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AN INVESTIGATION OF THE IMPACT OF THE COMBINATION OF SYSTEMATIC DESENSITIZATION AND STUDY-SKILLS TRAINING ON THE REDUCTION OF STUDENTS' TEST ANXIETY

***Poorgholami F.¹ and Fatehi Y.²**

¹*Department of Education Sciences, University of Payam Noor, Unit Farashban, Iran*

²*Department of General Psychology, University of Payam Noor, Unit Farashban, Iran*

**Author for Correspondence*

ABSTRACT

The main objective of the present study was to determine the effectiveness of the combination of systematic desensitization and study-skills training on students' test anxiety. The study population was junior secondary school students in the Kazeron, Iran. The sample included 60 junior secondary school students who were selected through simple random sampling method among test anxious students and were randomly designated into three experimental and one control groups. Data were gathered by Abolghasemi Test Anxiety Scale and structured clinical interview. The results obtained from one way ANNOVA showed significant differences between systematic desensitization, study-skills training, combined approach (systematic desensitization and study-skills training) and control groups in students' test anxiety. Also bonferoni multi comparison test showed that combined approach, systematic desensitization, study-skills training were orderly effective in reducing students' test anxiety. Given the significant effect of systematic desensitization and study-skills training on the reduction of students' test anxiety, the combined approach (systematic desensitization and study-skills training) was more efficient on the reduction of students' test anxiety.

Keywords: *Test Anxiety, Systematic Desensitization, Study-skills Training, Combined Approach, and Student*

INTRODUCTION

One of the most extensive research areas in recent decades has been anxiety and its related fields. Recent studies have shown that anxiety disorders are eligible for the maximal frequency among the level of total population. One of these disorders is Test Anxiety. Test anxiety refers to the condition where a person suffers from fear about his abilities to do a task which results in the reduction of the ability to cope with test situation (Fathi and Imamgholivand, 2002). Test anxiety is common among high school and university students and is one of the most serious problems in education and is also considered as one of the worries and concerns of the education system (Karami and Milani, 2004). Test anxiety is a common type of performance which involves 10-20% of pupils and students (Sargolzaee *et al.*, 2003). The first studies on test anxiety were initiated in 1914 (Stober & Pekrun, 2004). Morris and Liberty were the first ones who stated that test anxiety has two important components of concern and excitement. Also, several theorists have proposed various models for test anxiety. Deficit model explains the effect of study habits on test anxiety. Deficit model ascribes test anxiety and low level of test scores to inappropriate and inadequate study habits or exam-taking skills (Tobias, 1985; cited in Sargolzaee *et al.*, 2003). Some researchers believe that test anxiety make individuals ready for the study (Holmes, 2001); in contrast, others believe that reducing test anxiety causes to improve the performance of individuals (Kurosawa & Harackiewicz, 1995). Therefore, a person suffering from test anxiety can be described as one who knows the materials but the intensity of his anxiety and excitation prevent him from reflecting his knowledge in the test session (Fathi and Imamgholivand, 2002). To deal with such type of anxiety, various therapy and training methods including relaxation, stress inoculation, study-skills training, biofeedback and psychological interventions have been applied that each has a different effectiveness on test anxiety (Karami and Milani, 2004). During the mid-sixties, specialists had emphasized on the use of relaxation and systematic desensitization to treat test anxiety. The method mainly accentuated on the component of

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excitement reaction in test situation (Sobhi, 2008). However, systematic desensitization has been effective alone or in combination with behavioral techniques on the treatment of test anxiety more than other treatments (Moghadam, 2008). According to the research conducted by Schneider & Nevid (1993; cited in Moghadam *et al.*, 2008) on university students with mathematics test anxiety, it was concluded that systematic desensitization and stress inoculation training are effective on reducing test anxiety. Also, by conducting a research on sophomore students in high school in Ahwaz, Iran, Abolghasemi (2002) concluded that systematic desensitization and stress inoculation training have an influence on reducing test anxiety.

On the other hand, some researchers have stated that study-skills training is essential in the treatment of test anxiety (Amiri *et al.*, 2008 and Sobhi, 2008). Although study-skills is considered as a common name and refers to a collection of techniques and arts by which one who studies can achieve more efficiency from his study, here, it is used as a proper noun which includes a training course during which necessary trainings are presented for obtaining maximum efficiency from study.

Pullman and Kenneli (1984; cited in Abolghasemi *et al.*, 2009) emphasize on the defect of study-skills and test-skills in students with test anxiety. According to this model, the main cause of the disturbed performance of these students is not anxiety but their weak study- and test-skills. In this regard, Culler & Holmhan (1980) found that students with test anxiety have more inappropriate study-skills. Also, Allen (1980) and Mitchell *et al.*, (1985) showed that sometimes, study-skills have just been effective in reducing test anxiety (cited in Sobhi *et al.*, 2008). Some researchers including Kennedy & Depoke (2000) used multimodal therapy (systematic desensitization and cognitive-behavioral interventions) for university students with test anxiety. The results indicated that multimodal treatment has a large impact on the reduction of anxiety. Also, in a study entitled comparing the effectiveness of Meichenbaum psychological inoculation methods and study skills and a combination of both methods in female students, Narimani and Abolghasemi (2009) concluded that the mentioned methods are effective in their academic performance and test anxiety while the combined method is more effective.

High prevalence of test anxiety among students necessitates the counselors and planners of the educational system to pay attention to its variables such as systematic desensitization and study-skills. Accordingly, the main objective of the current study is to evaluate the effectiveness of the combined method of systematic desensitization and study-skills training on students with test anxiety.

MATERIALS AND METHODS

Due to its practical objective and intervention of the researchers in creating data, the present study is quasi-experimental with pre-and post-tests.

Sample and Sampling

The study population was all male students in the junior secondary schools in Kazeran, Iran in the academic year of 2011-2012. 800 male students in the junior secondary schools in Kazeran filled test anxiety questionnaire and then, those who obtained high score (one standard deviation above the mean) were scrutinized via structured clinical interviews.

Finally, among from individuals with test anxiety those who were volunteer to participate in the study, 60 students were selected by simple random sampling and they were randomly divided into three experimental groups and one control group ($n = 15$ per group). The mean and standard deviation for the age of the subjects were 14.63 and 0.70, respectively. None of the subjects had the history of treatment of test anxiety.

Research Instruments

1) *Test Anxiety Inventory (TAI)*: “Test Anxiety Inventory” made by Abolghasemi *et al.*, (1996) has 25 clauses that the subject responds to according to a four-grade scale of never, rarely, sometimes and often. The minimum and maximum scores obtained in this questionnaire are from 0 to 75. To assess the internal consistency, Cronbach's alpha coefficient has been used. According to the obtained results, Cronbach's alpha coefficients were obtained as 94%, 95% and 92% for the total subjects, female subjects and male subjects, respectively. To assess the criterion validity, the test makers used the scale of 58 clauses of

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Coppersmith Self-esteem. The criterion validity coefficients are 57%, 68% and 43% for total-, female- and male subjects, respectively.

2) *Psychological Clinical Interview*: This interview contains nine clauses about the type of problem, course of test anxiety and its severity, physiological, cognitive and behavioral mood and symptoms before and during the test and tendency to treatment which were done for diagnosis. In this study, those subjects who obtained high scores in the test of anxiety underwent structured clinical interview of Spielberger & vuag (1995). Subjects having diagnostic criteria were put in the final sample.

Research Procedure: To assess the rate and severity of students' test anxiety, before starting the educational intervention, the test anxiety questionnaire was conducted as pre-test on four groups. The subjects consisted of four groups of male students suffering from test anxiety. One group was exposed to systematic desensitization method, one group to study-skills training and one group to the combined method of systematic desensitization and study-skills training.

One group was considered as the control group. Systematic desensitization and study skills were considered as independent variables and test anxiety as the dependent variable. Pre-test was done before the educational intervention and at the stage of identifying the suffered students and post-test was performed two weeks after the educational intervention. Then, methods of systematic desensitization and study-skills training were performed on the subjects in three experimental groups. The substantive outline of treatment sessions were as follows:

Systematic Desensitization: In the present study, Wolpe systematic desensitization provided specifically for test anxiety by Sapp (1999) was used. Steps for systematic desensitization include:

1. Muscle relaxation training: a) Muscle training in 14 groups of muscles (hands and wrists, front arms, head, eyes, mouth, lips, nose, neck, abdomen, buttocks, thighs, ankles and toes); b) Muscle training in 6 groups of muscles (dominant arm, non-dominant arm, face, neck, abdomen and legs); c) Muscle training in 3 groups of muscles (both arms, center of the body and both legs); d) Reminding and repeating numeration of 3 groups of muscles and e) assessing after muscle training.
2. Providing the hierarchy of test anxiety: a) providing 4 stimuli from the hierarchy of test anxiety; b) providing 8 stimuli from the hierarchy of test anxiety; c) providing 12 stimuli from the hierarchy of test anxiety; d) providing 15 stimuli from the hierarchy of test anxiety and e) providing 18 stimuli from the hierarchy of test anxiety
3. Doing complete systematic desensitization

Study-Skills Training

In the current research, in order to train study-skills, SQ3R technique planned by Griggs (1990, cited in Dooley, 2010) and for effective studying was applied.

First Session: while we became familiar with the students, we provided them with general explanations on student's educational goals, test season, test anxiety, its related stress and excitement as well as their impact on test anxiety.

Second and Third Sessions: the components of correct study-skills such as time management, note-taking, maintaining attention, overcoming stress, nutritional tips, retention patterns, using assistant booklets etc. were elucidated.

Fourth and Fifth Sessions: in addition to explaining the advantages and disadvantages of these methods, a variety of study methods such as SQ3R, group study, speed reading, accurate reading etc. were trained.

Sixth and Seventh Sessions: it was emphasized on daily and weekly planning based on specific circumstances of each student, uniform distribution of the time study and the importance of exercise. Establishing motivation and interest about education, introducing prestigious universities with great facilities, controlling anxiety and intrusive thoughts during the study and test-taking, ability to listening well and learning in the classroom, immediately reviewing content, summary writing, keeping the content using illustration of learned content in mind and observing cases such as adequate sleep and nutrition during the examinations were other points considered in these two sessions.

Eighth Session: in the last session, in addition to summarizing the contents, questions and answers were done between the students and teacher and problems were resolved.

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The number of therapy sessions was 10 ones for systematic desensitization method and 8 sessions for study skills that each session lasted about one hour. Therapy sessions were done by two therapists at the Center of Counseling and Psychological Interventions of Kazeroon for one month.

RESULTS AND DISCUSSION

Results

Descriptive statistics for test anxiety separated in groups and test type have been shown in Table 1.

Table 1: Descriptive statistics of test anxiety separated in group and test type

Stage	Group	mean	SD	N
Pre- test	systematic desensitization	46/20	5/28	15
	study-skills	53/80	6/58	15
	Combined method	45/93	4/77	15
	Control	53/80	6/58	15
Post-test	systematic desensitization	42/27	3/31	15
	study-skills	48/47	6/48	15
	Combined method	30/07	4/23	15
	control	53/53	6/61	15

In this study, the variable of pre-test scores of test anxiety was controlled using one-way covariance analysis and data related to three methods of systematic desensitization, study- skills and combined method in association with test anxiety were analyzed. Also, using Leuven consistency test of variance error, the homogeneity of regression slopes was first examined for the dependent variables of test anxiety and the obtained results indicated no significant differences among the variances ($F = 0.617$, $P > 0.05$). The results obtained from the covariance analysis are given in Table 2.

Table 2: Results of covariance analysis to compare test anxiety in the experimental and control groups

Index variable	source	of	Total	Freedom	Mean	F	Sig	Effect
	Changes		squares	degree	squares			size
Test anxiety	Pre-test		1118/136	1	1118/136	126/748	0/001	0/697
	Group		2286/188	3	762/063	86/384	0/001	0/825
	Error		485/197	59	8/82			

The results obtained in Table 2 reveal that by controlling pre-test, there is a significant difference between subjects in the experimental and control groups in terms of test anxiety ($F = 126.748$, $P < 0.001$). Also, in order to examine which therapy method would have an impact on test anxiety, the paired comparisons of Bonferroni Post hoc test are given in Table 3.

Table 3: Results of Bonferroni Post hoc test and paired comparisons of test anxiety scores

First group	Second group	Adjusted mean of group 1	Adjusted mean of group 2	mean difference	Significant level
systematic desensitization	Study- skills	45/230	45/655	-0/425	0/115
	Combined	45/230	32/726	12/504	0/000
	control	45/230	50/722	-5/492	0/001
Study- skills	Combined	45/655	32/726	12/929	0/000
	control	45/655	50/722	-5/067	0/002
Combined	control	32/726	50/722	-17/996	0/000

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Given the results in Table 3, it is observed that in post-test of test anxiety (with controlling pre-test); there is a significant difference between the experimental conditions of systematic desensitization and combined method in reducing test anxiety ($P < 0.01$). Since the adjusted mean of the combined method (32.726) is less than that of systematic desensitization (45.230), the combined method is more effective. There was a significant difference between systematic desensitization and the control group and comparing the adjusted means of the two groups indicated the effectiveness of systematic desensitization. On the other hand, a significant difference was shown between two groups of study-skills and the combined method ($P < 0.01$) so that by comparing the adjusted means, it was specified that the combined method was more effective than study-skills method. Also, comparing the combined method and the control group indicated that there was a significant difference between these two groups in reducing test anxiety ($P < 0.01$) while no significant difference was observed between systematic desensitization and study-skills ($P > 0.05$). In total, in association with the mean difference and significant levels, results in Table 3 indicate that all three therapy methods were effective in reducing test anxiety but the combined method was more effective than the other two ones.

Discussion

This study aimed to evaluate the effectiveness of the combined method of systematic desensitization and study skills on students' test anxiety. This study results showed that all three methods of systematic desensitization and study-skills training and the combined method (systematic desensitization and study-skills) are effective in reducing test anxiety. The results obtained in the present study on the effectiveness of systematic desensitization in reducing test anxiety are consistent with the results of researches conducted by Hudesman & *et al.*, (1984), Agbochuku (2005), Parker & *et al.*, (1995), Biabangard (1999) and Abolghasemi (2002). Systematic desensitization is one of the most common and easiest ways of behavioral therapy for students' test anxiety. Through affecting the physiological and cognitive aspects, this method reduces test anxiety and stress. During systematic desensitization, associating muscle relaxation with visualizing distress scenes prevents involuntary arousal and also provides a new response for conditioning with previous anxiety-causing stimuli. In other words, since one of the main components of test anxiety is excitement, the treatment of test anxiety by this method leads researchers to combine this method with other methods. Also, the results showed that study-skills training cause a significant reduction in scores of test anxiety compared to the control group. The results obtained from this part of research are consistent with the findings of studies done by Cheek (2002), Schuts & Davis (2000), Amiri *et al.*, (2008) and Sobhi (2008). In this regard, Berger (1972) believes that reducing test anxiety lonely is not sufficient to improve academic achievement but modifying study habits of students having test anxiety is necessary because these students do not participate in the examination with adequate preparation. Also, Aivrsok *et al.*, (cited in Kasady, 2004) argue that students with high test anxiety have major problems in information processing such as decoding and keeping materials and this cause to poor learning and also poor performance at the time of tests. At different stages of the cycle of learning- test, study- skills training can reduce test anxiety via eliminating defects of information processing and meta-cognition. So, it can be said that correct ways of studying act as a meta-cognitive mediator and cause to reduce test anxiety (Espada *et al.*, 2006). Also, in order to more accurately assess which one of the proposed treatment methods were effective on reducing test anxiety and which one had been more effective, Bonferroni Post hoc test was applied. The test results showed that although each treatment method had been effective in reducing test anxiety, combining two methods (systematic desensitization and study skills) has been more effective in reducing test anxiety compared with each method alone. The results obtained from this part of the study are consistent with previous research conducted on the effectiveness of the combined therapy (Dadin, 2008; Narimani, 2009; Nakhai, 2010 and Tryon, 1985). The results indicated that the combined method is more effective than the other two methods. This shows that in the effective treatment of test anxiety, in addition to reducing symptoms of test anxiety and replacing new responses, proper study-skills should also be taught. It seems that combining these two methods can effectively reduce test anxiety by reducing both components of anxiety and concern since one method focuses more on the psychological aspects and the other on study-skills.

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Since a large percentage of our national population contains students, paying attention to their educational issues such as epidemiology of test anxiety seems to be essential. Therefore, teachers and counselors are recommended to help students through training solutions and methods of coping with test anxiety before and during exams. Finally, according to the obtained results, it is suggested that improving students' study habits attracts more accurate attention by educational officials of schools and especially counselors be justified on the effectiveness of systematic desensitization and relaxation in reducing test anxiety and received the necessary trainings hereof.

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