A Comparative Study of Test Anxiety between Students of Biological Sciences and Humanities at University College of Rub-bi Rashid

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Abstract

The aim of this study was to see if there was any significant difference between undergraduate students of biological sciences and humanities in their test anxiety scores at University College of Rub-bi Rashid, Tabriz, Iran. This analytical-descriptive study was conducted on a sample of 188 students composed of 94 students of humanities and 94 students of biological sciences. The cases were selected by simple random sampling and Sarason Anxiety Questionnaire was used for gathering data and finally the collected data was analyzed via SPSS 24. The mean of anxiety level among students of humanities was 1.84 and 2.05 before and after the test respectively, and the measured mean for students of biological sciences was 1.89 before the test and 2.15 after the test. This result showed a significant difference between these two types of students ($P < 0.05$) in both phases, but there were no significant differences between experimental and test groups' sex and anxiety level ($P > 0.05$). Moreover, the results of chi-square tests showed no significant difference between the two types of students after the test ($P > 0.05$). In these two studied groups, the test anxiety was increased after the test in comparison with that before it. Also, it was concluded that biological students' test anxiety was as large as humanity students' test anxiety in the second phase. Similarly, no significant difference was observed between boys and girls after the test. Finally, the authors suggest some handy tips that can help to relieve the pressure on the tests.

Introduction

As Bachman and Palmer (1996) argued, test performance is ascribed to test-taker and test task characteristics. The test-taker characteristics comprise topical knowledge, language knowledge, personal characteristics, strategic competence, and affective schemata. Bachman and Palmer comment that the former three interact with the latter two, and test performance results from these interactions. Consequently, the test-taker characteristics and test task characteristics have effects on each other. These authors emphasize that it is imperative to know how these components affect test performance as teachers' decisions based on test performance rely on these characteristics. While these variables all deserve investigation, a core issue is how personal characteristics affect test performance. Bachman and Palmer imply that of all types of personal characteristics related to test performance (e.g., age, sex, nationality), test anxiety is of highest priority.

According to Scholars, anxiety is perhaps one of the most researched areas of human condition. In Sarason's (1988) view, anxiety is described as a basic human emotion that consists of fear and insecurity and appears when something seems to be threat that harms the ego or self-esteem. Test anxiety also refers to a "special case of general anxiety consisting of phenomenological, physiological, and behavioral responses related to a fear of failure" (Sieber, 1980, p. 17) and to the "experience of evaluation or testing" (Sieber, 1980, p. 18). Moreover, anxiety can be regarded as a set of feeling of worry, nervousness, and fear which is commonly experienced in stress-inducing situations, for instance, a test or performance in public and so forth.

Spielberger (1972) was first scholar who classified anxiety into two types: trait anxiety and state anxiety. The latter is the type which unfortunately is much more seen among youth particularly in academic setting. State anxiety is a temporary state of uneasiness along with physical and behavioral reactions which stem from autonomic nervous system. Test anxiety is a form of state anxiety because it occurs only in situation when people are examined, and performance is of great importance. More recent conceptualizations have divided test anxiety into three components (Wren & Benson, 2004): thoughts such as self-criticism and worries about performance, autonomic reactions such as sweaty palms, increased heart rate, dry mouth, headache, etc., and off-task behaviors such as fidgeting.

The symptoms may be different from person to person, but affect negatively students' concentration. The student with poor concentration pays less attention for task-directed efforts, which in turn impairs performance, and the poor performance ruins study skills and impacts students' achievement, and in the end, discourages students from learnings.

"We live in a test-conscious, test-giving culture in which the lives of people are in part determined by their test performance" (Sarason, 1960, p. 26). Based on studies, in highly competitive educational system even the good students have faced test anxiety. They are afraid they will not meet their own personal standards. Their high standards and desire for maximum success have negative impact on the test

anxiety levels and sometimes they are not able to bear the negative consequences of it. Moreover, some factors such as age, gender, difficult learning areas, ability of student in learning and time pressure during exam as well as physical and mental diseases are responsible for inducing test anxiety.

According to the aforementioned facts and the importance of test anxiety and its existence among academic students, the aim of this research was to compare the test anxiety of students of human sciences and biological sciences at University College of Rub-bi Rashid during academic year 2018.

Method

The study addressed the following questions to pursue the above stated broader objective research questions:

1. Do students of biological sciences and humanities experience test anxiety?

2. What is the level of the test anxiety experienced by undergraduate students of biological sciences compared to students of humanities at University College of Rub-bi Rashid?

Research Design

This study being descriptive-analytical in nature utilized survey techniques. All cases in the control and test groups got the Sarason inventory before and after the test and descriptive statistics, pared samples test, and chi-square test were used for studying the data collected from them. All of the calculation was performed using SPSS 24 and significance level was considered as $P \leq 0.05$.

Setting

The study was conducted at University College of Rub-bi Rashid. This college accepts students of biological sciences and humanities from the Iranian National University Entrance Exam held once a year by the Ministry of Sciences and Research. The period of study is 4 years which is divided into 2 years pre-basic and other 2 years as basic courses.

Sample

One hundred and eighty-eight participants were selected randomly from both undergraduate students of biological sciences and humanities. In the 94 member students of biological sciences, 34 cases belonged to Microbiology, 11 cases belonged to Food Industries, 36 cases were from Cellular-Molecular Biology, 3 cases were from Animal Biology, 1 case was from General Biology. The other group including the students of humanities was composed of 94 cases, 35 cases from Translation Studies, 30 cases from Insurance Management, and 29 cases from Accounting. The mean age of subjects in the test and control groups was 10.58 (±1.2) and 10.01 (±0.79), respectively.

Tools and Measurements of Data Collection

The questionnaire that was used for gathering data in this study was Sarason Anxiety Inventory which included 37 two-choice items. Each respondent had to fill the questionnaire during 10 to 15 minutes in a form of yes or no for each item. This questionnaire with the Cronbach alpha coefficient equal to 0.88, the internal consistency equal to 0.95 and the criterion validity equal to 0.72 is one of the most prestigious test inventories and its validity and reliability has been admitted frequently in different studies. Afterwards, in the second stage of this study, after two weeks when the students of both groups had an exam, they were given a Sarason questionnaire.

Ethical Considerations

An approval to conduct the study was obtained from the ethical committee of the research unit at University College of Rub-bi Rashid. Subjects were selected randomly among 1700 and they were assured about the confidentiality and anonymity of the collected data and that it will be only used by the researchers for the purpose of the current study.

Data Collection

Participants who agreed to participate in the study were given a brief explanation about the study. Researchers arranged with different course instructors to take 15-20 minuet of the class time for the students to complete the survey questionnaire. In the first stage of the study, a questionnaire was given to students of biological sciences and humanities when they did not have any tests. In the second stage, they were given the same questionnaire just before the final exam at the end of the semester, and they were collected after completion. The data were collected over a 3 weeks' period.

Statistical Analysis

Data was coded, entered, cleaned, and analyzed using SPSS statistical software package version 24. All cases in the control and test groups got the Sarason inventory before and after the test and descriptive statistics, pared samples test, and chi-square test were used for studying the data collected from them. All of the calculation was performed using SPSS 24 and significance level was considered as $P \leq 0.05$.

Results

Data analysis showed that the test anxiety increased significantly before and after the test in both groups but the intergroup difference was non-significant in the second stage. (Table 1 and Table 2; Figure 1). Paired samples test results showed a significant difference between the 2 control and test groups ($P < 0.05$) (Table 3 and Table 4).

In order to compare the difference of anxiety after the test in the two groups, chi-square test was used and the anxiety mark of students before the test was considered as the confounding variable. After checking the hypotheses of the chi-square analysis and confirming the main hypotheses of this test, the main output of this model also showed no significant difference in the average anxiety marks between the two groups ($P > 0.05$) (Table 5). In other words, after the test, anxiety scores in the group of students of biological sciences was as large as those in humanity students' group.

Table 1. Descriptive Statistics of the Anxiety Level Before and After the Test

		Count	Column N %
Anxiety 1	**Mild**	61	32.4%
	Moderate	92	48.9%
	High	35	18.6%
	Total	188	100.0%
Anxiety 2	**Moderate**	93	49.5%
	High	57	30.3%
	Mild	38	20.2%
	Total	188	100.0%

Table 2. Descriptive Statistics of the Anxiety Level Between Students of Biological Sciences and Students of Humanities Before and After the Test

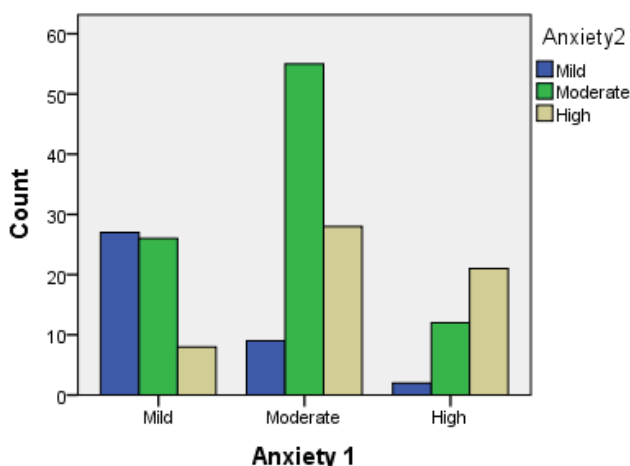|		Group			
		Humanities		**Biology**	
		Count	**Column N %**	**Count**	**Column N %**
Anxiety 1	**Mild**	29	31.5%	32	33.3%
	Moderate	49	53.3%	43	44.8%
	High	14	15.2%	21	21.9%
	Total	92	100.0%	96	100.0%
Anxiety 2	**Moderate**	47	51.1%	46	47.9%
	High	25	27.2%	32	33.3%
	Mild	20	21.7%	18	18.8%
	Total	92	100.0%	96	100.0%

Figure 1. Comparison of the Average Test Anxiety Marks Between the 2 Groups - Before and After the Test

Table 3. Descriptive Statistics of the Test Anxiety of the Research Subjects in the Test and Control Groups

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Anxiety 1	Humanities	92	1.84	.668	.070
	Biology	96	1.89	.738	.075
Anxiety 2	Humanities	92	2.05	.701	.073
	Biology	96	2.15	.711	.073

Table 4. Descriptive Statistics of the Test Anxiety of the Research Subjects in the Test and Control Groups

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
Pair 1	Anxiety 2 - Anxiety 1	.239	.747	.054	.132	.347	4.396	187	.000

In addition, this data was studied according to the gender in both groups and the chi-square test showed that there was not a significant difference in the anxiety level after the test between male and female students of test groups (Tables 5, 6, 7, and 8).

Table 5. Descriptive Statistics of the Gender Distribution of the Research Subjects in the Test Group

Gender *Anxiety 2 Cross-tabulation

Count		Anxiety2			Total
		Mild	Moderate	High	
Gender	Male	7	24	14	45
	Female	31	69	43	143
Total		38	93	57	188

Table 6.

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.826[a]	2	.662
Likelihood Ratio	.861	2	.650
N of Valid Cases	188		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.10.

Table 7. Descriptive Statistics of the Group Distribution of the Research Subjects in the Test Group

Group *Anxiety 2 Cross-Tabulation

Count		Anxiety 2			Total
		Mild	Moderate	High	
Group	Humanities	20	47	25	92
	Biology	18	46	32	96
Total		38	93	57	188

Table 8.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.891[a]	2	.641
Likelihood Ratio	.893	2	.640
N of Valid Cases	188		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.60.

Discussion

The main purpose of the present study was to compare the test anxiety of undergraduate students of biological sciences and humanities. The results indicated that in these two studied groups, the level of anxiety was increased after the test in comparison with that before it. Also, it was discovered that biological students' test anxiety was as large as humanity students' test anxiety. Similarly, no significant difference was observed between boys and girls after the test.

In the present study, the test anxiety of greater part of participants was moderate and high after the test; only 21.7% of students of humanities and 18.8% of biological sciences had low test anxiety. 51.1% of students of humanities and 47.9% of biological sciences yielded moderate test anxiety. 27.2% of students of humanities and 33.3% of biological sciences showed high anxiety. These findings confirm stress as a pervasive phenomenon in all students. A moderate level of test anxiety is necessary for better academic performance since lack of anxiety as a provoking factor of struggle increase among students may lead to poor academic performance (Driscoll et al., 2009). These results are much allied to the study done by Mohammadi and Parandin's (2015), 61.2% of students felt averagely or intensively stressed which is compatible with our findings obtained. According to Darabi et al. (2013), 66% of students were evaluated with average or intensive levels of stress, which also supports our findings. On the other hand, Moadeli and Ghazanfari (2005) reported weak level of stress for students, which is in contrast with the present study. To justify this difference, we can point to the impressionability of this kind of stress from different factors and different individual interpretations. Difficulty of exam questions and fear of getting insufficient marks or strict professors are some more factors.

In studying the samples according to the gender, no significant difference was reported between girls and boys, showing that anxiety does not depend on gender in the case of education and learning. This result despite being consistent with some studies (Khosravi & Bigdeli, 2008; Darabi et al., 2013) is in contrast with most researches (Rahimian & Sadeghi, 2007; Mohammadi & Parandin, 2015; Moadeli & Ghazanfari, 2005; Yousefi et al., 2013; Jenaabadi, Nastiezaie, & Jalalzaei, 2016). In the study of Mohammadi and Parandin (2015) about stress among students, this difference was significant as the anxiety level was higher in girls than that in boys. Studies of Yousefi et al. (2013) had a similar result. Further, Jenaabadi, Nastiezaie and Jalalzaei (2016) also reported a higher level of stress for girls. As argued (Akbaryboorang & Aminyazdi, 2009), this may be due to cultural and social

differences. In some societies girls accept anxiety as a feminine trait, whereas for boys, anxiety is a threat against their masculinity and look for ways to defeat it. Additionally, some personality traits effect responsibility level directly. Girls are more easily affected by test results and hence take more responsibility for ensuring their success. This causes increased fear and anxiety.

Anxiety has also been identified as a leading cause of poor academic performance. High levels of academic anxiety can negatively affect working memory (Owens, Stevenson, Hadwin, & Norgate, 2012). Anxiety is also related to high levels of worry that can affect academic performance. The results from this study showed no intergroup difference after the test. That is, the result of this study did not support the assumption that students of biological sciences encounter significantly higher level of test anxiety than students of humanities, and vice versa. However, anxiety was shown to have risen significantly in both groups after the test in comparison with that before it, thereby lowering the academic performance of students of both types at University College of Rub-bi Rashid. The result was consistent with copious research studies worldwide (Ahmed, Minnaert, Kuyper, & van der Werf, 2011; Huberty, 2009; Robinson, 1966; Swan & Howell, 1996; Grills-Taquechel, Fletcher, Vaughn, & Stuebing 2012; Owens et al., 2012).

Conclusions

Based on Attribution Theory, students require to feel in control over the outcome of academic tasks (Lim, 2007). Additionally, Test anxiety can affect student's study behaviors and testing behavior. It really has to do with a negative anticipation about tests, both in terms of the preparation for tests and actual performance on tests.

Moreover, Testing can cause stress and anxiety levels to rise, even in the very best of students. During college, test anxiety can be even higher. For the best results and scores for the students, it is important to help them manage test anxiety with plenty of preparation, stress management and relaxation techniques. One way to do this is to provide them with stress management tips in the last sessions of each semester. The following tips can help relieve the pressure on the tests:

-Asking teachers to rely more on formative assessment rather than summative assessment.

-Motivating students to exercise. Test anxiety is a physical, emotional, and cognitive problem. Physical exercise can increase students' self-confidence and reduce test anxiety.

Asking students to consult college advisors before taking tests.

-Preparing classroom guidance topics on test anxiety, test taking strategies and effective study skills.

-Asking college professors and instructors to avoid using threats in the classroom. Professors and instructors can be a cause of stress. Of course no teacher

wants to see a student stressed out but they are viewed as those who develop tests and correct and score papers, thereby pushing students to stress land. Therefore, they should take initiatives to calm students' nerves before giving tests.

The study focused on the comparison of test anxiety between students of biological sciences and humanities at the university college of Rub-bi Rashid during academic year 2018-2019. In order to carefully manage the study, it was delimited only to this university college. It would have generated more generalized information if it had included wider area of samples of different universities throughout the country.

Ethical Approval

This research was approved by the Ethics Committee of University College of Rub-bi-Rashid and all collected data were kept confidential.

Conflict of Interest Disclosures

None.

Acknowledgements

References

Ahmed, W., Minnaert, A., Kuyper, H., & van der Werf, G. (2011). Reciprocal relationships between math self-concept and math anxiety. *Learning and Individual Differences, 22*, 385-389. Retrieved from http://www.journals. elsevier.com/learning-and-individualdifferences/

Akbaryboorang, M., & Aminyazdi, S. A. (2009). Test-anxiety and self-efficacy: A study on the students of Islamic Azad University, Branch of Southern Khorasan. *The Horizon of Medical Sciences*, *15*(3), 70-76.

Bachman, L. F., & Palmer, A. S. (1996). *Language testing in practice: Designing and developing useful language tests* (Vol. 1). Oxford: Oxford University Press.

Darabi, M., Aivazi, A. A., Gholami-Parizad, E., Ghazanfari, Z., & Imanzad, M. (2013). Test anxiety among Ilam UMS's students, 2012. *Advances in Nursing & Midwifery*, *23*(82), 1-7.

Driscoll, R., Evans, G., Ramsey, G., & Wheeler, S. (2009). High test anxiety among nursing students. *Education Resources Information Center,14*(4), 350-356.

Grills-Taquechel, A. E., Fletcher, J. M., Vaughn, S. R., & Stuebing, K. K. (2012). Anxiety and reading difficulties in early elementary school: Evidence for unidirectional- or bidirectional relations? *Child Psychiatry & Human Development*, *43*, 35–47. doi:10.1007/s10578-011-0246-1

Huberty, T. J. (2009). Test and performance anxiety. *Principal Leadership*, *10*, 12–16. Retrieved from http://www.nasponline.org/

Jenaabadi, H., Nastiezaie, N., & Jalalzaei, S. (2016). The effect of time management training on student's test anxiety. *Journal of nursing education*, *5*(1), 12-22.

Khosravi, M., & Bigdeli, I. A. (2008). The relationship between personality factors and test anxiety among university students. *Journal of Behavioral Sciences*, 2, 13-24.

Lim, H. (2007). Effects of attributions and task values on foreign language use anxiety. *Journal of Education and Human Development*, *1*(2), 1-20. Retrieved from http://www.scientificjournals.org/journals2007/articles/1135.pdf\

Moadeli, Z., & Ghazanfari Hesamabadi, M. A. (2005). Survey on the students' exam anxiety in the Fatemeh (P.B.U.H.) College 0f Nursing and Midwifery, *Strides in Development of Medical Education*, *1*(2), 65-72.

Mohammadi, M. M., & Parandin, S. (2015). Evaluation of Exam Anxiety Level among Kermanshah University of Medical Sciences Students and its Association with Demographic Characteristics in 2014, *The Journal of Medical Education and Development, 10*(3), 227-236.

Owens, M., Stevenson, J., Hadwin, J. A., & Norgate, R. (2012). Anxiety and depression in academic performance: An exploration of the mediating factors of worry and working memory. *School Psychology International, 33*, 433–449. doi:10.1177/0143034311427433

Rahimian, B. E., & Sadeghi, A. (2007). Prevalence of reading disorder in primary school students. *Iranian Journal of Psychiatry and Clinical Psychology*, *12*(4), 396-402.

Robinson, B. W. (1966). A study of anxiety and academic achievement. *Journal of Consulting Psychology, 30*(2), 165–167. Retrieved from http://www.apa.org/pubs/journals/ccp/index.aspx.

Sarason, I. G. (1960). Empirical findings and theoretical problems in the use of anxiety scales. *Psychological Bulletin*, *57*(5), 403.

Sarason, I. G. (1988). Anxiety, self-preoccupation and attention. *Anxiety research*, *1*(1), 3-7.

Sieber, J. E. (1980). Defining test anxiety: Problems and approaches. *Test anxiety: Theory, research, and applications*, 15-40.

Spielberger, C. D. (1972). Anxiety as an emotional state. *Anxiety-Current trends and theory*, 3-20.

Swanson, S., & Howell, C. (1996). Test anxiety in adolescents with learning disabilities and behavior disorders. *Exceptional Children, 62*(5), 389-389. Retrieved from http://journals.cec.sped.org/ec/

Wren, D. G., & Benson, J. (2004). Measuring test anxiety in children: Scale development and internal construct validation. *Anxiety, Stress & Coping*, *17*(3), 227-240.

Yousefi, F., Habibi, S., & Mohammadkhani, M. (2013). Test anxiety level in medical students and its relationship with sexuality. *Education Strategies in Medical Sciences*, *6*(3), 141-145.

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