

Original Article: The Effect of Cognitive Emotion Regulation Training on Resilience and Psychological Hardiness of Students with Depressive Syndromes

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ABSTRACT

Introduction: Since depression is one of the most serious psychological diseases and imposes a great burden on patient, family, and health system of the society, the aim of this study was to assess the effect of cognitive emotion regulation training on resilience and psychological hardiness of students with depression symptoms.

Methods: In this quasi-experimental study, the statistical population was all undergraduate female students with depression symptoms in psychology at Islamic Azad University, Tabriz Branch in 2021. Resilience, psychological hardiness, depression, and emotion regulation protocol questionnaires were used for data collection. Data analysis was done by using the analysis of covariance method (ANCOVA) by SPSS 22 software.

Results: The results of this study showed that emotion regulation training significantly increases resilience and psychological hardiness as well as reduces depression in students ($p < 0.01$).

Conclusion: With the effective training of cognitive regulation of emotion, resilience and psychological hardiness in depressed students can be improved and in this way, it helps their mental health effectively. Therefore, it is suggested that for students who have depression symptoms, interventions based on emotion regulation should be applied.

Introduction

Depression was coined by the American Psychiatric Association (APA) for a set of symptoms in 1980, and then in DSM-III, the term “mood disorder” became popular instead of depression

[1]. This disorder is concerned as one of the most common mental health problems and the cause of disability all over the world, so that it ranks fourth among ten main causes of the global burden of diseases and places a great burden on individual, family, and health system of every country. In addition to the genetic causes, social

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and psychological factors caused by environmental events can also be related to the depression occurrence. The prevalence of depressive disorders is 10-15%, while only half of those suffering from depressive disorders are seriously treated [2]. The main symptoms of depression include the feelings of sadness, pessimism, lack of pleasure, guilt, self-blame, suicidal thoughts, crying, agitation, apathy, indecisiveness, weakness, changes in sleep and appetite patterns, lack of concentration, fatigue, and sexual disorders [3]. Resilience is an important concept in understanding the adaptation process. Learning the adaptive methods in patients with chronic diseases, including depression is a key point. Resilience is a person's ability to maintain biological and psychological balance in critical situations [4], which is concerned as one of the natural adaptive responses of humans, and through that, a person succeeds in overcoming these challenges [5]. Another effective concept in learning adaptation methods and overcoming serious threats in chronic diseases such as depression is hardiness. The psychological hardiness is a motivational pattern, a skill that in stressful situations [6] can moderate tensions and their adverse effects [7]. Therefore, it is one of the important component in mental and physical health [8] by improving the feeling of self-esteem, resistance against psychological pressure, and self-efficacy [9]. Since emotions are closely related to mental and physical health [10], it seems that there is a relationship between emotion regulation and depression. In addition to experiencing emotions, humans also review, adjust, and, in some cases, fight against them; and this principle is the theoretical basis of emotional regulation. Insufficiency in emotional regulation is the underlying mechanism of mood and anxiety disorders [11]. Maladaptive regulation strategies, such as rumination, self-blame, and catastrophizing have a significant relationship with the severity of depressive symptoms [12]. According to these explanations, the aim of this study is to determine the effect of cognitive emotion regulation training on resilience and psychological hardiness of students with depression symptoms.

Methods

Study design and population

The design of this study is quasi-experimental type with pre-posttest along with control group. The present study was done after registering in the research system of Islamic Azad University, Ahar Branch (IAU 2202913758593661400162447165). The study population included the female students with the depression symptoms studying psychology at the Bachelor's degree of Islamic Azad University, Ahar Branch in 2021.

Sampling method

The required sample was calculated by Cochran's formula and the sample size was estimated to be 217. After completing the Beck Depression Questionnaire (long form), 30 people were selected among the people whose depression score was 30 and a higher standard deviation (with depression symptoms) and answered the questionnaires of resilience and psychological hardiness. They were randomly studied in the experimental group and the control group (N=15).

Eligibility criteria

The inclusion criteria included female gender, Bachelor's degree, psychology field, symptoms of depression, and not attending other psychological training classes at the same time, and exclusion criteria included the subject's lack of consent to participate in the research and absence of more than 3 sessions.

Data collection

Resilience questionnaire

Connor and Davidson's resilience questionnaire was used to measure resilience. This questionnaire contains 25 items that measure resilience in 5-point Likert scales from zero to four. The minimum resilience score of the participants in this scale is zero and their

maximum score is 100 [4]. The results of the preliminary studies related to the psychometric properties of this scale have confirmed its reliability and validity, and the internal consistency, retest reliability, and convergent, and divergent validity of the scale have been reported as sufficient [13].

Psychological hardiness questionnaire

To measure the level of psychological hardiness, the questionnaire of the short form of the hardiness scale designed by Kobasa *et al.* (1982) was used [14]. This questionnaire consists of 20 items including challenge, commitment, and control subtests. The scoring method of this questionnaire is in the form of never, rarely, sometimes, and most of the time options (4, 3, 2, and 1, respectively). The total score of these items is concerned as the person's hardiness score, so a higher score indicates more hardiness and a lower score indicates less hardiness. The validity and reliability of this questionnaire in Iran has been confirmed by Elhampour *et al.*'s study in 2017. The items' overall internal consistency was obtained through Cronbach's alpha, 0.683 indicating the acceptable reliability and internal consistency [15].

Depression questionnaire

In this study, Beck questionnaire, which was designed by Beck *et al.* (1961), was used to measure the depression level [16]. Beck's questionnaire has 21 items scored from 0 (sign of mental health) to 3 (sign of acute and deep depression). In other words, there are four sentences in front of each item that specify one of the depression symptoms, which are arranged from the mildest to the most severe state of depression. The range of total score is between 0 and 63. A score of 0 to 9 indicates no depression, 10 to 18 mild depression, 19 to 29 moderate to severe depression, and 30 to 63 severe depression. The cut-off point of this questionnaire to check depression symptoms is between 19 and 29. The validity and reliability of this questionnaire in Iran was checked and confirmed by Hamidi *et al.* (2014). In this study, the internal consistency of the test was

announced by using Cronbach's alpha method and 0.93 and 0.64, respectively. In the convergent validity study, the correlation of the Beck GHQ-28 questionnaire was 0.8 [17].

Cognitive emotion regulation training protocol

In this study, cognitive emotion regulation training was provided to the study subjects according to an 8-session protocol. Briefly, the sessions are as follows: The first session includes explaining the session's outlines to the participants and doing group assignments. The second session includes the emotional recognition and classification in the field of life quality, and the review of the previous session's exercise, encouraging self-knowledge, and examining one's personality is also carried out. The third session consists of interpreting emotions related to physical sensations. In this session, emotions are evaluated based on the intention to perform and emotional awareness caused by the disease. The fourth session includes compassionate support and self-soothing in necessary emotional situations. In this session, the advantages and disadvantages of emotions and the challenge continuation with negative beliefs will be analyzed. The fifth session consists of actively correcting negative emotions through strengthening positive beliefs about resilience and hardiness, reviewing postponing worry, expanding its applications, examining, and stopping thought suppression, which ultimately leads to feeling better. The sixth session includes the emotional acceptance and its flexibility in patients. Expanding the applications of postponing worry and rumination, challenging the remaining positive beliefs about rumination, worry, negative beliefs about symptoms, examining, starting, and eliminating other maladaptive coping strategies are done in this session. In the seventh session, checking the avoidance, non-adaptive coping, and removing it as well as working on the remaining beliefs are done. The eighth session includes understanding the positive and negative emotions of patients, tolerating negative emotions, analyzing the advantages and disadvantages of threat monitoring (review), challenging positive beliefs about

threat monitoring, stopping threat monitoring, and providing alternative options.

Data analysis

The data analysis was done by using the analysis of covariance method (ANCOVA) by SPSS 22 software. In the descriptive statistics section, the mean and standard deviation were used, and in the inferential statistics section, the multivariate covariance analysis statistical method was used according to the hypotheses of this method.

Results

The studied groups did not have statistically significant differences with each other in the studied variables in the pre-test stage, because the mean and standard deviation of the groups were almost close to each other, but in the post-test stage, these quantities encountered more variance so that the mean and standard deviation of the groups changed (Table 1). Accordingly, to determine whether this difference is statistically significant or not, multivariate covariance analysis was used.

Table 1. Descriptive indicators of resilience and psychological hardiness in the pre-test and post-test stages in the experimental and control groups

Variable	Experimental pre-test group (N=15)		Control pre-test group (N=15)		Experimental post-test group (N=15)		Control post-test group (N=15)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Resilience	47.77	4.92	48.92	4.65	61.56	45.73	47.44	5.52
Hardiness	51.35	5.69	5.93	4.22	59.73	5.15	5.96	5.21

Inferential statistics

To use multivariate covariance analysis, the presumptions of homogeneity of covariance matrix, homogeneity of variances, and homogeneity of regression slope were checked (Tables 2-4).

Homogeneity of the covariance matrix: M-box test was used to check the homogeneity of the covariance matrix; the results show that the values of covariance are equal in the two groups. Because the calculated F-values are not significant at the $p < 0.05$ level (Table 2)

Table 2. M-box test for the assumption of homogeneity of covariance matrix in dependent variables

Variable	M-box	df.1	df.2	F	Sig
Dependent variable	11.58	10	4823.56	1.75	0.43

Homogeneity of variances: Lon's test was used to examine the assumption of equality of variances, and the results showed that the condition of homogeneity of variance of grades

in resilience and psychological hardiness variables is established. Because the calculated F-values are not significant at the $p < 0.05$ level (Table 3).

Table 3. Results of Lon's test for variances homogeneity in dependent variables

Variable	Statistics	df.1	df.2	Sig
Resilience	1.92	1	28	0.47
Hardiness	1.58	1	28	0.83

Homogeneity of regression slope: The result of the homogeneity of regression slope showed that calculated F is not significant at the level of

0.05. Therefore, the regression slope is the same in resilience and psychological hardiness variables. Concerning the presuppositions of

Multivariate covariance analysis have been fulfilled, this method can be used for data analysis (Table 4).

Table 4. Presumption of homogeneity of regression slope in dependent variables

Variable	F-factor	P
Resilience	1.7	0.85
Hardiness	1.37	0.22

Multivariate covariance: The findings in Table 5 indicate the multivariate covariance analysis on the resilience and psychological hardiness scores of experimental and control

groups. Based on these findings, the total emotion regulation had a significant effect on at least one of the dependent variables in experimental group.

Table 5. The results of multivariate variance analysis of experimental and control groups in the post-test stage of dependent variables

Test	Rate	DF (Hypothesis)	DF (Error)	F	p
Pillai's Trace	0.987	4	21	390.52	0.001
Wilks' lambda	0.013	4	21	390.52	0.001
Hotelling's trace	74.38	4	21	390.52	0.001
Roy's Largest Root	74.38	4	21	390.52	0.001

Table 5 demonstrates the multivariate covariance analysis on the resilience and psychological hardiness scores of the experimental and control groups. Based on these findings, overall emotion regulation had a significant effect on at least one of the dependent variables in the experimental group (Table 6).

depression syndrome: Multivariate covariance analysis illustrated that emotion regulation training has significantly increased resilience in these students ($F=27.19, p<0.01$). Likewise, multivariate covariance analysis indicated that emotion regulation training significantly increased psychological hardiness in these students ($F=25.8, p<0.01$).

The effect of emotion regulation on resilience and hardiness of students with

Table 6. The results of multivariate covariance analysis to compare experimental and control groups in resilience and hardiness

Dependent variable	Sum of squares	DF	Mean square	F	P
Resilience	88.45	1	88.45	27.19	0.001
Hardiness	53.22	1	53.22	25.87	0.001

Discussion

The results of the present study revealed that emotion regulation training increases resilience in students with depressive symptoms, which is in line with the findings of Azimi *et al.* [18], Tawami *et al.* [19], Forkman *et al.* [20], Saxena *et al.* [21], and Flow *et al.* [22]. In explaining this finding, it seems necessary to point out that people suffering from depression have false

beliefs about the control and regulation of emotions, that their low ability to regulate emotions is only caused by the disease. These people cannot control their emotions. Hence, identifying intermediate beliefs helps patients to understand where these beliefs originated and how their problems were created. Finally, through performance, review, and identification of fundamental beliefs, these people can become aware of how depression strengthens their

fundamental beliefs, adjust, and correct their fundamental beliefs by using emotion regulation interventions and emotional regulation, and finally control and moderate yourself [23]. Likewise, in another explanation of this finding, it can be mentioned that depressed people cannot strengthen their positive emotions and regulate their emotions due to the false beliefs that their negative emotions are only caused by illness. This reinforces patients' misperceptions about emotional regulation, and these misperceptions cause them to avoid facing positive emotions and turn to restrain positive emotions internally [24]. In this way, these people are trapped in a vicious cycle that reinforces the control of emotions in an ineffective way. However, emotion regulation tries to break this vicious cycle by using emotion regulation methods so that it challenges misperceptions of the patients so that patients are placed in an efficient cycle. In this way, increasing the ability to reconsider, adjust the intensity, and direction of a positive emotion in oneself and others, affects the false cognitions of depressed people, and the correction of false cognitions, in turn, leads to an increase in their emotional regulation [25]. Depressed people's documents about events are perfectly internal, general, and stable and based on negative cognitive styles, so that these patients tend to interpret daily events negatively and use cognitive errors of wishful inference and extreme generalization because they are drawn to learn helplessness due to the repeated encounters with unpredictable and uncontrollable events. Therefore, the positive effect of emotion regulation on depression, due to the use of techniques such as performance review, identification of cognitive errors, and correction of spontaneous negative thoughts and intermediate and fundamental beliefs, can justify the reduction of depressed mood scores [26]. The results of the present study revealed that emotion regulation training increases psychological hardiness in students with symptoms of depression, which is in line with the findings of Azimi *et al.* [18], Jamshidzahi *et al.* [27], Dixon *et al.* [28] and Cooley *et al.* [29] are aligned. To explain this finding, it seems necessary to point out that in emotion regulation, changing the content of ineffective

thinking is the most effective way to change and correct emotions and worries in depressed people. Therefore, during emotion regulation, depressed people become aware of the cognition impact on their emotions and behaviors and learn to identify their negative spontaneous thoughts and common cognitive errors and replace them with more efficient thoughts. In the following, psychological relaxation training causes patients to experience the opposite physiological effects of worry [29]. Finally, by using the downward arrow method, they identify the basic negative beliefs that trigger anxiety and through their empirical investigation, analyzing negative beliefs, writing down their opposing beliefs, and positively interpreting their worrying thoughts in a new way (such as dealing with the problem differently and solving the problem without resorting to worry), they respond and this issue leads to an increase in psychological toughness in depressed people [29]. In addition, with the formation of cognitive distortions and negative spontaneous thoughts about depression, the reduced concern of patients is damaged more than before. In this regard, teaching emotional components to the patients leads to re-evaluation and cognitive conceptualization by them. Problem-solving training strengthens planned problem-solving in patients, and by familiarizing and identifying negative spontaneous thoughts, they become aware of dysfunctional beliefs, and take responsibility for their lives. In the following, through the evaluation of spontaneous thoughts and training to respond to spontaneous thoughts, by using the ineffective thoughts recording sheet, more efficient thoughts will be replaced. Identification and correction of the intermediate beliefs by using the Socratic questioning technique, evaluation of the advantages and disadvantages of a belief and cognitive re-conceptualization leads to find out the root of problems and how they grow. Finally, through the modification of basic beliefs by using the basic belief worksheet and the technique of examining positive and negative evidence and the downward arrow, the hardiness of depressed people increases [30]. This finding can be explained by considering the role of cognitive factors (spontaneous thoughts, intermediate beliefs, fundamental beliefs, and

disturbed processing processes) in the depression pathology. Due to the fact that depressed people reveal a high vulnerability to rumination and are very ready to misinterpret the physiological symptoms of their body, this awareness is given to the patients during the emotional regulation, that they have catastrophic thoughts about their health status and the course of treatment. These thoughts cause a kind of negative and selective bias towards health and recovery in them. Therefore, one of the effective behavioral techniques that helps to explain the treatment effect is to perform mental relaxation exercises with the occurrence of physiological symptoms of depression, which leads to a reduction of depression by reducing rumination [31]. Therefore, the emotional regulation by using behavioral techniques such as activity review training helps to structure the daily activities of depressed people and by encouraging them to do enjoyable activities and activity planning, it leads to an increase in daily success [26]. Moreover, the use of other behavioral techniques such as mental relaxation exercises leads to de-tension and reduction of rumination in the depressed people. Behavioral experiments further often target behavioral responses to depressive symptoms, the type of interaction with health care workers, and the behaviors performed to avoid rumination, which ultimately lead to reduced rumination in depressed individuals [32].

Limitations and suggestions

Among the limitations of the present study is the use of emotion regulation and ignoring other interventions and variables affecting psychological resilience, hardiness, and the intervention only in the population of a specific region (Ahar city), which makes it difficult to generalize the results to other population. In the design of future studies, it is suggested that in addition to conducting this study in a multi-centered manner (in different cities) with a larger sample size and long-term follow-up, this intervention be combined with other treatments such as pharmacotherapy and psychological third wave treatments. On the other hand, this intervention can be done in the other

psychological diseases so that its results can be more accurate basis for comparing results and more generalizability. Data collection by using various methods such as interviewing, observation, foundational data theory in addition to self-report questionnaires will undoubtedly increase the credibility and generalizability of the results.

Conclusion

From the results of this study, it can be concluded that with the effective training of cognitive regulation of emotions, resilience, and psychological hardiness in depressed students can be improved and in this way it helps their mental health effectively. Therefore, it is suggested that for students with depression symptoms, interventions based on emotion regulation to be applied.

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