The effectiveness of acceptance and commitment therapy (ACT) on test anxiety and psychological well-being in high-school students

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Abstract

Aim: This study aimed to investigate the effect of acceptance and commitment therapy on test anxiety and psychological well-being.
Methods: This study was an experimental with a pre-test and post-test design and control group. Participants were consisted of 60 male of high-school students (each group 30 persons) that were selected by multi-stage sampling method among Najafabad city students. The experimental group received 8 sessions of 90 minutes by ACT intervention and control group received no intervention. Data was analyzed with using the SPSS-19 software and by multivariate analysis of covariance (MONCOVA) method.
Results: The findings showed that there is a significant difference between pre-test and post-test scores of experimental and control groups. In the other hand, ACT therapy led to significant decrease test anxiety and significant increase psychological well-being (p<0/001).
Conclusion: The results showed ACT method is effective in decrease test anxiety and increase psychological well-being. Therefore, counselors and therapist can use ACT therapy for decrease test anxiety and increase psychological well-being.

Keywords: Treatment, Acceptance and Commitment, Anxiety test, Psychological well-being.
Introduction
Anxiety and depression are current problem which negatively effect performance of students. Test anxiety is a simple form of anxiety and in particular refers to the conditions experienced before, during and after a test (1). Test anxiety is an anxiety related to situation that has close relationship with performance and learning of students in educational centers and is defined as a fairly stable trait associated with threatening situations (2). Test anxiety threatens the mental health of students and has adverse impact on the efficiency, talent, character formation and social identity of them (3). Prevalence of anxiety has been reported among students around the world about 10 to 30 %, and in the Iranian students 17.2 % (4). Test anxiety is known as a set of cognitive, physiological and behavioral responses with regard to the possible negative consequences or failure in the test and other similar conditions (5). Students with severe test anxiety have problems in encryption, organizing data in meaningful patterns and use of effective meta-cognitive processes such as introspection (3). Many social, biological and psychological factors are effective in the emergence of test anxiety. Different ways that an individual analyzes the status of taking exam, his/her positive and negative experiences of the past in assessment opportunities, unrealistic goals, perfectionism, the evaluation method, teacher’s training style, existing variables in the context of school, personality traits and self-concept are among important factors in emergence of test anxiety (6).
Depression is among other mental disorders, which negatively affects performance, motivation and academic achievement of students. Studies show that low levels or absence of psychological well-being leads to an increased incidence of depression and to prevent from depression and treat it, the psychological well-being should be improved (7-8). Psychological well-being is defined as a combination of good emotions and effective performance. Good emotions include positive emotions such as joy, fondness, liveliness and love. Effective performance includes a sense of autonomy, competence and self-efficacy, resilience in the face of challenge and adversity, and positive social relationships along with empathy and kindness(9). Psychological well-being is part of psychology of life quality which is defined as people's perception of life in fields of emotional behavior, mental performance and mental health aspects and consists of two parts. Its first part is moral judgment about how people are making progress in their lives and the second level of it is pleasant experiences (10). Psychological well-being is an appropriate indicator for predicting people's psychological health and attributes such as positive interpretations, creative and flexible thinking, good social relationships, optimism and consistency in achieving goals (11). Acceptance and commitment therapy that is briefly called (ACT), is one of the third wave behavioral therapies that instead of directly changing the content of experience, focuses on changing the relationship between the individuals and their inner experiences (thoughts, feelings, memories and physical senses). The basic premise of this method is teaching people to be able to deal with inner experiences in mindfulness and non-judgmental way and encouraging to effective acceptance (12).
In this method, mindfulness and acceptance interventions along with the techniques to change behavior and experimental exercises are used. The aim of this method is to foster and improve psychological flexibility which leads to a decrease in mental disorders and improvement of well-being and valuable sustainable behavior (13). Hayse believes that the ACT approach rather than focusing on the settlement and removing problematic factors, helps people to accept their own controlled emotions and cognitions and release themselves from the control of verbal laws which are the cause of their problems. It also helps them to identify their values and define them as behavioral objectives and move towards achieving
them with commitment (14).
The researches results indicate the effectiveness of acceptance and commitment therapy such as treatment math anxiety (15), anxiety(16,17), and improvement of mental health (18), social , emotion and health adjustment (19),psychological wellbeing and resilience(9,25).
Acceptance and commitment therapy encourages students to experience their thoughts, emotions, senses, and etc. before, during and after the exam and in the school environment by mindfulness and without judgment and accept these inner experience as they are. Also encourages them to set educational-social objectives for themselves and practice their own purposes with commitment and in dealing with obstacles and challenges in the way of achieving their goals, use strategies compatible with flexible thinking. Anxiety and low psychological well-being reduce motivation, educational-social performance and achievement of high school students and leave negative effects on all aspects of their lives.
Therefore, using therapeutic approaches to reduce anxiety and increase psychological well-being is essential. Hence, the major issue is whether acceptance and commitment therapy is effective on test anxiety and psychological well-being of students? Therefore, the overall goal of this study was to evaluate the effect of acceptance and commitment therapy on anxiety and psychological well-being of students.

Materials and methods
The method of present research was experimental, and pretest-posttest with control group was used. The statistical population consisted of all male students of Najafabad high schools in the academic year 2014-15. In this study, by using a multistage random sampling among all high schools, 60 students (two groups of 30 people) were selected. The selection criteria for students’ entrance to the sample were factors such as average score and higher in the scale of Sarason’s anxiety test, the loss of close relatives in the past 6 months, having mental disorders at the same time and being student in Najafabad and emigration of close relatives in the past 6 months, having simultaneous mental disorders and incomplete questionnaires.
First, both groups were given pre-test and then, the experimental group received 8 sessions of 90-minute acceptance and commitment therapy. The control group received no intervention and then post-test was given to both groups.
Content of therapy sessions based on acceptance and commitment are as follows. First session: getting acquainted with members and communicating with them, mental training, break and implementation of questionnaire. Second session: discussing and evaluating experiences, creating innovative disappointment, break, and efficiency as a measure. Third session: reviewing the experiences of the previous session, expression of control as a problem, measuring performance, break, evaluating the practice of next session. Fourth meeting: reviewing experiences of the previous session, duty and behavioral commitment, introducing diffusion, cognitive diffusion techniques, break, intervening in the performance of problematic language chains, self-weakening and self-wasting with thoughts and emotions. Fifth session: review of homework and behavioral commitment of the observer; showing the separation between the self, inner experience and behavior; observing the self as context; undermining self-conception and self-expression. Sixth Session: measuring performance, application of mindfulness techniques, contradiction between experience and mind, break, modeling of mind control, learning inner experiences as a process. Seventh session: measuring performance, introducing the concept of value, showing the risks of focusing on results, exploring practical values of life. Eighth session: understanding the nature of desire and commitment, determining action patterns in accordance with the values.
By observing the principle of confidentiality and with getting written consent for participating in the research, these instruments were used for data collection:
A. Sarason test anxiety questionnaire: the questionnaire is made by Sarason. The instrument has 37 items, which can be scored as yes-no. In this instrument, the range of scores is 0 to 37. The psychometric characteristics of the questionnaire are evaluated in several studies and the total validity of the questionnaire is 0.88 using Cronbach's alpha and is 0.95 by the method of internal consistency, and validity criteria of it is reported 0.72 (21 and 22).

B. Ryff psychological well-being questionnaire: The questionnaire is provided by Ryff. The instrument has 84 items which is scored using the six-point Likert scale from strongly agree to strongly disagree. In this instrument, the range of scores is from 0 to 504. Several studies evaluated the psychometric characteristics of the questionnaire and reported the validity of the questionnaire as 0.90 using Cronbach's alpha and by internal consistency method as 0.75 (23 and 24).

It should be noted that to analyze the data, descriptive statistical methods such as the measures of central tendency and dispersion were used to describe distribution of variables and multivariate analysis of covariance (MANCOVA) was used for statistical hypothesis testing. The data were analyzed by SPSS-19 software.

Findings
In this study, the average age of students was respectively in the experimental group (16/32) years and in control group (16/17) years. Parents’ educational degree in experimental group was respectively; 27% lower than BS, 54% undergraduate and 19% graduate students and the control group were 32% lower than BA, 50% undergraduate and 18% graduate students. Prior to the data analysis by multivariate analysis of covariance, assumptions of multivariate analysis of covariance were evaluated. Results of Kolmogorov - Smirnov test were not significant for any of the variables that these findings suggest that the normality assumption is true. Also the results of Box’s M test and Levene’s test were not significant, the findings suggest that the assumptions of the equality of covariance matrices and variances are true.

Table 1. The mean and standard deviation of test anxiety and psychological well-being of groups in the pre-test and post-test stages

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M &amp; SD</td>
<td>M &amp; SD</td>
<td>M &amp; SD</td>
<td>M &amp; SD</td>
</tr>
<tr>
<td>Experimental</td>
<td>30</td>
<td>17 ± 4.22</td>
<td>11.5 ± 4.45</td>
<td>330.30 ± 30 ± 40.0</td>
<td>360 ± 97 ± 31</td>
</tr>
<tr>
<td>Control</td>
<td>30</td>
<td>17 ± 6.93</td>
<td>16.97 ± 6.61</td>
<td>332.97 ± 49.57</td>
<td>335.53 ± 50</td>
</tr>
</tbody>
</table>

According to the results of Table 1, it seems that mean of groups have no significant difference in the pre-test. Also, the results showed that in the post-test, mean of test anxiety (11/53 ± 4/45) of the experimental group decreased and the mean of psychological well-being (360/97 ± 31/67) of the experimental group increased. In Table 2, the results of multivariate analysis are presented by controlling the effect of pre-test to investigate the effect of independent variable on the dependent variable.

Table 2. Results of multivariate test
According to results in Table 2, the results of all four tests indicated that the independent variable was effective on the dependent variable. In the studies usually results of Wilks’ Lambda test are reported. Given the amount of squared Eta in Wilks’ Lambda test (0.775), it can be determined that the independent variable explains 77% of the total variance. Since the multivariate test is significant, it is possible to continue separated assessment of each of the dependent variables. So to examine the impact of acceptance and commitment therapy on test anxiety and psychological well-being after controlling the effect of pre-test, univariate analysis of covariance was used that the results of which are reported in Table 3.

Table 3. The separated results of univariate analysis of covariance for test anxiety and psychological well-being at post-test

<table>
<thead>
<tr>
<th>Scale</th>
<th>Source of change</th>
<th>Sum of squares</th>
<th>Degree of freedom</th>
<th>Mean squares</th>
<th>F level</th>
<th>Effect size</th>
<th>Statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test anxiety</td>
<td>Pre-test group membership</td>
<td>1606.919</td>
<td>1</td>
<td>1606.919</td>
<td>388.912</td>
<td>0.001</td>
<td>0.872</td>
</tr>
<tr>
<td>Test anxiety</td>
<td>Group membership</td>
<td>442.817</td>
<td>1</td>
<td>442.817</td>
<td>107.172</td>
<td>0.001</td>
<td>0.653</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>Pre-test group membership</td>
<td>97002.124</td>
<td>1</td>
<td>97002.124</td>
<td>1.035</td>
<td>0.001</td>
<td>0.948</td>
</tr>
<tr>
<td>Psychological well-being</td>
<td>Group membership</td>
<td>11829.597</td>
<td>1</td>
<td>11829.597</td>
<td>126.264</td>
<td>0.001</td>
<td>0.689</td>
</tr>
</tbody>
</table>

According to results in Table 3, findings showed that after controlling the effect of pre-test, there is a significant difference between the experimental and control groups at posttest (P < 0.001). In other words, acceptance and commitment therapy significantly reduced the test anxiety and increased psychological well-being.

Discussion and conclusion
The results of this research showed that acceptance and commitment therapy has significant impact on the scores of anxiety posttest and psychological well-being of experimental group in comparison with the control group. So ACT approach could reduce the test anxiety and increase psychological well-being that this result was
consistent with the findings of the studies (9,15,16,17,18,20,25,26). For example Zettle who compared in a study the efficacy of acceptance and commitment therapy with desensitization of students' math anxiety, concluded that both treatments reduced the students' math anxiety (15). Block reduced the students' anxiety in social situations using acceptance and commitment therapy (16). Swain and colleagues also conducted a meta-analysis of 323 studies in the field of anxiety disorders, and concluded that ACT approach has high efficiency in the treatment of anxiety disorders (25).

Soo and colleagues through acceptance and commitment therapy promoted the ability to manage anxiety in patients suffering from brain injury (17). Muto and colleagues in a study on Japanese students living in America, in search for the impact of acceptance and commitment therapy on reducing the negative mood and improving the psychological well-being, concluded that this method has led to the promotion of students' psychological well-being (18). Furthermore, to improve mental health in schools, Jonson and Huppert began teaching exercises of mindfulness to the students that the results showed the increase of psychological well-being of students (9).

To explain these findings, it can be said that avoidance and poor performance are the two main components of anxiety disorders, and acceptance and commitment therapy which is based on two factors of psychological acceptance and committed performance, is a suitable adaptation for treatment of anxiety disorders. Although avoidance may be a temporary relief, in the long term it leads to the emergence of psychological problems. Avoidance from expression of internal experiences (thoughts, emotions) increases vulnerability of individuals in the face of stressors. People who are more willing to suppress their inner experiences in the face of stress in different environments such as school, increase their efforts to control their confusions. ACT approach encourages individuals to face with their inner experiences and experience them with mindfulness and without judgment and accept his experiences as they are and without conflict, which results in reduction of the individual’s stresses. ACT approach also encourages individuals to clearly define their values and transform them into behavioral objectives and attempt responsibly in order to achieve their goals. The most important structure and purpose in the ACT approach is to improve psychological flexibility which is a fundamental factor in psychological well-being. The objective of main processes used in the ACT approach is psychological acceptance, cognitive diffusion, having contact with the present, clarifying values, committed practice and promoting psychological flexibility which lead to reduction of psychological trauma and increase of psychological well-being (18).

Therefore, effective mechanisms to reduce avoidance and increase psychological acceptance of ACT lead to reduction of test anxiety and increase of the students’ psychological well-being. Students were also encouraged to determine behavioral objectives for themselves in line with their values such as better academic performance, and attempt responsibly to achieve these goals. In addition, the improvement of psychological flexibility and mindfulness exercises were the mechanisms of effectiveness on the promotion of students’ psychological well-being.

The most important limitation of this study was the lack of follow up stage. Another limitation was restricting the sample to high school students that is why there is no possibility of generalizing the results to female students, and generalization to other students must be handled with care. Therefore, due to the effect of acceptance and commitment therapy on reducing test anxiety and increasing psychological well-being, it is suggested that the procedure be used for the female students, other educational levels and even university students. You can also use this method for the treatment of other
types of anxiety disorders such as generalized anxiety disorder and social anxiety of pupils and university students. In addition, it is suggested that future studies use long-term follow up with short intervals, so that the generalization of this method could be discussed with more accuracy and confidence.
References

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