The Test Anxiety Forecasting based on Cognitive Distortions and Irrational Beliefs

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Abstract: Test anxiety as a common and important phenomenon of public education is closely related to general anxiety or stress, however, it has have certain traits and characteristics that make it distinct from general anxiety. It this paper, we investigate relationship between cognitive distortions and irrational beliefs from one hand and test anxiety of students in other hand. Statistical population of this study consisted of first grade female students of public high school of in Hamadan city at academic year of 2011-2012 that found to be 15400 students. The results showed that, there is a direct relationship between students' test anxiety and cognitive distortions as well as irrational beliefs. Moreover, there is a direct relationship between students' cognitive distortions and irrational beliefs. Results also suggest that, based on cognitive distortions and irrational beliefs, students' test anxiety could be predicted. Therefore, by adding some courses in schools to teach students the methods of better thinking, we could take an important step toward improving welfare and individual and public health.
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1. Introduction

Anxiety is as a part of daily life of people in all communities and is considered as an appropriate for consistent response. Absence of anxiety or presence of pathological anxiety may face us with many difficulties and dangers. Anxiety in a moderate and beneficial extent makes us to act appropriately and timely and choose a better life (Demdato and Diener, 2002). Test anxiety as a common and important phenomenon of public education is closely related to general anxiety or stress, however, it has have certain traits and characteristics that make it distinct from general anxiety (Siber, 2004). The test anxiety itself is largely associated with negative thoughts and pessimistic assessments of the test and according to Elia (2008) discomforts and anxieties of and individual is the result of his/her irrational beliefs. Test anxiety as a common and important educational phenomenon is closely related to the academic performance and achievements of children and adolescents. Moreover, test anxiety is related to the personality and self-confidence of students so that, it is more common among introverted students with low self-esteem. Test anxiety is a general term that refers to a specific form of social anxiety or fears that make an individual doubt his/her abilities and as a result, weakens the ability to cope with situations such as tests. Ellis (quoted by Elia, 2008) believes that, the main cause of depression, anxiety, or other psychological problems are individuals' wrong and immature reasoning on problems. One of the

cognitive components that are closely associated with irrational thinking is individuals' irrational assessments of the way of dealing with phenomena and interpersonal relationships that, usually, are inefficient and unhealthy and Beck (2001, quoted by Ciarrochi, 2004) refers them as cognitive distortions. These distortions make us feel more like a victim rather a confronter; thus, the problems of life generate more discomfort and dissatisfaction for us.

Oliver (2007) suggests that, the main reason of anxiety and depression of people lies beneath these unhealthy thoughts and cognitive distortions and those who use a lot of these distortions quickly manage to get results but not necessarily a true result. These cognitive distortions are:

1) All or nothing thought, 2) curving view, 3) exaggeration, 4) disaster view, 5) mind reading, 6) quick and hasty judgment, 7) over-generalization, 8) intuitive argue, 9) labeling, 10) should be - better.

In this context, the overall objective of this research is to identify the relationship between cognitive distortions and irrational beliefs of students with test anxiety and include minor objectives as following:

- Determining the relationship between cognitive distortions and test anxiety of students
- Determining the relationship between irrational beliefs and test anxiety of students
- Determining the relationship between

cognitive distortions and irrational beliefs of students

- Based on cognitive distortions and irrational beliefs, test anxiety of students could be predicted.

Research hypotheses are as follows:

1. There is a direct relationship between students' test anxiety and cognitive distortions.
2. There is a direct relationship between students' test anxiety and irrational beliefs.
3. There is a direct relationship between cognitive distortions and irrational beliefs of the students.
4. Based on cognitive distortions, test anxiety of students could be predicted
5. Based on irrational beliefs, test anxiety of students could be predicted.

Borens (2004) in a research titled "treatment of anxiety in final exams and its relationship with students' expectations and performances" showed that, the experienced test anxiety influence the learning and understanding ability of the students and have a significant relationship with their expected perception and performance in final exams. Vanghn and Leff (2005) found that, the believe that a person did not managed to achieve the high standards and expectations of the people who are important for him/her (community induced perfectionism), is associated with return or relapse of schizophrenia. Similarly, a recent study conducted by Teasdale and Hooley (2007) to investigate psychological-social predictors about return of depression have shown that, the best predictors for relapse, are the opinions of patients about to criticizes provided by their spouses.

Both test anxiety and cognitions have statistically significant and positive relationship with the actual performance of the task after controlling the effects of capability. On the other hand, Kowal and Pritshard (2006), in a comparison of 23 patients with chronic headache and 23 control persons concluded that, subjects with headache are significantly show higher sensitivity, diffidence, psychosomatic problems, and behavioral disorders. They also expressed that, anxiety, perfectionism, and life stress are significantly helps to predict the severity of the headache. Vitta Kirsna (2007) investigated the effective predictors of test anxiety in students with and without learning disability pay. The results showed that, the learning disorder predict high scores in worriment and low scores in the anxiety and lying. Poot Wine (2008), in research titled "whether conducting types of examinations moderate test anxiety and its effect on

test performance" showed that, taking several types of exams during the semester moderated test anxiety and improved students' performance in examinations with high grades. In addition, Ciarrochi et al. (2009) and Hewitt and Dick (1986) in their studies, concluded that, poor personal adjustment and egocentric perfectionism are related only if the perfectionist person faces with some stresses or failures in achieving the goal or experiences negative life events. They also found that, there is a positive relationship between above the average scores in the perfectionism and stress size scale from one hand and depression in the Beck's depression questionnaire from the other hand. Frost et al (1990) and Hewett and Felt (2004) found confirmed these results in a similar work. Bridges, Richard and Harnish (2010) in a research titled "the role of irrational beliefs in depression and anxiety", expressed that, irrational beliefs play an important role in cognitive therapy and the results showed that, the irrational beliefs play as one of the main predictors of development of mental health problems including depression and anxiety. leyla kucuk (2011) investigated the relationship between irrational beliefs in adolescents as a predictor of anxiety on 557 high school students in Turkey (Istanbul) and her results showed that, among the components of irrational beliefs, self-accusation, reaction with to failure, and obsession as well as anxiety are strong predictors of anxiety. Balkis, Duru, and Bulus (2012) in a research titled "the relationship between academic remissness, rational/irrational academic beliefs, time management for the tests, and academic achievement using structural equations model", studied 281 students and concluded that, rational academic beliefs have a direct effect of academic remissness and the time allocated for the exams. Moreover, they found that, rational academic beliefs have positive impact on academic achievement. Alizadeh Sahrayi, Khosravi and Besharat (2010) in a study titled "the relationship between irrational beliefs and negative and positive perfectionism in the city of Noshahr" studied 280 high second and third grade school students who were selected through random cluster sampling. The results showed that, there is a significant and positive relationship between the total score of irrational beliefs and all its subscales from one hand and negative perfectionism from the other hand, except the subscale of perfectionism that unlike the expectation, had a negative relationship with negative perfectionism. In addition, there was a significant negative relationship between positive perfectionism with subscales of irrational beliefs including the need for approval of others, reaction to frustration, emotional irresponsibility, and avoiding problems. Moreover, there was a significant and positive

relationship between positive perfectionism and intention to blame. The other subscales had not a significant relationship with positive perfectionism. Salimi et al. (2010) in a research titled "the relationship between irrational beliefs of mothers and with high school girls' behavioral problems"; using scientific and comparative cross-sectional research, they studied 420 high school girls in the city of Mashhad who had behavioral problems with their mothers and had been referred to counseling offices of education department. 200 students with such problems were selected and compared with another 200 students without these problems. Irrational beliefs test and Rater Form-B were run on them. Data analysis using T Student, one-way ANOVA, and Scheffe's test showed that, there are significant differences between irrational beliefs of mothers with and without behavior problems. Seraji and Dadfar (2012) in their study titled "the effectiveness of cognitive – behavioral methods, Fluoxetine and their combination on sexual phobias" have randomly placed 13 women with sexual phobia disorder into three groups. Results showed that, cognitive-behavioral therapy and combined treatment is effective in reducing maladaptive cognitions, irrational beliefs, and the severity of sexual anxiety, but Fluoxetine therapy, alone, is not effective.

2. Material and Methods

According to the objectives and hypotheses, the correlation is from predicting type. Statistical population of this study is consisted of first grade female students of public high school of in Hamadan city at academic year of 2011-2012 that found to be 15400 students. According to Kerjesi and Morgan table, 393 students were selected using multi-stage cluster sampling so that, initially, we randomly selected six out of 50 high schools and then, six classrooms were selected from each high school. The cognitive distortions scale of beck and Wiseman was first introduced in 1978. This questionnaire is based on Beck's cognitive theory on depression and anxiety. This scale measures beliefs and attitudes that include highly irrational and perfectionistic criteria to assess individual performance and valuableness. The scale of distorted attitudes is the most important Beck test in the research centers of the United States of America in the field of cognitive therapy (Petrocelli, 2009). It this test, the respondents states their beliefs and attitudes on each question on a scale of complete agreement to complete disagreement. The scores are from 1 for complete disagreement to 5 for complete agreement. However, for questions 1, 3, 11, 13, 15, 16 and 20 the scoring procedure is reverse. The final scores range from 20 to 100. According to the

conducted researches in this field, the average scores for a healthy adult are between 38 and 48 and higher scores indicate vulnerability to depression and having distorted cognition. Furthermore, this tool is developed to identify the assumptions that are beneath the substrate of a particular thought of an individual. According to Beck, observing ineffective beliefs and attitudes and accepting wrong and rigid rules, may increase the risk of psychologically discomforts, especially anxiety and depression. The questionnaire of cognitive distortions is developed to identify cognitive distortions of everyday life in an easy way since that, so many of our problems and inappropriate emotions are due to the irrational thinking and identifying them is necessary to get rid of a huge number of problems in life. The mentioned questionnaire includes 20 items to measure cognitive distortions that is introduced by Albert Ellis.

3. Results

In this section, the obtained data will be presented in tables and descriptive diagrams, based on the examined variables.

Table 1: discipline-oriented frequency distribution

Discipline	Frequency	Percent
Human sciences	110	28
Mathematics	87	22
Experimental sciences	94	24
Technical sciences	102	26
Total	393	100

As it can be seen fin the above table the highest frequency is for human sciences (110 persons, 28%) followed by mathematics (87 persons, 22%), experimental sciences (94 persons, 24%), and technical sciences (10 persons, 26%).

Table 2: scores of cognitive distortions and its components

Cognitive Distortion	Number of subjects	Number of questions	scores Minimum score	Maximum	mean	Standard deviation
All or nothing view	393	2	1	8	4.8	1.6
Exaggerated generalization	393	2	2	8	4.3	1.3
Mental filter	393	2	2	7	3.5	1.4
Disregarding positive facts	393	2	2	8	3.6	1.7
Hasty conclusions	393	2	3	9	3.1	1.5
Overstate-understate	393	2	2	8	3.3	1.6
Emotional reasoning	393	2	2	9	3.4	1.4
Should, better	393	2	1	8	3.6	1.4
Labeling	393	2	2	8	3.7	1.5
Personalization	393	2	2	9	3.1	1.7

Table 3: scores of irrational beliefs and its components

Irrational belief	Number of subjects	Number of questions	Minimum scores	Maximum score	Mean	Standard deviation
Necessity of approval and support from others	393	10	18	41	29.6	3.78
Over-expectation from self	393	10	17	38	28.4	4.67
Tendency to blame	393	10	19	37	28.7	3.75
Reaction to failures	393	10	11	42	27.2	3.36
Emotional irresponsibility	393	10	13	33	27.5	4.77
Over-worriment with anxiety	393	10	15	35	28.8	4.39
Avoiding problems	393	10	18	41	31.2	4.05
Dependence on others	393	10	12	37	30.7	4.8
desperation to change	393	10	8	40	31.6	3.48
Perfectionism	393	10	19	39	27.9	4.1

Table 3: Correlation between components of cognitive distortions and test anxiety of student

Component	R
All or nothing view	0.21
Exaggerated generalization	0.25
Mental filter	0.19
Disregarding positive facts	0.06
Hasty conclusions	0.21
The total score	0.21
Overstate-understate	0.09
Emotional reasoning	0.27
should, better	0.14
Labeling	0.011
Personalization	0.08

In order to test the first hypothesis of research, the results of Pearson's correlation coefficient showed that, there is a significant and direct relationship between test anxiety and components of cognitive distortions such as all or nothing view, exaggerated generalizations, mental filter, hasty conclusion, emotional reasoning, should- better, and personalization. However, there was not a significant relationship between the components of disregarding positive facts, overstate-understate, and labeling and test anxiety. Moreover, correlation coefficient between all components of cognitive distortions and test anxiety is 0.21 that is significant at $\alpha=0.01$. Therefore, the first hypothesis of research is confirmed.

Table 4: Correlation between components of irrational beliefs and test anxiety of students

Component	R
Necessity of approval and support from others	0.16
Over-expectation from self	0.38
Tendency to blame	0.19
Reaction to failures	0.32
Emotional irresponsibility	0.016
The total score	0.31
Over-worriment with anxiety	0.42
Avoiding problems	0.34
Dependence on others	0.13
desperation to change	0.24
Perfectionism	0.30

In order to test the second hypothesis, the results of Pearson's correlation coefficient showed that, there is a significant and positive relationship between test anxiety and components of irrational beliefs such as, necessity of approval and support from others, over-expectation from self, tendency to blame, reaction to failure, over-worriment with anxiety, avoiding problems, desperation to change, and perfectionism. However, there was not a significant relationship between component of emotional irresponsibility and test anxiety. Moreover, correlation coefficient between all components of irrational beliefs and test anxiety is 0.31 that indicates a strong relationship between this overall variable and test anxiety. Therefore, the second hypothesis of research is confirmed.

In addition, the results also showed that, there is a significant relationship between all components of cognitive distortions and irrational beliefs, thus, the third research hypothesis is confirmed.

Table 5: Beta coefficients to determine the intensity and direction of components of cognitive distortion on test anxiety

Variables	B	SE	Beta	t	P
Constants	23.827	711	-	27.425	0.001
All or nothing view	0.23	0.32	1.43	3.080	0.001
Exaggerated generalization	0.08	0.38	1.51	2.520	0.001
Mental filter	0.36	0.41	1.596	3.044	0.001
Disregarding positive facts	0.48	0.47	1.05	2.289	0.001
Hasty conclusions	0.65	0.35	1.079	1.1000	0.001
Overstate-understate	0.44	0.39	1.750	2.198	0.001
Emotional Reasoning	0.54	0.41	1.811	2.565	0.01
should, better	0.22	0.44	1.352	1.620	0.001
Labeling	0.37	0.44	2.278	2.555	0.001
Personalization	0.71	0.51	1.420	2.455	0.001

As it can be seen in the above table, cognitive

distortions can predictive test anxiety of students. Therefore, the fourth hypothesis is confirmed.

Table 6: Beta coefficients to determine the intensity and direction of components of irrational beliefs on test anxiety

Variables	B	SE	Beta	t	P
Fixed	29.827	842	-	727. 34	0.001
Necessity of approval and support from others	0.16	230	1.24	3.069	0.001
Over-expectation from self	0.08	015	1.27	2.501	0.007
Tendency to blame	360	119	1.576	3.032	0.003
Reaction to failures	0.48	171	1.01	2.279	0.009
Emotional irresponsibility	655	328	0.059	1.999	0.46
Over-worriment with anxiety	441	373	1.645	2.184	0.007
Avoiding problems	539	347	1.798	2.556	0.05
Dependence on others	202	335	1.297	1.602	0.548
desperation to change	180	337	2.266	2.532	0.001
Perfectionism	962	397	1.408	2.422	0.0016

As it can be seen in the above table, irrational beliefs can predictive test anxiety of students. Therefore, the fourth hypothesis is confirmed.

4. Discussions

The most higher correlations between sub-components of cognitive distortion and test anxiety are from the components of emotional reasoning, exaggerated generalization, hasty conclusion, all or nothing view, and mental filter and the minimum correlations are from the components, overstate-understate, labeling, and disregarding positive facts. Therefore, predicting power of variables of emotional reasoning, exaggerated generalization, all or nothing view, hasty conclusion, and mental filter are more than other variables. According to cognitive theories, like the theory of Ellis, the major factor of maintaining behaviors are cognitive processes and individuals, based on their perception of the events, react to them, thus, distorted recognitions result in emotional disorders. In order to explain the components of avoiding problems it can be said that, those with avoiding strategies or as Doeck (1998) stated, those who use avoiding strategies in setting goals, have a series of personality features such as lack of self-confidence, lack of motivation, and denying their skills that could be underlying factors of anxiety. Furthermore, on predicting perfectionism component it can be said that, those with neurotic perfectionism, due to unrealistic expectations, will never be satisfied from their performance. They try to attract the satisfaction of other and at the same time, they hardly try to avoid failure that leads to self-criticism, self-destruction, stressful interpersonal experiences, distress, and negative emotions. Cognitive distortions and irrational beliefs, in terms of nature, both are related individual's cognitions. Therefore, they are likely are correlated. Indeed, if it found that, there is no relationship between them, the obtained result is highly doubted, because both of them have been studied, in various resources, under the subject of cognitive theories. Based on the cognitive distortions and irrational beliefs, test anxiety can be predicted. Using multiple regressions, it can be shown that, the contribution of each variable in prediction of anxiety is significant. In other words, these two variables can predict test anxiety. The fourth result of this study indicated that, cognitive distortions can predict anxiety. Irrational beliefs play an important role in cognitive therapy and the results showed that, the irrational beliefs act as one of the major predictors of forming mental health problems including depression and anxiety.

Limitations of this study are:

- Conducting research in a self-report(Questionnaire) fashion for all three variables of cognitive distortions, irrational beliefs, and test anxiety.
- Unwillingness of male high schools and the absence of male questioner to collect the data restricted us to only investigate female subjects.
- Based on self-report instruments used here, assessing test anxiety t is difficult, because this structure depends on the tissue and when exam time approaches, its amount will be increased. Therefore, it is better to be measured with tools other than questionnaire.

Suggestions resulted from this work are:

- According to the study, irrational beliefs with wrong valuing and cognitive distortions could result in a stressor environment. Therefore, establishing some courses and counseling offices in schools to teach the ways of appropriate thinking, we could take a major step toward improving mental health in society.
- Establishing consultation meetings and workshops the interaction of ideas and investigate problems with the help of an adult (teacher, counselor) we can identify the flawed and inefficient thinking processes and replace them with normal thinking process.

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