Comparing Metacognitive Therapy with Cognitive Therapy on Reducing Test Anxiety and Meta-worry in Students

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ABSTRACT

Objective: The purpose of the present study was to compare the efficacy of metacognitive therapy with cognitive therapy on reducing test anxiety and meta-worry among students.

Methods: The present study is a quasi-experimental research with pre- and post-test design with a control group. Study population comprised all female students of Tarbiat-Modares University of Tehran and sample included 15 students who selected by available sampling method and then randomly assigned in 3 groups. Test Anxiety Inventory and the Anxious Thoughts Inventory were given to 3 groups. For analyzing the data, analysis of covariance (ANCOVA) and repeated measure method were used. Students in 3 groups were matched with regard to age and marital status.

Results: The results of co-variance test showed that there are differences between 3 groups in test anxiety. Metacognitive and cognitive therapy had same efficacy in reducing test anxiety, while the metacognitive therapy had more efficacy than cognitive therapy in reducing meta-worry.

Conclusion: Considering the effectiveness of two treatments on test anxiety, results of the present study can be useful for specialists. Also, results of metacognitive therapy can be helpful in reduction of meta-worry.

1. Introduction

Anxiety is a common and undeniable phenomenon in human beings, which affects the performance and effectiveness in different situations. We all know that an average level of anxiety is useful in keeping people hardworking and responsible as well as helpful in having a more sustainable and prosperous life (McCaleb-Kaha, Wenner, 2009; Donnelly, 2009). However, high level of anxiety threatens oneی mental and physical health and has a negative effect on oneی personal, social, familial, occupational, and educational performance.

Whenever our action is evaluated, there is a probability of an emotional reaction. In each step of evaluation if we feel that we are not ready or have self-doubt or even think that we cannot do our best, we will become sad, stressed, and or dejected. On the other hand, having a confidence to be ready or the ability of a good performance is accompanied by positive emotions like self-confidence, proud, happiness, and self-capability (Coorey, 2003). One of the most important issues in schools is test anxiety. Nowadays, test anxiety is commonly observed among students, which might be due to more prominent role of tests in educational system than it was some decades ago. That is why about 10 million high school students and 15% to 20% of university students in the USA experience test anxiety (Chapel et

al., 2005). Based on some studies, the prevalence of test anxiety in Iran is 17.2% (Abolghasemi, 2003).

Some scholars believe that high level of anxiety creates intrusive thoughts, which do not associate with test and prevent students to concentrate on test. All these thoughts cause failure in learning. However, other scholars think that test anxiety happens owning to the lack of competency in students rather than the reasons mentioned. Also, there is no relationship between test anxiety and students performance (Cheraghian et al., 2008).

Elice's rational-emotional method of therapy was one of the most effective methods, which caused significan and positive changes in the students rational thoughts and beliefs. Findings showed that Ellice's rational-emotional behavioral therapy and Meichenbaum's cognitive behavior modification therapy are effective in reducing test anxiety. In other studies Lotfi, Eizadi-fard, Ayazia, and Agheli-Nejad assessed the effect of Meichenbaum's therapy on the reduction of test anxiety symptoms in high school students. Results showed that test anxiety symptoms significantly reduced in experiment group in comparison to control group.

The most effective treatment for test anxiety is the combination of skill-focused approach with different therapeutic approaches. In this study, we used metacognitive therapy. Before explaining this method, it is necessary to mention that in other approaches such as cognitive therapy (CT), attempts made to modify the content of perseverative thinking, i.e., appraisals, rather than the metacognitive processes, which perpetuate the continued maladaptive processing. With respect to content, certain thoughts and intrusions are referred to.

One of the recent shifts in CBT (Cognitive behavioral therapy) has been the movement toward metacognition, or thinking about thinking and experience. Of course, in some respects, CBT has always had some metacognitive elements. The completion a CT thought diary, for example, requires the patient to step back from momentary experience, and to observe and record it. The process of rational disputation seen in REBT (Rational Emotive & Behavior Therapy requires the ability to name and examine the utility of various belief systems. Problem-solving therapy explicitly invites the patient to step back from his or her automatic and reflexiv problem-solving strategies and to conceptualize alternative approaches to life's problems. Schema-focused work also examines not just momentary experiences but the larger cognitive affective behavioral frameworks

that are used by patients to structure their lives. Thus, metacognitive aspects are included in most of the extant CBT approaches.

In general, though, these metacognitive elements are going to change, looking at these cognitive-behavioral patterns to find alternatives with more evidential and adaptive ways to function would be helpful (Wells, 2009). Metacognitions are vulnerability factors in predicting development of psychological disorders (Mohammadi et al., 2013). Metacognitive therapy (MCT) is based on the idea that metacognitions cause a particular pattern of responding to inner experiences such as worry that maintains negative emotions and strengthens negative thoughts. In MCT the content of cognitions (e.g., negative, irrational cognitions about the self and appearance, the world, and other people) is not addressed -as it is done in cognitive therapy- but merely beliefs about thinking (metacognitive beliefs) and the process itself are the focus of treatment. In other words, self-regulatory executive function model (S-REF) is important in this process (Wells, 2009).

Results of various studies demonstrated that metacognitive are significantly effective on prediction of anxiety, OCD and Depression (Mohammadkhani, 2013., Delavar et al., 2015). Many mental disorders follow S-REF model of the cognitive attentional syndrome (CAS) as a feature of many disorders. Preliminary evidence suggests that this treatment is effective in generalized anxiety disorder (Wells & King, 2006; Fisher, 2006), obsessive compulsive disorder (Fisher & Wells, 2008; Simons, Schneider, & Herpertz-Dahlmann, 2006) and post-traumatic stress disorder (Wells & Sembi, 2004; Wells, Welford, Fraser, et al., 2008). There is clear evidence of CAS in anxiety disorders and test anxiety (e.g. worry & negative belief about metacognition, and coping behaviors) (Barahmand, 2009; Wells & Carter, 2001; Mathews et al., 1999).

Worry is catastrophizing and difficult to control. Worry process is considered as a coping style, but it can be the central of worry (Wells, 1995). Since worry is one of the elements in definition of test anxiety, it seems that worry as a coping strategy, is activated in response to disturbing negative thoughts (failing in exam). This process is not necessarily a problem, because theoretically, when a person believes that his fear may be useful and avoid the risk, he is happy worry (Wells, 2009). Using fear as a coping strategy, refers to metacognitive beliefs about worry, which is common in many persons. Activation of negative metacognitive beliefs, are more important in test anxiety. Anxiety disorders occur when a person's

negative beliefs about worry become active in situations like test anxiety or when a person feels his performance will be evaluated (Wachelka, 1999). Thus, a treatment that decreases CAS and metacognitions associated with it should be effective for test anxiety. Considering this issue in students and its effects on educational status, the present study aimed to compare between effectiveness of metacognitive therapy and cognitive therapy on test anxiety among students.

2. Methods

The present study is a quasi-experimental research with pre- and post-test design with a control group. Study population in this research is all female students in Tarbiat-Modares University of Tehran. Fifteen students were selected by available sampling method and randomly assigned in 3 groups. First group received MCT and second group received CT and third group received no treatment. Every group included 5 students. Pretest and posttest were carried out before and after treatment. The participants received no other psychotherapy during the study period.

Test Anxiety Inventory (TAI): This questionnaire consists of 20 items, and the subjects are instructed to respond according to how they generally feel by reporting the frequency of their experiences (Spielberger, 1980). The responses to items of test anxiety questionnaire have 4-point scale rated as follows: 1, almost never; 2, sometimes; 3, often; and 4, almost always. The mean score for 20 items (TAI total score) was determined. Eight items belonged to worry (W) and 12 items to emotion (E) subscales. This test does not have any diagnostic cut-off point and the results should be interpreted through comparison (Spielberger, 1980). The reliability coefficient of the test was measured via test-retest method on a sample of 52 male and female Iranian students. The analysis revealed a reliability coefficient of 0.89 (p=0.0l) (Mousavi et al., 2008).

The Anxious Thoughts Inventory (AnTI): The AnTI is a multidimensional measure of worry (Wells, 1995). It comprises 3 scales, which measures proneness to social worry, health worry, and meta-worry. The social and health worry subscales are content measures, while the meta-worry subscale measures metacognitive appraisals (worry about worry) and processes dimensions of worry. All items should be answered using a scale of 1 (almost never) to 4 (almost always). The instrument has a 3-factor solution, and the factors are meaningful and reliable. Each subscale has good psychometric properties (α ranges from 0.75 to 0.84). The Iranian version has been found to have α ranging from 0.57 to 0.92 (Barahmand, 2009).

The method of present research is quasi-experimental with pretest and posttest design and a control group. Based on the score obtained from Spielberger‍Test Anxiety Inventory, which were completed among university students, 15 female students with the highest test anxiety scores were selected and randomly assigned to 1 control and the 2 experimental groups. Participants in this study met the following inclusion criteria: (1) Their test anxiety score (Test Anxiety Inventory) was at least one standard deviation above the mean (2) aged 22‍30 years, (3) no evidence of a psychotic or organic illness and/or a medical or physical condition underlying test anxiety, (4) medication free or stable on medication for at least 6 months, (5) no current substance abuse disorder, and (6) not receiving psychological treatment.

Each MCT session lasted 60 minutes and students received 9 sessions. Each CT‍ session lasted 45 minutes and students received 8 sessions. All sessions were performed once a week. The two experiment groups were under Wells‍metacognitive therapy and Beck‍ cognitive therapy, but control group did not receive any intervention. All subjects completed questionnaires in the first and last sessions. To determine the effect of treatment during the sessions any differences in outcomes in the posttest were compared with pretest findings. Treat-

Table 1. Mean of test anxiety and meta-worry in pretest and posttes; Data are presented as mean (SD).

| Groups | Test anxiety | | Meta-worry | |
	Pretest	Posttest	Pretest	Posttest
MCT	62.6 (4.2)	50.8 (2.7)	13.9 (3.7)	6.8 (1.8)
CT	64.2 (5.1)	53.3 (3.3)	13.4 (3.4)	11.9 (2.3)
Control	61.2 (4.7)	60.0 (4.2)	13.8 (3.7)	13.5 (3.4)

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Table 2. Co-Variance for test anxiety and meta-worry.

Dependent variables	Source	SS	df	MS	F	P
Test anxiety	Pre-test	31.17	1	31.17	0.488	0.499
	Groups	753.5	2	376.7	5.90	0.018
	Error	702.42	11	63.85		
	Total	37918	15			
Meta-worry	Pre-test	0.339	1	0.339	0.056	0.818
	Groups	67.844	2	33.922	5.851	0.021
	Error	66.86	11	6.07		
	Total	1266	15			

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$P \leq 0.05$ is considered significant.

ment was done under the supervision of a professor of psychology and a master psychologist. No additional treatment was delivered during the follow-up period. For analyzing data, ANCOVA and repeated measure method were used.

3. Results

For matching individuals in 3 groups with regard to demographic variables (age, and marital status), the Chi-square test was used. The extent of heterogeneity in age ($P > 0.05$) and marital status ($P > 0.05$) were not significantly different. So, there were no significant differences among 3 groups regarding distribution of age, marital status variables.

Table 1 shows means and standard deviations of pretest and posttest scores of 3 groups in Test Anxiety Inventory, and meta-worry subscale of Anxious Thoughts Inventory.

As it can be seen in Table 1, the mean scores of these 3 groups in pretest are almost similar to each other, whereas the means of these groups in posttest (after performing therapeutic package in experimental groups)

showed differences and also in follow-up this decrease continued.

In order to evaluate the equality of variances of all subjects, Levene s test was used. Results showed that there were no pretreatment differences between groups based on test anxiety scores.

Posttreatment outcome was assessed using 1-way ANCOVA to control pretreatment levels on each of the respective outcome variables. Moreover, the results of co-variance test (Table 2) showed that there were differences between 3 groups regarding test anxiety scores: (F(df=2)=5.90, P<0.05) and Meta-Worry: (F(df=2)=5.85), P<0.05).

Fisher s Least Significant Differences (LSD) was used to analyze the overall change from pretreatment to posttreatment changes within the groups. As Table 3 shows, metacognitive and cognitive therapy had same efficacy in reducing test anxiety; however, the metacognition group had more efficacy than cognition group in reducing meta-worry (Mean Difference=-9.1, P=0.009). LSD indicated metacognitive group had more efficac in reducing test anxiety compared to the control group

Table 3. LSD test of two therapies (metacognition and cognition).

Groups		Variable	Mean difference	P value	SE
Metacognition	Cognition	Test anxiety	-2.5	0.91	5.11
Metacognition	Control	Test anxiety	-9.1	0.01	5.10
Cognition	Control	Test anxiety	-6.4	0.015	5.26
Metacognition	Cognition	Meta-worry	-5.1	0.009	1.49
Metacognition	Control	Meta-worry	-4.318	0.023	1.63
Cognition	Control	Meta-worry	-1.6	1.56	0.0001

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(mean difference=-9.1, P=0.01) and meta-worry (mean difference=-4.3, P=0.023). Also, the results showed that cognitive group had more impact in reducing test anxiety compared to the control group (mean difference=-6.4, P=0.015), and there was no difference between cognition and control group in reducing meta-worry (P=1.56).

4. Discussion

This study attempted to evaluate the effectiveness of metacognitive therapy versus cognitive therapy in reducing test anxiety. As the results showed these two packages (metacognitive and cognitive therapy) had same efficacy in reducing test anxiety. The basic structure of self-regulatory executive function model (S-REF) in emotional disorders is detached mindfulness (Wells & Matthews, 1994). It is known as a facilitator of the changes in the underlying pathological processes and used in metacognitive therapy (Wells, 2009). As for the nature of test anxiety, studies had shown that test anxiety is composed of two components of metacognitive-worry and coping skills, while regarding treatment pathological aspects, basic cognitive portion of test anxiety should also be targeted. The relationship between test anxiety and cognition, may be explained with Wells and Mathews model (1994) (Mathew et al., 1999).

Apparently, because of these overlapping concepts, no differences between cognitive and metacognitive therapy in reducing test anxiety were observed. Also, among several reviews related to cognitive therapy, worry was regarded as an aspect of test anxiety and the results indicate that this method significantly reduces the worry component of test anxiety (Harris & Johnson, 1983).

As it can be seen in Table 3, metacognitive therapy reduced test anxiety, while the reduction in test anxiety was not observed in the control group and this can show the effectiveness of this treatment. Metacognition directs our attention, thinking and coping style, so it can cause inefficient Knowledge. This view implies that metacognition should be changed during the treatment, not after it and as its consequences (Wells, 1995). The fundamental component of metacognitive therapy is called the self-regulatory executive function model (SREF-M). This model of emotional disorders focuses on attention because of their extreme vulnerability and irrational activities. Cognitive attentional syndrome has been focused in the treatment of test anxiety as well as overcoming repetitive patterns of thinking to reduce test anxiety (Wells & Cartwright-Hatton, 2004).

The results showed that cognitive therapy has also resulted in reducing anxiety. The basic concept of cognitive therapy is that one's emotional and behavioral reactions, are not consequences of events, but also are results of how the events are interpreted. Cognitive therapy helps one to concentrate on tasks and not on self-based responses. In this method, the therapist notices students anxiety-making thoughts and asks them to express their emotions and maladaptive cognitive responses, and finally teaches them to use interpretation and labeling emotional motivations, which evoke during exam (Meichenbaum & Butler, 1980). The results of the present study are consistent with the finding of Nordahl (2009).

The results showed that metacognitive therapy had more efficacy than cognitive therapy in reducing meta-worry. In explaining the more effectiveness of metacognitive therapy compared to cognitive therapy in reducing meta-worry, it is said that in anxiety disorders, behavioral consequences are the results of using worry as coping strategy, negative assessing worry, and trying to control it, while these factors are mingling with inefficient meta-beliefs (Wells, 1995) and for treating anxiety disorders, the key concept of metacognitive approach is worry about worry (Wells, 2009). However, cognitive therapy focuses on the content of the thoughts, and the worry as the core of anxiety disorders is not directly targeted. Therefore, metacognitive therapy effectively reduces worry that has increased during test anxiety.

Several limitations of the study are needed to be regarded. The study relied solely on self-report measures of symptoms. Despite the encouraging results, this study is based on 15 cases, which limit the generalizability of treatment effects. Also, we do not know the impact of therapist expectations on measures as they have not been validated in this regard.

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