

# Comparison of the Effects of Metacognitive Therapy and Compassion-Focused Therapy on Anxiety in the Mothers of Children with Cerebral Palsy

Negin Khoshvaght<sup>1</sup>, PhD Student;  Farah Naderi<sup>1\*</sup>, PhD;  Sahar Safarzadeh<sup>1</sup>, PhD; Marjan Alizadeh<sup>1</sup>, PhD

<sup>1</sup>Department of Psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran

\*Corresponding author: Farah Naderi, PhD; Department of Psychology, Ahvaz Branch, Islamic Azad University, Postal code: 61349-37333, Ahvaz, Iran. Tel: +98 61 33348420; Fax: +98 61 33329200; Email: naderifa2@gmail.com

Received October 13, 2020; Revised October 29, 2020; Accepted November 18, 2020

## Abstract

**Background:** Raising a child diagnosed with cerebral palsy (CP) is a major challenge for parents and may greatly change the family's lifestyle. The present study aimed to investigate the effects of metacognitive therapy (MCT) and compassion-focused therapy (CFT) on anxiety in the mothers of children with cerebral palsy.

**Methods:** The research method was quasi-experimental with a pre-test, post-test, and follow-up design and a control group. Selected by convenience sampling, the sample consisted of 45 mothers of children with cerebral palsy who referred to Bahar Rehabilitation Center, Shiraz, Iran, in 2020. We randomly divided the participants into two experimental groups (metacognitive therapy and compassion-focused therapy) and a control group (n=15 per group). The research instrument included the Beck Anxiety Inventory. The first experimental group underwent 12 sessions (60-minute sessions per week) of metacognitive therapy and the second experimental group underwent eight sessions of compassion-focused therapy (60-minute sessions per week).

**Results:** The mean±SD of the anxiety for metacognitive therapy, compassion-focused therapy, and control groups in the post-test stage were 24.30±6.21, 25.10±2.44, and 42.70±4.46, respectively. Based on the results, both metacognitive therapy (MTC) and compassion-focused therapy (CFT) were effective in reducing anxiety in the mothers of children with cerebral palsy (CP) (P=0.0001); also, there was no significant difference between the effects of MCT and CFT on anxiety in this group of mothers.

**Conclusion:** Metacognitive therapy and compassion-focused therapy can be employed to reduce anxiety in mothers of children with cerebral palsy.

**Keywords:** Cerebral palsy, Anxiety, Metacognitive therapy, Compassion therapy, Empathy

**How to Cite:** Khoshvaght N, Naderi F, Safarzadeh S, Alizadeh M. Comparison of the Effects of Metacognitive Therapy and Compassion-Focused Therapy on Anxiety in the Mothers of Children with Cerebral Palsy. Women. Health. Bull. 2021;8(1):1-9. doi: 10.30476/whb.2020.88585.1087.

## 1. Introduction

Cerebral palsy (CP) is a neurological disease that causes the non-progressive disturbance of the locomotor system due to damage to the developing brain (fetus and infant) (1). It is associated with sensory, perceptual, cognitive, communicative, and behavioral disorders as well as epilepsy and musculoskeletal problems. It can also limit the daily social activities of patients and may lead to increased functional limitations as the patients get older (2). These disabilities require a long-term care beyond the needs of children with normal development (3).

Although it is often assumed that this motor disorder is caused by brain injuries at birth, its mechanism is much more complex and involves pregnancy and even postnatal growth (4). Some of these children only have mobility impairments, whereas others also suffer from learning, hearing, and vision impairments and seizure. The state of intelligence varies depending on the location of the cerebral injury, as some of the children with CP may be talented and clever (5-7). The global

prevalence of CP is estimated at 2-6 infants per 1000 live births (8).

Under these circumstances, raising a child diagnosed with CP is a major challenge for parents and may greatly change the family's lifestyle. A mother is a child's greatest teacher and educator, and motherhood, in general, is one of the most complex experiences for any woman. Therefore, experiencing motherhood in relation to a disabled child is far more difficult and associated with many unpleasant feelings for the mother. In general, mothers of disabled children are more likely to engage in their behavioral problems compared with their fathers (9). Being a mother to disabled children is both physically and emotionally frustrating and stressful. Mothers who are unexpectedly informed of their children's affliction with CP may undergo contradictory feelings such as shock, hope, worthlessness, child acceptance, and difficulty in anxiety control (10). Children with cerebral palsy have various long-term disabilities. Because mothers are at the center of the rehabilitation and care services team

for a child with cerebral palsy, they suffer from many social and emotional issues and report higher anxiety levels and a lower quality of life (6). In separate studies, Panahi and colleagues. (11) and Sajedi and colleagues. (12) showed that the prevalence of anxiety in the mothers of children with cerebral palsy was higher than those of normal children.

Anxiety is a condition that affects almost every human being to varying degrees throughout their lives, as everyone has experienced it at least once in their lifetime (13, 14). As one of the most common mental disorders, anxiety is a distressing condition that results from the apprehension of an unknown danger and disrupts a person's behavioral continuity (15). Negative thoughts, emotions, and feelings cause many mental and physical illnesses. Anxiety is expressed by repeated experiences of negative thoughts about potentially negative events (16). Anxiety is usually associated with fear, sadness, helplessness, and difficulty finding a solution to an anticipated and seemingly unsolvable problem (17, 18). Anxious people are often oblivious to the cause of anxiety and do not know whether this feeling is caused by a sense of internal insecurity or an external source is at play (19). More reasonable forms of anxiety may be characterized by depression, extreme sensitivity and anger, restlessness, insomnia, and sleep disorders, whereas its severe forms are associated with guilt (20). Various studies have reported a high level of anxiety in the mothers of children with CP and other disabilities (12, 21-24).

Metacognitive therapy, as a pure cognitive approach, was developed as a result of the dissatisfaction with the existing behavioral-cognitive approaches that ignored the features of maladaptive thinking and its controlling factors. MCT is based on the assumption that a psychological disorder is related to the activation of a maladaptive style of thinking called the cognitive attentional syndrome (CAS) (25). The objective of MCT is to treat this syndrome and regulate the metacognitive beliefs associated with it (26, 27). The metacognitive approach, which is thematically derived from the cognitive approach, focuses on the process of thinking rather than the content of thinking (28). Different studies have reported the effectiveness of MCT in reducing anxiety and depression in patients with post-traumatic stress disorder (PTSD) (29-32).

It has also been shown that CFT can be a strong predictor of mental health. More recent studies have investigated the beneficial effects of compassion cultivation with the internal compassion cultivation

turning into a major therapeutic focus and goal (33). In addition, self-compassion has recently received a great deal of scientific attention from researchers as a strategy for reducing mental disorders. CFT is a multidimensional therapeutic intervention developed based on remarkable advances in cognitive-behavioral therapy, emotion-focused therapy, dialectical behavior therapy acceptance and commitment therapy, rational emotive behavior therapy, and many other approaches (19). CFT actually aims to reduce components such as shame, self-criticism, and self-compassion (34). Any CFT intervention is based on approval, support, and kindness. Moreover, self-compassion is negatively related to depression, anxiety, self-criticism, ruminating thoughts, and thought suppression but positively correlated with life satisfaction and social skills (35). Compassion itself is an important human force encompassing kindness, fair judgment, and interconnected emotions and helping others find hope and giving meaning to life in the face of challenges. Compassion also means to simply attract kindness towards oneself and to be influenced by the suffering of others (36). Many studies have reported the effectiveness of CFT in reducing anxiety, depression, and suicidal ideation in women with vitiligo (37); symptoms of depression, anxiety, stress, and weight self-efficacy in female students (38); stress, anxiety, depression, and symptoms of patients with irritable bowel syndrome (39); depression, anxiety, and emotion regulation in patients with coronary heart disease (40); anxiety in breadwinning women; and anxiety and depression in patients (41, 42).

The presence of a child with CP in a family can adversely impact the level of anxiety in family members, especially mothers; therefore, it is necessary to develop appropriate interventions to reduce the anxiety levels in these mothers and improve the quality of life for such families. Although the effects of MCT and CFT on anxiety were separately investigated in previous studies, a few studies compared their effectiveness. The present study aimed to compare the effects of MCT and CFT on anxiety in the mothers of children with CP in order to identify the most effective and appropriate intervention.

## 2. Methods

This quasi-experimental method included a pre-test, a post-test, a follow-up design, and a control group. The statistical population included all mothers of children with cerebral palsy who referred to Bahar Rehabilitation

Center of Shiraz in 2020. Using convenience sampling, we selected 45 mothers who were willing to participate. We included 15 participants in each group by use of G\*power statistical software and based on Afroundeh and Saidzanoi (43) study with an effect size of 1.7, a test power of 0.90, and  $\alpha=0.05$ . Randomization was performed by the researcher and the participants were allocated to groups by coin toss. Randomization was performed after obtaining the participants' consent. We randomly divided the participants into two experimental groups (metacognitive therapy and compassion-focused therapy) and a control group ( $n=15$  per group). The inclusion criteria were willingness to participate, anxiety score above the mean, minimum middle school education, no mental illness (based on participants' reports), no simultaneous psychological or pharmaceutical treatment, no drug addiction. The exclusion criteria were more than two absences from the treatment sessions and reluctance to continue the treatment process. The intervention program was performed in groups by a psychotherapist who had received specialized courses and workshops. After the training sessions, the post-test was performed in the experimental and control groups. The follow-up was done in the three groups after 45 days. For ethical considerations, the researchers received written consent from the participants for participation in

the research.

### Research Instruments

The measurement tool in this study was the Beck Anxiety Inventory (BAI), consisting of 21 self-reported items scored based on a four-point Likert scale (0 to 3). Scores may range from 0 to 63. Beck and colleagues reported that the internal consistency of this scale was equal to 0.93, and its test-retest reliability coefficient was 0.75 after a one-week pilot study. Kaviani and Mousavi (44) also showed that the validity (0.72), reliability (0.82), and internal consistency (0.92) of this scale were acceptable. They also stated scores of 0-11, 12-18, 19-26, 27-36, and 37-63 respectively for BAI indicates of asymptomatic, mild, moderate, severe, and very severe levels of anxiety. They standardized this questionnaire in Iran and reported a reliability score of 0.82 (44). The Cronbach's alpha coefficient was 0.81 in the present study.

### Executive Protocol of MCT Sessions

The first experimental group participated in 12 six-minute sessions of MCT. These sessions were held once a week based on the metacognitive model of Wells (45). A summary of MCT sessions is presented in Table 1.

**Table 1:** A summary of metacognitive therapy sessions (45)

Session	Objectives
First	Getting to know the group members; introduction of group rules and regulations; anxiety conceptualization; induction of metacognitive style
Second	Preparation for the beginning of treatment; thought suppression pilot test
Third	Introduction of detached mindfulness (DM) practices; anxiety postponement; assigning homework: attention training techniques; attention to DM; postponement of provocative concerns
Fourth	Review of homework; continuing the process of postponing worries; introduction of control loss test
Fifth	Challenging the metacognitions related to uncontrollability; introduction of the widespread and sustainable uses of DM; practicing attention training techniques; assigning homework: practicing attention training techniques; expansion of the uses of DM and postponement of worries about stimuli of anxiety; control loss test
Sixth	Review of homework; continuing to challenge the uncontrollability belief, if necessary; challenging the risk-related beliefs; trying to lose control or hurt oneself through anxiety testing; homework: induction of anxiety to test risks
Seventh	Development of new programs; working on the remaining metacognitive beliefs; prediction of future stimuli and discussion on how to use the new program; prevention of recurrence
Eighth	Review of homework; continuing to challenge the risk-related beliefs; emphasizing reversing any remaining maladaptive strategies; homework: behavioral experiments to challenge risk-related beliefs
Ninth	Review of homework; challenging the positive beliefs, if the negative beliefs are minimized; homework: implementation of the strategy of non-compliance with positive beliefs
Tenth	Review of homework; continuing to challenge the positive beliefs; implementation of the non-compliance strategy in the treatment session; homework: Behavioral tests (some tests to increase or decrease the level of anxiety)
Eleventh	Review of homework; working on reversing the remaining symptoms; implementation of the non-compliance strategy in the treatment session; continuing to challenge the positive beliefs; homework: asking patients to prepare a summary of the treatment process
Twelfth	Review of homework; working on a treatment plan (to prevent recurrence); explaining the alternative plan by providing some examples; planning for supplementary sessions; homework: identification of the ongoing applications of the treatment; post-test

DM: detached mindfulness

*Content of CFT*

CFT sessions were planned based on Gilbert’s CFT model (46). This intervention was carried out for the second experimental group in eight 60-minute sessions once a week. Table 2 summarizes the CFT sessions.

*Statistical Analyses*

Data were analyzed by descriptive and inferential statistics, such as mean, standard deviation, and repeated measures analysis. The Kolmogorov-Smirnov test was used to examine the normality of distribution of pre-test and post-test, and the Levene’s test was utilized to investigate the equality of variances. The repeated measures ANOVA was used to investigate the effectiveness of the

intervention programs on anxiety. The Bonferroni post hoc test was utilized to investigate the difference between the means of anxiety among the pre-test, post-test, and paired follow-up. Cronbach’s alpha was calculated to specify the reliability of the questionnaire. SPSS version 24.0 was further employed to analyze the data.

**3. Results**

According to the descriptive statistics, the mean ages of participants in the experimental groups were 35.52 and 34.74 years, whereas the control group was aged 34.07 years. The demographic variables of the participants are shown in Table 3.

Table 4 shows the mean and standard deviation

**Table 2:** A summary of compassion-focused therapy sessions (46)

Session	Content
First	Introduction of participants; introduction of group rules and regulations; explanation of research variables; introduction of CFT
Second	Explanation of compassion, and how CFT can help overcome problems
Third	Teaching compassion and empathy: training in how to create more and more diverse emotions in relation to others’ issues to increase the care for and the attention to health, thinking about being compassionate to others, attention to and focus on compassion, compassionate thinking, compassionate behavior, and compassionate imagery
Fourth	Training in forgiveness, how to accept mistakes and forgive ourselves for making them in order to facilitate changes, increasing warmth and energy, mindfulness, how to accept issues and problems in order to accept the upcoming changes, and gaining the ability to withstand difficult and challenging conditions due to the changing nature of life and face different challenges, wisdom and power, warmth, and no judgment
Fifth	Training in the development of valuable and sublime emotions: training individuals in how to create valuable emotions in themselves so that they can appropriately and effectively deal with the environment, practicing consciousness and mindfulness, assessment of advantages and disadvantages of the beliefs that bring useless emotions
Sixth	Training in responsibility as the main component of self-compassion: training the participants in how to think self-critically to develop newer and more effective views and feelings, compassion practice, sound and image of compassion, and compassion-based correspondence
Seventh	Compassionate correspondence, practicing anger and compassion and fear of compassion, preparations for terminating the group
Eighth	Review, summarization, group termination, post-test

CFT: compassion-focused therapy

**Table 3:** Demographic variables of the participants.

Groups	Mean age	Education		
		Middle school degree	High school education	College education
Metacognitive therapy	35.52	4	8	3
Compassion-focused therapy	34.74	2	11	2
Control	34.07	4	7	4

**Table 4:** Mean and standard deviation of dependent variables in experimental and control groups in pre-test, post-test, and follow-up

Variable	Phases	MCT	CFT	Control
		Mean±SD	Mean±SD	Mean±SD
Anxiety	Pre-test	42.60±5.42	43.10±4.57	41.85±6.43
	Post-test	24.30±6.21	25.10±2.44	42.70±4.46
	Follow-up	23.90±7.82	24.85±3.03	41.70±4.87

MCT: Metacognitive therapy; CFT: Compassion-focused therapy; M±SD: Mean±Standard deviation

(SD) of the studied variables in the experimental and control groups in the pre-test, post-test, and follow-up. Mean±SD of the anxiety for metacognitive therapy, compassion-focused therapy, and control groups in the post-test stage were 24.30±6.21, 25.10±2.44, and 42.70±4.46, respectively.

We further tested assumptions related to the repeated measures analysis of variance including the M-box test, Mauchly's test, and Levene's test. The M-box results showed that the observed matrix of the dependent variables was equal in all groups (P=0.314). Furthermore, the Mauchly test was not significant (Mauchly's W=0.785, P=0.525), thereby confirming the assumption of sphericity for this variable. Levene's test was used to evaluate the equality of error variances related to the time-variable at different phases of the test. According to the anxiety pre-test (P=0.411), post-test (P=0.327), and follow-up (P=0.294), the error variance was equal at different phases of intervention, so the normality assumptions were established.

According to Table 5, time significantly affected anxiety (P=0.0001). Moreover, the results of repeated measures analysis indicated significant differences in anxiety scores among the groups (P=0.0001). It was also specified that the interaction between time and group significantly influenced anxiety (P=0.0001) (Table 5).

The effectiveness of MCT and CFT on anxiety was compared between the three groups using the Bonferroni post-hoc test (Table 6). According to Table 6,

there was a significant difference between MCT and CFT groups and the control group in the post-test and follow-up phases (P=0.0001). The results also showed that there was no significant difference between the MCT and CFT groups concerning anxiety reduction. Figure 1 shows a repeated measurement graph of anxiety scores in the three groups of MCT, CFT, and control in the pre-test, post-test, and follow-up.

#### 4. Discussion

The aim of the present study was to investigate the effects of metacognitive therapy (MCT) and compassion-focused therapy (CFT) on anxiety in the

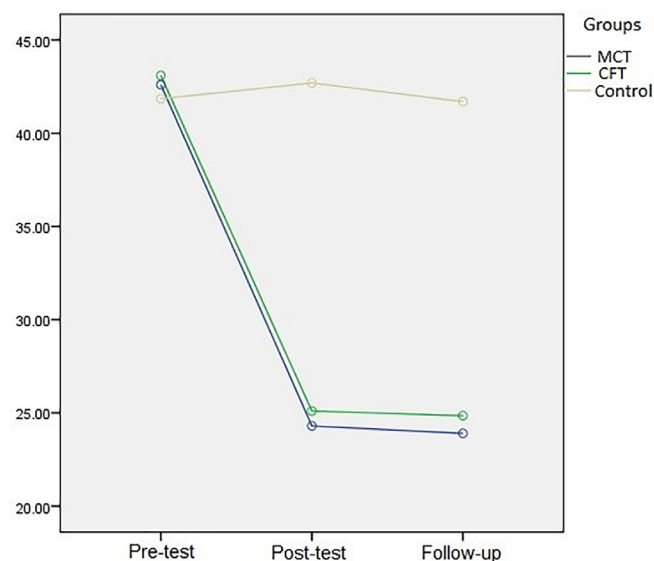


Figure 1: Comparing the mean anxiety scores between the three groups in three evaluation phases

Table 5: Repeated measurement results for the effects of time and interaction between time and group

Source	Variable	SS	df	MS	F	P	η <sup>2</sup>
Time		4588.033	1	4588.033	197.782	0.0001	0.776
Group	Anxiety	5253.344	2	2626.672	64.610	0.0001	0.694
Time*group		2239.717	2	1119.858	48.275	0.0001	0.629

SS: Sum of squares; df: Degrees of freedom; MS: Mean square; F: F-distribution; η<sup>2</sup>: Eta-Squared

Table 6: Bonferroni post-hoc test results of pairwise comparisons

Variable	Phases	Group 1	Group 2	Mean Difference	SE	P
Anxiety	Pre-test	MCT	Control	0.750	1.748	0.853
		CFT	Control	1.250	1.748	0.709
	Post-test	MCT	Control	18.618	1.272	0.0001
		CFT	Control	17.963	1.276	0.0001
	Follow up	MCT	Control	17.991	1.733	0.0001
		CFT	Control	17.169	1.738	0.0001
	Pre-test	MCT	CFT	0.500	1.784	0.961
		CFT	MCT	0.822	1.732	0.847
	Post-test	MCT	CFT	0.655	1.271	0.819
		CFT	MCT	0.655	1.271	0.819

MCT: Metacognitive therapy; CFT: Compassion-focused therapy; SE: Standard error

mothers of children with cerebral palsy (CP). The study findings showed that both MCT and CFT were effective in anxiety reduction in the mothers. Of note, their effects were sustainable until the follow-up period. The results further indicated that there was no significant difference between MCT and CFT in terms of post-test and follow-up anxiety reduction. The first study finding demonstrated that MCT was effective in reducing anxiety. This finding is consistent with the research results of Johnson and colleagues (28), Khanjani and colleagues (30), Haseth and colleagues (31), and McEvoy and colleagues (32). Khanjani and colleagues (30) reported that MCT both statistically and clinically reduced the post-test and follow-up anxiety and depression in patients with PTSD. Haseth and colleagues (31) showed that group MCT reduced the generalized anxiety disorder (GAD) in patients. This can be explained by the fact that MCT temporarily reduces anxiety through two strategies: first, attention shifts from stressful stimuli to other stimuli, and second anxiety postponement. If these two strategies are continuously used, they can reduce the anxiety level. The main objective of MCT is to help individuals view the problems differently through active participation in treatment. In fact, MCT helps them avoid problems and negative thoughts in order to better evaluate their thoughts and ideas. This is realized by teaching skills such as identification of negative thoughts and feelings, expression of feelings and emotions, positive judgments, exploration of ways to achieve goals and dealing with challenges, development of solutions to deal with challenging situations, and behavior management (30). It is definitely effective to apply these techniques or thinking styles and externalize problems in psychological areas, especially anxiety. They initially reduce the negative thoughts and feelings and then move towards GAD and depression. Based on this study, MCT can be applied in medical centers as one of the most effective treatments to reduce anxiety.

CFT was another effective approach to reducing the anxiety level of the mothers, which is in line with the research results of Ahmadi and colleagues (32), Taher Pour and colleagues (38), Seyyedjafari and colleagues (39), Adibizadeh and Sajjadian (40), Takahashi and colleagues (41), and Steindl and colleagues (42). To explain this finding, it can be stated that increased compassion serves as a shock absorber against the effects of negative events. Individuals with a high level of self-compassion are less likely to subject themselves to self-evaluation; they have a more laid-back attitude and more easily cope with the problems and negative events of life. They also react to problems mainly based on

realities because their judgments are directed towards neither self-defense nor self-criticism and self-blaming. Studies have shown that individuals with a high level of self-compassion are not only kinder to themselves but also are more responsible for their problems; they deal with events more easily, and, as a result, experience lower levels of anxiety.

One of the characteristics of human commonalities is to accept that everyone has flaws and may sometimes engage in unhealthy behaviors. Contrary to increased assimilation, consciousness leads to a balanced and clear awareness of present experiences, preventing the painful aspects of life from being overlooked nor preoccupying the mind. When people face painful events, they unconsciously and negatively judge and evaluate themselves, instead of dealing with issues based on a more vigilant and realistic approach. In general, CFT protects individuals against negative states and strengthens positive emotional states by motivating compassion through compassion techniques, identification of self-compassionate thoughts, and elimination of barriers to self-compassion. With the increase in compassion, individuals are further motivated to deal with and manipulate negative thoughts. Mediation exercises decrease the cortisol levels and increase the heart rate variability (38). As a result, such exercises can be conducive to maintaining and increasing calm when dealing with stressful situations.

We also found no significant difference between MCT and CFT in terms of anxiety reduction. Generally, the participants in both groups managed to find different solutions to their problems in collaboration with the therapist, resulting in maternal emotional regulation and reduced anxiety levels. MCT generally employs various methods for improving anxiety-based thinking and breaking down the vicious cycle of anxiety. The therapeutic effects of MCT were sustainable until the end of the follow-up period; thus, the improvement in metacognitive beliefs probably helped mothers to form a new relationship with their thoughts and reduce the metacognitions that enhance the maladaptive manner of repetitive negative thoughts. On the other hand, training mothers in CFT skills can increase their compassion for past difficulties, sufferings, and bitter experiences, reduce self-criticism, eliminate negative thoughts, and, ultimately, reduce the anxiety level.

## 5. Conclusion

MCT and CFT teach individuals to use mediation techniques, establish a decentralized relationship

with their thoughts by dealing with and accepting them as unreal ideas, reduce their unity with negative thoughts and feelings, increase their awareness of their thoughts and body senses by raising their cognition and experience through focusing on breathing, modify their relationship with psychologically negative thoughts, and moderate their arousal symptoms. In these interventions, individuals accept their emotions but do not seek immediate relief from or avoidance of these emotions. In other words, although individuals cannot change the conditions of their lives, they can change the intensity of their emotional reactions to stressful situations. Based on the study findings, counseling centers are recommended to apply MCT and CFT for the treatment of such mothers. Since all members of the sample were of the same gender and from only one city (Shiraz), the study findings should be cautiously generalized to other populations. It is suggested that similar studies be conducted on larger samples, in other cities, or on the fathers of children with CP; this is because fathers' mental states can have reciprocal effects on cohabitation and the mother's spirit. By encouraging clients to experience these therapies, it is hoped that they can better control their stressful stimuli (which are mostly mental) and reduce their anxiety level on their own.

### Acknowledgements

This paper reported the results of a PhD thesis written by Negin Khoshvaght in the Department of Psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran. The researchers wish to thank all the individuals who participated in the study.

### Ethical Approval

The participants willingly filled out the questionnaires and signed written informed consent. The Ethics Review Board of Islamic Azad University, Ahvaz branch, approved the present study with the following number: 1064819893917.

### Funding

This study received no grant from any institution/company/university.

**Conflicts of interest:** None to declare.

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