

The Relationship between Test-Anxiety and Academic Achievement among Iranian Adolescents

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Abstract

The purpose of this study is to determine the relationship between test-anxiety and academic achievement among adolescents in Sanandaj, Iran. The respondents comprised of 400 students (200 boys and 200 girls) in the age range of 15-19 years old that were randomly selected from nine high schools in Sanandaj, Iran. A self administered questionnaire was used for data collection which includes a Test-Anxiety Inventory (TAI) (Abbolghasemi, 1988), Grade Point Average (GPA) score and personal information. Result shows that there is a significant correlation ($r = -0.23$, $p = .000$) between test anxiety and academic achievement among adolescents. In addition, there is a significant difference ($t = 5.47$, $p = .000$) of academic achievement between male and female adolescents whereby female score higher in their academic achievement. It is recommended that academic achievement and mental health be improved in school settings with support strategies such as educational guidance, counseling and psychotherapy or other psycho-educational program such as teaching life skill.

Keywords: Test-anxiety, Academic achievement, Iranian adolescents & gender

1. Introduction

Education is vital for every country in the world, and Iran is not an exception as a strong and effective education can help boost the development of the country. However, education can also become a burden to the country as low academic achievement is one of the major problems facing the families, society and government at large. As for Iran, the prevalence of low academic achievement among high school students was high. For instance, Amin Far (2002) found that 65% of female students from rural areas and 34% of male students from urban areas had academic failure. In addition, according to the education organization of Sanandaj, Iran (2007), 27% of high school students had encountered academic problems. Evidently, 28% of first year, 27% second year and 11.55% third

year high school students had low academic achievement respectively. As a consequence, for instance, Hamidian (2006) indicated that \$50 million were needed to solve problem of low academic achievement in Azerbaijan Province in Iran and estimated that the problem of academic achievement can be resolved in 3.5 years with help of effective intervention.

Academic achievement can be explained using attribution theory (Weiner, 1986). Attribution theory is a cognitive theory of motivation which states that a relationship between student's beliefs regarding cause of success or failure and the ways these beliefs are internalized will influence student's academic achievement, expectation to success and self concept. There are several factors affecting academic achievement, one of these is test anxiety. According to Zeidner (1998), test-anxiety is a multidimensional signs that can be described as a group of phenomenological, physiological, and behavioral reactions to appear with possible negative consequences or failure on an examination or similar evaluative situation. Test-anxiety, especially worry has impact on academic performance, and working memory (Eysenck, 2001). In addition, Sarason (1984) as cited in Keoghi, Bond, French, Richards and Davis, (2004) found that test- anxiety decreases attention span, memory and concentration, then leads to low academic performance. Masson, Hoyois, Pcadot, Nahama, Petit and Anseau (2004) found that high school students with high test-anxiety had a poor school performance. Thus, test- anxiety contributed to academic achievement because of vulnerability to distraction and interference experienced by the students.

Eysenck (2001) found that test-anxiety creates irrelevant thoughts, preoccupation, and decreased attention and concentration thus, leads to academic difficulties. In addition, test- anxiety is link to memory and can have effect on academic achievement, because both of them disrupt attention and concentration. When attention and concentration are impaired, this will disrupt memory and as a consequence will lead to low academic achievement (Chen, Li, 2000 and Sanders, 2001, cited in Needham, 2006).

In local context, Rahimi (1999) found 36.9 % of high school students in Sanandaj, Iran had severe anxiety. In addition, Daskzan (2004) documented that 37% of male and 53% of female high school students in Saghez city in Kurdistan province had test-anxiety. He found that there was a significant relationship between test-anxiety and academic achievement. On the other hand, Mozaffari (2001) found that 60% of Shayeds' high school students and 50 % of non Shayeds' high school students in Sanandaj had test-anxiety. Moreover, Keoghi, (2004) found that test-anxiety was related to distraction, and this has resulted in low academic achievement.

Based on literature, test anxiety is related to lower academic performance and it is estimated that about 25.0% of primary and secondary school students in America, and around 10 million students suffered lower academic performance as result of test-anxiety (Hembree, 1988; Hill and Wigfield, 1984).

Chapell, Blanding, and Silverstein (2005) carried out a study among 5,551 undergraduate and graduate students in Pennsylvania and Illinois and found a significant difference of academic achievement among three different levels (low, moderate, and high) of test-anxiety. For instance, students with low test-anxiety had higher academic achievement than students with moderate and higher test-anxiety. Similarly, students with moderate test-anxiety had higher academic achievement than students with higher test- anxiety.

Previous studies have identified main factors related to academic achievement in general, which lead to the description of main variable, namely test-anxiety. According to Eysenck (2001) and Sansigiry and Sail (2006), test-anxiety impaired the concentration, attention and memory, and these became the factors that influenced academic performance. However, academic achievement among early adolescents in schools setting in Iranian context has not gained much attention from local researcher except Daskzan (2004) and Mozaffari (2001). Therefore, the need to examine current prevalence of low academic achievement and its causes had prompted this research to be undertaken. The main objective of the present study is to determine the relationship between test-anxiety and academic achievement among high school students in Sanandaj, Iran. The major purpose and motivation underpinning this present study was originated from literatures on academic achievement, especially among high school students (Sharifi, 2001, Masood Zadeh, 2002, & Daskzan, 2004).

2. Method

2.1 Participants and procedure

The population for this study comprised of high school students in Sanandaj, Iran that were divided into subgroups, particularly gender and age group that were expected to differ in the traits being studied (Gravette & Forzano, 2006). Due to these two subgroups, a stratified random sampling method was employed. Based on Krejcie and Morgan Table (1970), the appropriate number of respondents participated in the present study were 400 students. The procedure for choosing the respondents involved three steps. Firstly, nine public high schools were randomly selected among the 33 public high schools in Sanandaj. Secondly, the number of students required for the study

according to their age was proportionally determined and the number of students was determined for each of the high schools. Then, the actual respondents were selected by simple random sampling.

3. Measures

Test Anxiety: A primary instrument used in the present study was the Test-Anxiety Inventory (TAI) (Abbolghasemi, 1988) which has been adapted to Iranian context. TAI is a self-administered 25-items test used to determine the level of test anxiety among students and take 15 minutes to complete. Each statement on the TAI is followed by a four-point Likert-type scale (never = 0, rarely = 1, some time = 2, and most of the time = 3). The minimum score on each of the twenty-five questions is zero and the maximum score for the whole test is seventy-five. TAIs' score categories are based on normal distribution, whereby a score $M-1SD$ (Mean- 1 Standard Deviation) denotes mild test anxiety and a score of $M+1SD$ as having high test-anxiety (Chapell et al., 2005). High scores indicate higher test anxiety. Cronbach Alpha for the present study was .92.

Academic Achievement: The respondents were asked to provide their last year Grade Point Average, GPA which ranges from .00–20.00. The rule of the Ministry of Education in Iran stipulates that the effective range of GPA to be from 0 to 20, with four parts: a score from 0 to 9 is considered as 'fail'; 10 to 14.99 is considered as 'weak' (classed as a C); 15 to 16.99 is as 'moderate' (classed as a B) and a score of 17 to 20 is considered as 'excellent' (classed as A). High score indicates higher academic achievement.

4. Results

Table 1 shows the number of respondents in the present study which comprised 200 (50%) males and 200 (50%) females. As for age of respondents, a total of 43.5% respondents aged between 15 to 16; 38.5% aged 17 to 18 and 17% aged 19 years old. The mean age was 16.93 (S.D=1.39)

As for academic achievement, only a small number which is 3% of the respondents reported their academic achievement as less than or equal to 9.99, 43.8% scored between 10- 14.99, while 26.2% and 27 % respondents reported their academic achievement to be between 15-16.99 and more than 17 respectively (refer Table 1). Mean score for academic achievement was 15.10 (S.D=2.42)

A formula of $M\pm 1S.D$ was used to categorize the score of test-anxiety. A total of 66 (16.5%) respondents were considered as having mild test-anxiety, while 260 (65%) of them had moderate test-anxiety and 74 (18.5 %) had severe test-anxiety. The M and S.D of the test-anxiety scores were 59.41 and 1.46 respectively.

As presented in Table 2, Pearson correlation was used to determine the relationship between test-anxiety as the independent variable and academic achievement as the dependent variable. The result showed that test-anxiety and academic achievement were significantly correlated, ($r=-.22$, $p\leq .000$). Evidently, there was a significant relationship between test-anxiety and academic achievement. The negative relationship connotes that as test-anxiety increases, respondent's academic achievement decreases. Result confirmed with Chapell et al. (2005), Masson et al. (2004) and Stober (2004) who found that students with low-test anxiety had higher academic achievement than students with moderate and higher test-anxiety. In other words, students with moderate test-anxiety had higher academic achievement than students with higher test- anxiety. As discussed above, one of the reasons which test-anxiety impacted on academic performance is its influence on attention and concentration, that later has effect on memory and academic performance.

In order to determine the significant difference of academic achievement between male and female, a t-test was employed. As presented in Table 3, result showed that female ($M= 15.74$, $S.D=2.46$) reported significantly higher level [$t(1) = 5.47$, $p=0.000$] of academic achievement than male ($M=14.45$, $S.D=2.21$). There is a remarkable difference at the 0.01 level of significance, indicating that there is a statistically significant difference of academic achievement. So, Iranian students' academic achievements were different among male and female.

5. Discussion

The aims of this present study were to determine the relationship between TAI and academic achievement among male and female high school student in Sanandaj, Iran. A total of 400 students were selected using a stratified random sampling. Result indicates that 43.8% and 3% of respondents in the present study were weak and failed respectively in 2008. Data from the present study differed from findings of Daskzan (2005), Mozaffari (2001), and Nosrati Shoar, (2003). The disagreement may be related to different respondent's size or motivation of study.

With regard to test anxiety, the result from the present study found that 18.5% respondents had severe test-anxiety. However, the result differed from Rahimi (1999), who found that 36.9 % of high school students in Sanandaj had severe anxiety. When compared to other studies in different country such as USA, the present result also differed from Methia (2004) as cited in, Sena, Lowe and Lee (2007), who reported that the rate of test-anxiety was more

than 33% among school age children and adolescents. This difference is contributed by the different tools for measurement of test-anxiety, different respondent's size, age of respondents, and the presence of psychological stress such as worry toward test-taking, irrelevant thought and cognitive impairment. For example, Eysenck (2001) found a significant relationship between anxiety and achievement whereby a high level of test anxiety resulted in lower cognitive performance.

Result from the present study was in agreement with Keogh, et.al. (2004) and Chapell et al. (2005) who found a relationship between level of test-anxiety and academic achievement. For instance, students with low test-anxiety had higher academic achievement than the students with moderate and higher test-anxiety, and also, students with moderate test anxiety had higher academic achievement than students with higher test-anxiety. Furthermore, result of the present study confirmed with Sarason (1984) as cited in, Keoghi, et al. (2004) who showed that worry impaired the performance by reducing attainable working memory capacity which in return was related to poor academic achievement. Thus, it can be concluded that test-anxiety or worry about test and examination decreases academic performance. In addition, finding from the present study was supported by Eysenck (2001), who found that limitation in working memory capacity caused cognitive impairment to individual experiencing a high test-anxiety. Students with high test-anxiety have encountered task-irrelevant thoughts, such as worries and anxious about self-evaluative aspects of failure. This is due to limited working memory capacity that disturbs the recall of prior learning and resulted in reduced academic performance.

6. Conclusion

Test-anxiety had impact on adolescent's academic achievement. It decreases adolescents' learning capabilities and hinders excellent academic performance. Test-anxiety decreases motivation towards the ability for attention, concentration and worst, it leads to academic failure. This research finding had found a significant relationship between test-anxiety and academic achievement among high school adolescents in Sanandaj, Iran. Therefore, school and family institutions must assist students in managing their test-anxiety through counseling, relaxation and behavioral techniques. Selected preventive activities can be proposed at high schools on targeted students with academic problems. Specialized intervention tailored to male students is suggested in order to improve male student's academic achievement.

Findings of this present research should not be generalized to all high school students, not even to the overall Iranian high schools. This study is limited to only students aged 15-19 in public schools and should not be generalized to the other private schools and to younger and older adolescent or young adult population. Academic achievement measure used in this study is only applicable in Iranian setting and caution is needed in discussing this variable as other measure of academic achievement is found in the literature.

Acknowledgement

The authors would like to thank Universiti Putra Malaysia and Organization of Education of Kurdistan Province, Iran for their permission that had made this research possible. Special dedication goes to the high school students for their participation. Lastly, thanks to the Department of Psychiatry, Faculty of Medicine, Kurdistan University of Medical Science, Sanandaj, Iran.

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Table 1. The academic achievement by target variables among respondents (n=400)

Test-anxiety level	Academic achievement level								Total
	≤9.99		10-14.99		15 -16.99		≥17		
	n	%	n	%	n	%	n	%	
Mild (≤44.72)	1	1.5	17	25.8	14	21.2	34	51.5	66
Moderate (44.73-74.09)	7	2.7	113	43.5	48	27.6	60	23.1	260
Severe(≥ 74.1)	4	5.4	45	60.8	11	14.9	14	18.9	74
Age group									
15-16	0	.0	46	26.4	48	27.6	80	46	174
17 – 18	3	1.9	80	51.6	47	30.3	25	16.1	155
19	9	12.7	49	69	10	4.1	3	4.2	71
Gender									
Male	10	5	102	51	47	23.5	41	20.5	200
Female	2	1	73	36.5	58	29	67	3.5	200

Table 2. Pearson Correlation between test-anxiety and academic achievement (n=400)

Variables	Academic Achievement	
	r	p
Test-anxiety	-.22**	.000

**p $\leq$ 0.01

Table 3. T-test of academic achievement between Male and Female

	Academic Achievement		t	p
	Mean	SD		
Gender			5.47 **	.000
Male	14.45	2.46		
Female	15.74	2.21		

**p $\leq$ 0.01