Extreme level of anxiety impends individual's mental and physical health and also has a negative effect on their personal, social, familial, occupational, and educational performance.

The term "test anxiety," as a scientific construct, refers to the set of phenomenological, physiological, and behavioural responses that accompany concern about possible negative consequences or failure on an exam or similar evaluative situation. It is described as a common phenomenon that constitutes a universal cause of poor academic performance among students worldwide. It is also an undisputable fact in human life's that influence an individual's accomplishment in numerous situations, an average level of anxiety is useful in sustaining people hardworking and being responsible of what they have to do (Donnelly, 2009). Test anxious students are characterized by a high degree of vulnerability and a particularly low response threshold for anxiety in evaluative situations. Furthermore, test anxiety has been described as a dynamic process constituted by the reciprocal interaction of the evaluative context, individual differences in trait anxiety, appraisals and threat perceptions, state anxiety, and coping patterns and outcomes.

2.2. Test Anxiety and Academic Performance

The responses to high levels of test anxiety have especially important implications in the educational setting. Identifying factors such as test anxiety that influence student achievement and motivation to learn in the classroom continues to be a goal of education researchers (Eggen and Kauchak, 1999).

Back to the past, Sarason (1963) found that "anxiety presence in the testing situation is an important variable in test performance". However, high levels of anxiety before or during a test, test-takers may not display their true abilities, thus spoiling their performance (McDonald, 2001). Children under stress may incline to pay more attention to "emotionally threatening stimuli such as failure and mistake and less on the required task". Researchers discovered in their research studies that test anxiety can be influenced by the academic expectations coming from the parents. Children can sometimes be anxious during a test due to the fear of not reaching their parent's expectations (Sarason, 1963, Putwain, 2007).

Test anxiety has been overwhelmingly identified as a two-factor construct, consisting of the cognitive (often referred to as "worry") and emotional (or affective) components. The prime view of the association between these two factors suggests the cognitive component that directly influences the performance of students in exams, while the emotionality component is associated but does not directly persuade test performance (Cassady, 2005).

Robert and Larry (1967) carried out a study on cognitive and emotional components of test anxiety, the relationship between two aspects of test anxiety; worry and emotional was examined. Research questions were developed in accordance with the objective of the study alongside a hypothesis that guides the study. Questionnaire was constructed which was administered to the target group

in order to collect useful data that will be analyzed for the study. After collection and analysis of the data information, the finding showed that worry was inversely related to academic performance and had a relative effect on students' performance. The findings also pointed to the fact that worry, fright; loss of memory, nervousness was part of the cognitive and emotional factors that inversely affected academic performance of the students. The study further suggested reduction of students affective filter in order to assist the student during test or examination situations, it also discussed the educational implications of neglecting this issue of test anxiety which will results in inability of proper evaluation of students at the end of lessons. They encouraged teachers to devise other means of evaluation which will reduce affective filter of students and assist them in bringing out the best in them.

Lindsay (2002) carried out another research on effect of test anxiety attention and memory skills of undergraduate students. The study focused on eliciting information that will assist in determining the extent at which test anxiety affect the attention and cognition of undergraduate students. A large population size was considered for the study and due to this large size of the population a reduced sample size of the population was chosen and used to collect data. Thus, a well-structured questionnaire was employed and administered to twenty-four undergraduate students in order to allow the student perform a cognitive task and measure their level of test anxiety as well .The performed cognitive task was to assist in measuring the attentive skills of the students through introduction of false alarms. This false alarm when introduced triggered the students to show their anxiety level and observations where noted accordingly. The findings of the study indicated that anxiety has a negative impact on attention and memory skills of students who has high-test anxious status whereas students with low -test anxious status showed very low impact of test anxiety on their attention and memory skills. She further stated that within these two groups, test anxiety had an impact regardless how minimal it was on students which was capable of distorting their recall skills.

The individual might experience a feeling of distress that their performances are being prudently observed out to be assessed (Cheraghian, Fereydouni, BarazPardejani & Bavarsad, 2008). Sometimes this can lead to low confidence or poor academic performance (Moadeli & Ghazanfari, 2005).

III.   METHODS
3.1.   Participants
Participants were 75 undergraduates from Thang Long University in Hanoi, all of them are students following different majors in academic year 2022-2023. These students are studying English for the TOEIC test. The minimum requirement is 450 points. Their English programs are divided into different phases, i.e. Elementary, Pre-Intermediate and Intermediate levels. During their study, they have to attend six examinations namely mid-term and final examinations. The summary of the subjects can be found in Table 1.

Table 1.Frequency Table for Nominal Variables

Variable	*n*	*%*
Gender		
Male	38	50.67
Female	37	49.33
Missing	0	0.00

Note. Due to rounding errors, percentages may not equal 100%.

3.2.   Research Instruments
Participants were administered the Test Anxiety Measure survey. The survey was adapted from Dennis H. (2011) Starting Out in Community College.Chicago, Il: McGraw-Hill (see appendix). It was a 35 item survey. The subjects were asked to read the questions or statements the circle True or False that best applied for them. The scores are then added up following the True answers. A score of 11 or below suggests low test anxiety. A score of 12 to 20 suggests medium test anxiety. A score above 20 indicates high test anxiety.

3.3.   Research Procedures
In order to figure out the levels of test anxiety among the subjects of the study, the researcher conducted the survey in class. The results were collected for computation. Low test anxious students were assigned 1; medium test anxious students were assigned 2 and 3 for those who are high test anxious students.

IV.   RESULTS
Research question 1: What are the self-perceived levels of test anxiety among non-English major students at Thang Long University?
The descriptive statistic showed the observations for Level of Test Anxiety Scale had an average of 1.77 (SD = 0.81, SEM = 0.09, Min = 1.00, Max = 3.00, Skewness = 0.43, Kurtosis = -1.34). When the skewness is greater than 2 in absolute value, the variable is

considered to be asymmetrical about its mean. When the kurtosis is greater than or equal to 3, then the variable's distribution is markedly different than a normal distribution in its tendency to produce outliers (Westfall & Henning, 2013). The summary statistics can be found in Table 2.

Table 2. Summary Statistics Table for Interval and Ratio Variables

Variable	M	SD	n	SEM	Min	Max	Skewness	Kurtosis
Level_of_TA_Scale	1.77	0.81	75	0.09	1.00	3.00	0.43	-1.34

   Note. '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

Frequencies and percentages were calculated for level of test anxiety. The most frequently observed category of Level of test anxiety was Low TA (n = 35, 46.67%). Frequencies and percentages are presented in Table 3.

Table 3. Frequency Table for Nominal Variables

Variable	*n*	*%*
Level_of_TA		
Low TA	35	46.67
Medium TA	22	29.33
High TA	18	24.00
Missing	0	0.00

   Note. Due to rounding errors, percentages may not equal 100%.

Research question 2: Is there a statistically significant difference between levels of test anxiety by gender?
A two-tailed independent samples t-test was conducted to examine whether the mean of Level of test anxiety scale was significantly different between the Male and Female categories of Gender.

ASSUMPTIONS
Normality. Shapiro-Wilk tests were conducted to determine whether level of test anxiety scale could have been produced by a normal distribution for each category of Gender (Razali & Wah, 2011). The result of the Shapiro-Wilk test for level of test anxiety scale in the Male category was significant based on an alpha value of .05, W = 0.68, p < .001. This result suggests that level of test anxiety scale in the Male category is unlikely to have been produced by a normal distribution. The result of the Shapiro-Wilk test for level of test anxiety scale in the Female category was significant based on an alpha value of .05, W = 0.80, p < .001. This result suggests that level of test anxiety scale in the Female category is unlikely to have been produced by a normal distribution. The Shapiro-Wilk test was significant for both the Male and Female categories of Gender, indicating the normality assumption is violated.

Homogeneity of Variance. Levene's test was conducted to assess whether the variance of level of test anxiety scale was equal between the categories of Gender. The result of Levene's test for level of test anxiety scale was not significant based on an alpha value of .05, F(1, 73) = 1.08, p = .302. This result suggests it is possible that the variance of level of test anxiety scale is equal for each category of Gender, indicating the assumption of homogeneity of variance was met.

RESULTS
The result of the two-tailed independent samples *t*-test was significant based on an alpha value of .05, t(73) = -3.11, p = .003, indicating the null hypothesis can be rejected. This finding suggests the mean of level of test anxiety scale was significantly different between the Male and Female categories of Gender. The results are presented in Table 4. A bar plot of the means is presented in Figure 1.

Table 4. Two-Tailed Independent Samples t-Test for Level of test anxiety scale by Gender

	Male		Female				
Variable	M	SD	M	SD	t	p	d
Level_of_TA_Scale	1.50	0.73	2.05	0.81	-3.11	.003	0.72

   Note. N = 75. Degrees of Freedom for the t-statistic = 73. d represents Cohen's d.

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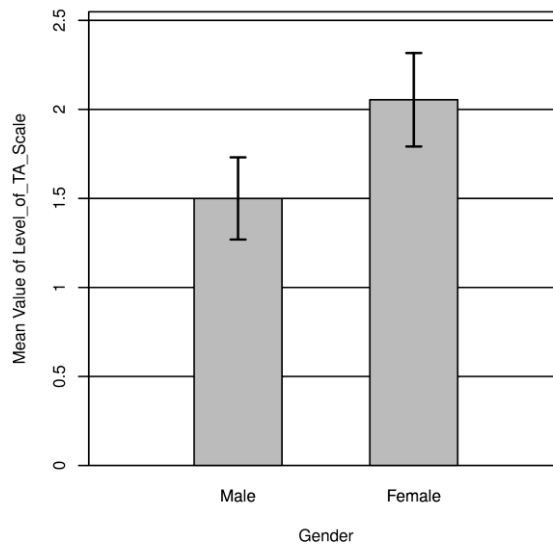

Figure 1. The mean of Level of test anxiety scale by levels of Gender

Two-Tailed Mann-Whitney U Test
INTRODUCTION
A two-tailed Mann-Whitney two-sample rank-sum test was conducted to examine whether there were significant differences in level of test anxiety scale between the levels of Gender. The two-tailed Mann-Whitney two-sample rank-sum test is an alternative to the independent samples t-test, but does not share the same assumptions (Conover & Iman, 1981). There were 38 observations in group Male and 37 observations in group Female.

RESULTS
The result of the two-tailed Mann-Whitney U test was significant based on an alpha value of .05, U = 442, z = -2.98, p = .003. The mean rank for group Male was 31.13 and the mean rank for group Female was 45.05. This suggests that the distribution of level of test anxiety scale for group Male was significantly different from the distribution of level of test anxiety scale for the Female category. The median for Male (Mdn = 1.00) was significantly lower than the median for Female (Mdn = 2.00). Table 5 presents the result of the two-tailed Mann-Whitney U test. Figure 2 presents a boxplot of the ranks of level of test anxiety scale by Gender.

Table 5. Two-Tailed Mann-Whitney Test for level of test anxiety scale by Gender

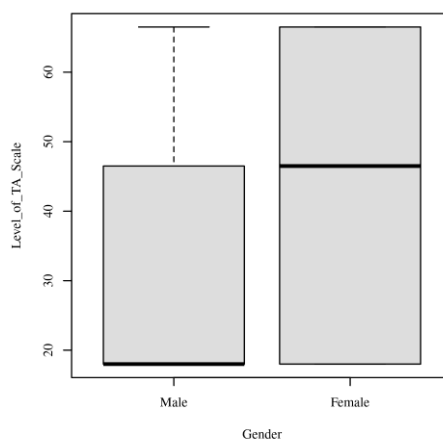| Variable	Mean Rank		U	z	p
	Male	Female			
Level_of_TA_Scale	31.13	45.05	442.00	-2.98	.003

**Figure 2. Ranks of level of test anxiety scale by Gender**

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Research question 3: What is the relationship between levels of test anxiety and their academic achievement?
An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in academic achievement by Level of test anxiety.

ASSUMPTIONS

Normality. The assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a Chi-square distribution, also called a Q-Q scatterplot (DeCarlo, 1997). For the assumption of normality to be met, the quantiles of the residuals must not strongly deviate from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. Figure 3 presents a Q-Q scatterplot of model residuals.
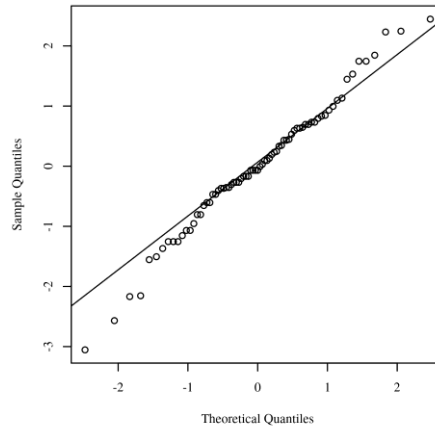
**Figure 3. Q-Q scatterplot for normality of the residuals for the regression model.**

Homoscedasticity. Homoscedasticity was evaluated by plotting the residuals against the predicted values (Bates et al., 2014; Field, 2017; Osborne & Walters, 2002). The assumption of homoscedasticity is met if the points appear randomly distributed with a mean of zero and no apparent curvature. Figure 4 presents a scatterplot of predicted values and model residuals.
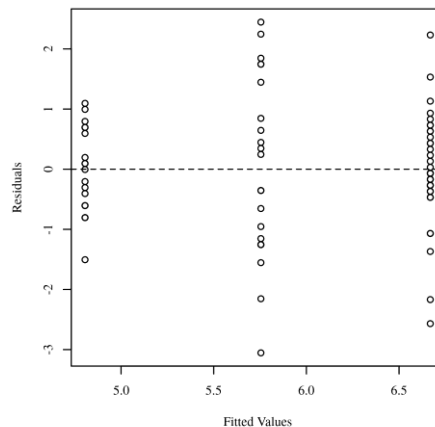
Figure 4. Residuals scatterplot testing homoscedasticity

Outliers. To identify influential points, Studentized residuals were calculated, and the absolute values were plotted against the observation numbers (Field, 2017; Pituch & Stevens, 2015). Studentized residuals are calculated by dividing the model residuals by the estimated residual standard deviation. An observation with a Studentized residual greater than 3.20 in absolute value, the 0.999 quantile of a *t* distribution with 74 degrees of freedom, was considered to have significant influence on the results of the model. Figure 5 presents the Studentized residuals plot of the observations. Observation numbers are specified next to each point with a Studentized residual greater than 3.20.
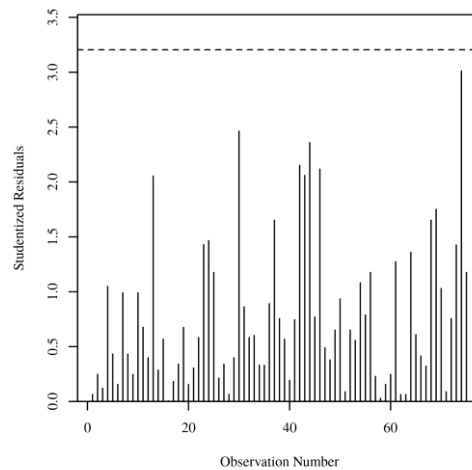
Figure 5. Studentized residuals plot for outlier detection

RESULTS

The ANOVA was examined based on an alpha value of .05. The results of the ANOVA were significant, $F(2, 72) = 17.72$, $p < .001$, indicating there were significant differences in Academic achievement among the levels of test anxiety (Table 6). The eta squared was 0.33 indicating levels of test anxiety explains approximately 33% of the variance in Academic achievement. The means and standard deviations are presented in Table 7.

Table 6. Analysis of Variance Table for academic achievement by level of test anxiety

Term	SS	df	F	p	ηp2
Level_of_TA	42.49	2	17.72	< .001	0.33
Residuals	86.30	72			
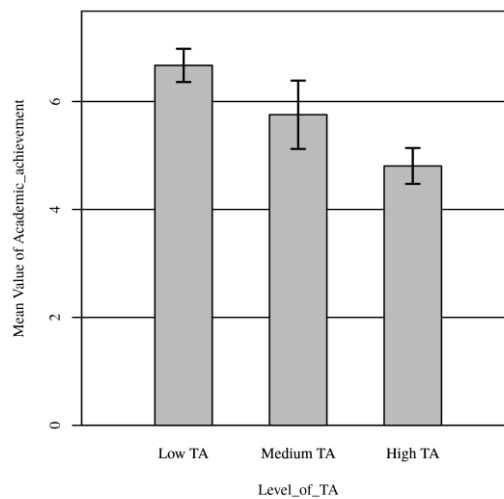
Figure 6. Means of Academic achievement by Level of test anxiety

Table 7. Mean, Standard Deviation, and Sample Size for Academic achievement by Level of test anxiety

Combination	M	SD	n
Low TA	6.67	0.93	35
Medium TA	5.75	1.51	22
High TA	4.81	0.72	18

Note. A '-' indicates the sample size was too small for the statistic to be calculated.

Post-hoc

A *t*-test was calculated between each group combination to further examine the differences among the variables based on an alpha of .05. The Tukey HSD p-value adjustment was used to correct for the effect of multiple comparisons on the family-wise error rate.

For the main effect of levels of test anxiety, the mean of Academic achievement for Low TA (M = 6.67, SD = 0.93) was significantly larger than for Medium TA (M = 5.75, SD = 1.51), p = .008. For the main effect of levels of test anxiety, the mean of Academic achievement for Low TA (M = 6.67, SD = 0.93) was significantly larger than for High TA (M = 4.81, SD = 0.72), p < .001. For the main effect of levels of test anxiety, the mean of Academic achievement for Medium TA (M = 5.75, SD = 1.51) was significantly larger than for High TA (M = 4.81, SD = 0.72), p = .022.

V.   CONCLUSIONS

The aims of this study were to measure the levels of test anxiety among the students of non-English majored at Thang Long University in Hanoi, Vietnam. The findings revealed that the level of anxiety was medium M=1.77 (SD = 0.81, SEM = 0.09, Min = 1.00, Max = 3.00, Skewness = 0.43, Kurtosis = -1.34).

Regarding difference of level of test anxiety by gender, the result of the two-tailed independent samples *t*-test was significant based on an alpha value of .05, t(73) = -3.11, p = .003. There was a significant difference between male and female students in the levels of test anxiety; M=1.5 for male and M=2.05 for female (Min=1.00, Max=3.00)

With regard to the relationship between levels test anxiety and academic achievement, The ANOVA was examined based on an alpha value of .05. The results of the ANOVA were significant, F(2, 72) = 17.72, p < .001, indicating there were significant differences in academic achievement among the levels of test anxiety. The mean of academic achievement for low test anxiety (M = 6.67, SD = 0.93) was significantly larger than for medium test anxiety (M = 5.75, SD = 1.51), p = .008. For the main effect of levels of test anxiety, the mean of Academic achievement for low test anxiety (M = 6.67, SD = 0.93) was significantly larger than for high test anxiety (M = 4.81, SD = 0.72), p < .001. For the main effect of levels of test anxiety, the mean of Academic achievement for medium test anxiety (M = 5.75, SD = 1.51) was significantly larger than for high test anxiety (M = 4.81, SD = 0.72), p = .022.

REFERENCES

1) Asadullapoor, A. Fati, L. & Gharaee, B. (2010) Metacognitive anxiety and the immediate and delayed judgment of learning. *Journal psychiat clinic psychol. 16* (4), 412-419.

2) Berk, A.R., & Nanda, J. (2006). A randomized trial of humour effects on test anxiety and test performance. *Humor - International Journal of Humor Research, 19,* 425-454

3) Black, S. (2005). Test anxiety. *American School Board Journal, 192*(6), 42-44.

4) Cassady J. C. (2005). The effects of online formative and summative assessment on undergraduate students' achievement and cognitive test anxiety. *Journal of Tecnology Learning and Assessment. 4* (1), 14-21.

5) Cassady, J. C., & Johnson, R. E. (2002). Cognitive test anxiety and academic performance. *Contemporary Educational Psychology, 27*(2), 270–295. https://doi.org/10.1006/ceps.2001.1094

6) Chapell, M.S., Blanding, Z., Silverstein, B., Michael E., Takahashi, M., Newman, B., Gubi, A., & McCann, N. (2005). Test Anxiety and Academic Performance in Undergraduate and Graduate Students. *Journal of Educational Psychology*, *97*, 268-274.

7) Cheraghian, B. Fereydouni, M. BarazPardejani, S. Bavarsad, N. (2008). Test anxiety and its relationship with academic performance among nursing students. *Journal Knowledge Health. 3*(4), 25–29.

8) Donnelly R. (2009). Embedding interaction within a bend of learner centric pedagogy and technology. *World Journal on Educational Technology*. *1* (1), 6-9.

9) Eggen, P., & Kauchak, D. (1999). *Educational Psychology: Windows on Classroom*. Prentice-Hall, 4th Ed.

10) Emery, J. R., & Krumboltz, R. D. (1967). Standard versus individualized hierarchies in desensitization to reduce test anxiety. *Journal of Counseling Psychology, 14*, 204-209.

11) Gaudry, E., & Spielberger, C. D. (1971). *Anxiety and educational achievement*. New York: Wiley

12) Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research, 58*, 7-77.

13) Linsay, S. (2002). The Effect of Test Anxiety on Attention and Memory Skills in Undergraduate Students. *Annual Review of Undergraduate Research at the College of Charleston, 1,* 263-273

14) McDonald, A.S. (2001) The Prevalence and Effects of Test Anxiety in School Children, *Educational Psychology*, *21*(1), 89-101, DOI: 10.1080/01443410020019867

15) Moadeli Z & Hemsamabedi G. (2005). Survey on the students' exam anxiety in the Fatemeh (P.B.A.H.) College of Nursing and Midwifery. *Journal of Strides in Development Medical Education. 1* (2), 65-72.

16) Powers, D. E. (1986). *Test anxiety and the GRE general test*. Report No. 86-45. Princeton, NJ: Educational Testing Service.

17) Putwain, D. W. (2007). Test anxiety in UK schoolchildren: Prevalence and demographic patterns. *British Journal of Educational Psychology, 77*(3), 579–593. https://doi.org/10.1348/000709906X161704

18) Robert, M.L & Larry, W.M. (1967). Cognitive and Emotional Components of Test Anxiety: A Distinction and Some Initial Data. *Psychological Reports*, *20*(3). https://doi.org/10.2466/pr0.1967.20.3.9

19) Sarason, I. G. (1963). Test Anxiety and Intellectual Performance. *Journal of Abnormal and Social Psychology*. *6*(3), 134-142

20) Sarason, I. G., & Sarason, B. R. (1990). Test anxiety. In H. Leitenberg (Ed.), *Handbookof social and evaluative anxiety* (pp. 475-496). New York: Plenum Press.

21) Sattler, S., Wiegel, C. (2013). Cognitive test anxiety and cognitive enhancement: the influence of students' worries about their use of performance-enhancing drugs. *Substance Use and Misuse 48*(3):220-32

22) Zeidner, M. (1990). Does test anxiety bias scholastic aptitude test performance by gender and sociocultural group? *Journal of Personality Assessment, 55*, 145-160.

23) Zeidner, M., & Most, R. (1992). An introduction to psychological testing. In M. Zeidner & R. Most (Eds.), *Psychological testing: An inside view* (pp. 2–47). Palo Alto, CA: Consulting Psychologists Press.