Comparison of effectiveness of mindfulness therapy and problem-solving therapy (PST) in manner of badle & lanx method on executive functions and emotional regulation positive strategies of soldiers in Imam Reza Northeast air defense

Hamid zolfaghari[1], Hamid seraj kermani[2], Mozhdeh azimian sayar[3], Mohammad barati[3], Mohammad ebrahim hokmabadi*[4], roza salehian[4], Arefeh alishahi[5], Meysam gachpazan[6]

[1]Phd student of Psychology, Ferdowsi University of mashhad, mashhad, iran
[2]Department of Psychology, Quchan Branch, Islamic Azad University, Quchan, Iran
[3]Department of Psychology, Neyshabur Branch, Islamic Azad University, Neyshabur, Iran
[4]Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
[5]Master student of cognitive psychology,ferdowsi university of mashhad,mashhad,iran
[6]Department of Medical Genetics and Molecular Medicine, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
* Corresponding Author Address: Department of Psychology, Psychiatry and Behavioral Sciences Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
Email: ebi.hokmabady@gmail.com

ABSTRACT:

Background and Aim: Military service is a period that can be a source of tension and psychological damage for some soldiers. The aim of this study was to investigate the effectiveness of mindfulness therapy on positive emotion regulation strategies and student soldier executive functions.

Methods: The present study was a quasi-experimental pretest-posttest with a control group. The study population consisted of student soldiers present at the Northeastern Air Defense Center of Imam Reza (AS) in Mashhad in 2021. Forty-five soldiers were selected by available sampling method and were randomly assigned to two groups with entry criteria. The instrument used in this study was the questionnaire of emotion regulation strategies and the London Tower test, which were performed on the research sample in pre-test and post-test. Multivariate analysis of covariance was used to analyze the results at a significant level ($\alpha = 0.05$).

Results: The results showed that mindfulness interventions and problem solving therapy in manner of badle & lanx method could have a significant effect on increasing the average members of experimental groups in executive functions ($P < 0.001$) and improving the level. Have emotion regulation strategies ($P < 0.001$). It was also found that there is no significant difference between the effectiveness of the interventions performed on the research variables.

Conclusion: Considering the significant effectiveness of interventions on research variables, it seems that the use of these therapies in a wide range of soldiers can guarantee a reduction in behavioral injuries in soldiers.

Keywords:
mindfulness, badle & lanx problem solving, emotion regulation strategies, executive functions, soldiers
Article Received: 10 August 2020, revised: 25 October 2020, Accepted: 18 November 2020

INTRODUCTION

The military environment and barracks is one of the places where more people need to adapt. Because people's attitudes towards the military environment are different from the home environment. In the military environment, people see another form of coercion to obey law and order. This may be unbearable for some, who may not be able to cope with the situation and resort to measures such as fleeing, fighting with other soldiers, smoking or drugs to compensate for these difficulties. On the other hand, there are soldiers who easily adapt to these conditions and not only do not face any problems during their military service, but also get new opportunities to improve their personal lives.

It has been found that children and adults often show deficiencies in motor, cognitive and emotional abilities, many of which can be named as executive action (1). Executive functions is a universal term that encompasses the many cognitive processes required for the behaviors and purposeful functions we require and refers to the diverse set of interdependent cognitive abilities that includes planning activities. Inhibition is the response, development and use of strategies, the

sequence of flexible functions, maintaining a set of behaviors and resistance to annoying stimuli (2). Lezak sees executive activism as a concept that succeeds in intention, planning, purposefulness, and self-controlling behaviors (3). In fact, executive systems are a cognitive system in psychology that controls and manages other cognitive processes (4) and means the ability to maintain the proper state of problem solving to achieve the goal with the areas of attention, logic and problem solving. Overlapping (5) The term executive action is like an umbrella used for various cognitive processes such as planning, working memory, attention, inhibition, self-monitoring, and self-regulation (6).

On the other hand, emotion regulation has been introduced as a factor that is associated with various types of psychological trauma including depression and anxiety (7). In fact, mood disorders and anxiety disorders are characterized by negative emotions that are persistent and intense. Therefore, the development of research on emotion regulation in depressed and anxious patients is needed (8). Given these needs, some researchers have recently suggested that therapeutic interventions should focus specifically on emotion regulation strategies, as such interventions may have positive effects on a wide range of emotional disorders (7). One of the important therapies in the field of emotional factors is the third wave therapies and specifically the mindfulness approach.

In mindfulness, the person becomes aware of his mental way at every moment, and after being aware of two ways of mind, one doing and the other being, he learns to move the mind from one way to another, which requires Teaching specific cognitive and metacognitive behavioral strategies to focus the attention process (9). Mindfulness-based interventions are effective in treating various psychological problems. Treatment of depression (10), reduction of negative psychological and physiological responses to stress (11) and Attention Deficit Hyperactivity Disorder (12) are some of the cases that: They have given an appropriate answer to the mind of consciousness. Stress-Based Mindfulness (MBSR) therapy is the most common type of these interventions, known as a stress reduction program and relaxation program, which can improve both coping with both depressive symptoms and coping skills. Affect the symptoms of stress and anxiety (13).

Another effective intervention approach in dealing with tensions is problem-solving therapy in manner of badle & lanx[1] method. Problem solving is an important coping strategy that increases the ability to make personal and social progress (14). In the typical problem-solving process, use to solve problems usually involves evaluating problems as challenges, thinking that problems can be solved, and It is the realization that problem solving requires systematic time and effort (15). On the other hand, in problem-solving therapy in manner of badle & lanx method, the focus is on creating a logical decision-making process on topics that often have high emotional rates. Problem-solving therapy also leads to a decision about what to do to solve people's communication problems (16). Therefore, problem-solving education for all ages with problems such as marital conflict, depression, life stress, anger management, courage and adjustment in school, is known to be effective (17) and this Applicability is expanding day by day due to its structure, short-term, and simple and understandable principles (15). On the other hand, many professionals are interested in learning mindfulness techniques and their application in problems and disorders (18). In particular, the implementation of mindfulness-based interventions in young people, both in the clinical and non-clinical population is increasing (19) and have shown their effectiveness in improving various disorders and the non-clinical population. Therefore, recognizing the effects of this type of intervention, especially mindfulness-based stress reduction therapy in interpersonal relationships, is essential for mental health professionals.

Methodology

The present study was a quasi-experimental study with selection of control group and measurement in pre-test and post-test. The statistical population of the present study was the students of the students present at the Northeastern Air Defense Therapy Center of Imam Reza (AS) in Mashhad in 1398. According to the research method and the fact that the minimum number of members in each group should be at least 15 people (20), and considering the possibility of loss of sample members during the interventions, among this number of soldiers using the sampling method Purposefully and by observing the inclusion criteria, first 40 subjects were selected as research subjects and these subjects were randomly divided into experimental (cognitive-therapeutic) and control groups so that each group of 20 A subject was formed. Inclusion criteria were no acute personality disorders, no chronic physical illness, literacy, age between 22 and 28 years, completeness of information received at the assessment stage, and informed satisfaction with attending the study and exclusion criteria. It also included having acute personality disorder, taking psychiatric drugs, not attending more than two sessions of treatment, distortion or incomplete information during treatment, and dissatisfaction of the subject at each stage of treatment. Both groups were examined before participating in the intervention session with research tools including the London Tower software test and the emotional self-regulation scale. Subsequently,

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mindfulness-based cognitive group therapy (21) and problem-solving therapy using Bedel and Lanx method (22) were performed by the researcher in 8 sessions of 90 minutes for the members of the experimental groups. During the implementation of psychological interventions for members of the experimental groups, no psychological intervention was provided for the control group. At the end of the intervention programs, both groups were evaluated post-test. In this study, the London Tower software test and the Cognitive Self-Regulation Scale along with the benefit of mindfulness-based stress therapy were used. Cognitive Self-Regulation Questionnaire: The Cognitive Emotion Regulation Questionnaire was developed by Granfski et al. (23). This questionnaire is multidimensional and self-report. It has 36 ingredients and has a special form for adults and children. The Cognitive Emotion Regulation Scale assesses self-blame, acceptance, rumination, positive refocus, refocus on planning, positive reappraisal, perspective, catastrophe, and blame of others. The questionnaire consists of 36 five-point graded questions (from always or never) that evaluate all four questions by one factor. Cronbach's alpha coefficient for the whole scale is reported to be 0.69 (24). Tower of London Software: The London Tower test was first designed by Shallis to measure the planning abilities of patients with forehead cortex injuries. In this test, examinees are asked to move a set of colored beads mounted on three vertical bars to match a specific purpose. In each experiment, the top row layout remains constant and shows the target layout. The bottom row consists of loops that the examinee rearranges to match the top row arrangement. Moving the rings is possible by first touching the ring and then touching the desired destination. The target position for the rings varies. But the starting point is kept constant. Test assignments are solved with at least two, three, four and five moves; This means that the minimum number of moves that the subject can do to solve the problem is this number. The variables include the following: a) The number of movements that is considered as a general measure of performance is the number of movements during which the subject has solved the problem. B) The programming time which is the time required to touch the first ring. C) The next thinking time is the time between choosing the first loop and completing the problem and it can also be used as a measure of performance. The Tower of London test, which is used to assess planning ability, is sensitive to the performance of the frontal cortex. The basis of scoring in this test is the effort that the person has solved the problem by doing it, as well as the number of problems solved, the number of attempts per problem, latency or design time, test time, total test time, number of errors And the total score is calculated accurately with a computer. The validity of this test is acceptable and 0.79 has been reported (3). Data obtained from the questionnaires were analyzed using SPSS-21 statistical data analysis software at the level of 0.05.

Table 1. Mindfulness-based cognitive therapy protocol

First session:	Introducing Yourself, Summary of Meetings, Eating a Raisin With all the emotion and discussion about how they feel, for homework, participants are asked to apply what they have learned from eating a raisin to brushing or washing dishes. .
second session:	Doing body scan meditation, discussing this experience and their homework experience, discussing the barriers to exercise (such as restlessness and mind wandering) and mindfulness program solutions to this problem (being non-judgmental and letting go of thoughts) Annoying), talking about the difference between thoughts and feelings and the role of personal perceptions Sitting Meditation, Assignment: Performing sitting meditation and scanning the body and mind of a new daily activity.
third session:	Discussion of homework, practice of seeing and hearing: In this exercise, participants are asked to look and listen non-judgmentally for 2 minutes, homework: sitting meditation, body scan or a mind-conscious body movement, exercise 3 A minute of breathing space, mindfulness of a new daily activity, and mindfulness of an unpleasant event.
fourth Session:	Attention to breathing with regard to body sounds and thoughts, discussion of stress responses and a person's reaction to difficult situations and alternative attitudes and behaviors Mindfulness Walking Exercise, Homework: Sitting meditation, body scan or one of the mindfulness body movements and 3 minute breathing space exercise (in an unpleasant event).

fifth Session:	Performing sitting meditation, performing the second series of mind-conscious body movements, the tasks of the next sessions are: sitting meditation, three-minute breathing space in an unpleasant event, and mindfulness of a new daily activity.
Sixth Session:	Practice three minutes of breathing space, discuss homework in two groups, practice that the content of the thoughts is mostly not real, four meditation exercises for 1 hour, homework: Choose a combination of meditations that is a personal preference. In addition, performing a three-minute breathing space in an unpleasant event and mindfulness of a new daily activity.
Seventh Session:	Doing four-dimensional meditation and being aware of everything that comes to mind in the moment, talking about what is the best way to take care of yourself, practicing about which life events are pleasant and which are unpleasant, and in addition how to make a plan that Enough pleasant events in it, three-minute breathing space, home exercise: Doing a combination of meditation that is preferred for the person, practicing three-minute breathing space in an unpleasant event, mindfulness of a new daily activity.
Eighth Session:	Discuss the use of what you have learned so far, body scan meditation, practice 3-minute breathing space, discuss ways to overcome the obstacles to meditation, talk about the whole session by asking questions such as Did the participants meet their expectations? Do they feel their personality has grown? Do they feel that their coping skills have improved and do they like to continue their meditation exercises?

Table 2. Problem-solving therapy protocol in manner of badle & lanx method

First session:	Familiarity and good relationship with group members with the help of eye contact, active listening, empathy, building trust, introducing group members to each other, explaining group rules to members, conducting questionnaires.
second session:	Identify problems in life and in the unit and prepare a list of problems in detail and break those problems into more detailed and solvable problems.
third session:	Prioritize the problems they are experiencing by focusing on one problem at a time, identifying the emotions associated with the problems, grading the relevant emotions from 0 to 10, what needs to happen to make them feel better, identifying the sources that They have at their disposal the coping strategies they have already used, identifying new sources of coping.
fourth Session:	List possible solutions, analyze the benefits and losses of each solution in detail, examine the exact consequences of each solution and its possible problems. Use brainstorming in this session.
fifth Session:	Choose the best possible solution according to the behavioral goals set.
Sixth Session:	Implementing the first solution that is more likely to be successful, using role-playing to practice solutions, challenging dysfunctional beliefs or thoughts that prevent the implementation of the solution, encouraging oneself to perform the problem-solving process, using The counselor provides the necessary advice and guidance during the work, notes the solutions and tasks provided to members and perform them in real life situation.
Seventh Session:	Identify successful solutions and separate them, control the results and re-examine the problem-solving process.
Eighth Session:	Summarizing and summarizing the results, evaluating the sessions, re-implementing the questionnaires

Findings

The mean age of the members in the control and experimental groups was 23.92 years and the standard deviation was 3.6. Using independent t-test, the mean age of the three groups was compared, which showed that the mean age of the members of the three groups was not significantly different. These data are shown separately for participants in each group in Table 2.

Table 2: How the age distribution of the subjects is divided into experimental and control groups

Probability value	Degrees of freedom	T	Standard deviation	Average	group
			3/41	23/71	MBSR
0/514	43	0/356	3/15	23/41	Problem solving
			3/79	24/13	Control group

Table 3 shows the descriptive indices of the mean and standard deviation of the subscales of emotion regulation strategies and executive functions. Based on the data in this table, it can be seen that the average members of the experimental groups in the post-test in all indicators is significantly different from the pre-test.

Table 3: Descriptive information related to research variables in two research groups

Executive functions	Perceptiveness	Positive evaluation	Focus on planning	Positive refocusing	the reception	variable	Time	group
24	10/73	1/060	10/93	11/26	9/46	Average	Pre test	MBSR
2/77	2/79	2/86	2/09	2/86	2/21	Standard deviation		
34/35	13/93	1/203	14/46	14/93	12/66	Average	Post test	
1/21	1/83	1/20	1/18	1/88	1/29	Standard deviation		
24/60	11/13	1/260	10/86	11/06	9/66	Average	Pre test	Problem solving
1/58	2/34	2/11	1/45	1/71	2/13	Standard deviation		
34/20	13/60	1/463	14/26	14/40	12/81	Average	Post test	
1/23	1/72	1/63	1/97	1/54	1/89	Standard deviation		
25/85	10/86	1/200	11/06	11/80	9/13	Average	Pre test	Control group
2/91	2/83	2/79	1/96	2/79	1/65	Standard deviation		
23/53	10/06	1/130	10/66	11/20	9/40	Average	Post test	
2/68	1/96	1/74	1/61	1/61	1/17	Standard deviation		

To evaluate the significant difference between the mean of members of experimental and control groups in pre-test and post-test, multivariate analysis of covariance was used for the variable of positive emotion regulation strategies and one-way analysis of covariance was used for the variable of executive functions. Assumptions related to homogeneity of variance, normality of data distribution, and pre-test and post-test alignment were examined, and the results confirmed them and allowed the researcher to use analysis of covariance. The results showed that the effect of Lambda-Wilkes statistic for all the variables was less than 0.05, which meant that the significant effect of this intervention method on positive emotion regulation strategies (P <0.001).

Table 4: Results of multivariate analysis of covariance for positive emotion regulation strategies

Out of group							Intergroup			
Impact coefficient	Probability value	F	Average squares	Degrees of freedom	Total squares	Subscales	Probability value	F	Lambda Wickels	Source
0/684	<0/001	4/0190	45/905	2	9/8101	Acceptance				
0/754	<0/001	5/6866	51/057	2	1/11502	Positive focus				
0/736	<0/001	5/6111	58/094	2	1/18916	Focus on planning	<0/001	1/6229	0/063	group
0/714	<0/001	4/1526	44/736	2	8/4719	re-evaluation				
0/588	<0/001	2/4026	59/675	2	1/35019	Perspectiveness				

The results show a significant difference between the mean of positive emotion regulation strategies in the members of the experimental groups compared to the members of the control group. Also, the obtained coefficient of effect indicates that mindfulness therapy has been able to significantly increase the average acceptance (P <0.001), positive refocus (P <0.001), refocus on planning (P <0.001), re-evaluation (P <0.001) and visibility (P <0.001) in the post-test. Table 7 presents the results of the Bonferroni post hoc test to compare the effectiveness of the two therapys provided to the members of the experimental groups.

Table 7. Bonferroni test results to compare the effectiveness of the presented interventions

Intergroup				
Probability value	Standard deviation error	difference in averages	group	Variable
>0/05	0/398	0/091	MBSR* problem solving	Acceptance
>0/05	0/352	0/452	MBSR* problem solving	Positive focus
>0/05	0/394	0/230	MBSR* problem solving	Focus on planning
>0/05	0/366	0/224	MBSR* problem solving	Re-evaluation
>0/05	0/558	0/316	MBSR* problem solving	Perspectiveness

The results obtained from Bonferroni post hoc test indicate that problem solving therapy and mindfulness therapy did not have a significant difference in the effectiveness of the interventions offered on positive emotion regulation strategies of the experimental group members (P <0.05).

Table 3. Results of one-way analysis of covariance for executive functions

Intergroup							
Probability value	Probability value	F	Average squares	Degrees of freedom	Total squares	Source	Variable
0/921	<0/001	239/389	419/131	2	838/261	group	Executive functions

Findings show a significant difference in the mean of executive functions in the members of the experimental groups compared to the members of the control group. Also, the obtained coefficient of effect indicates that mindfulness therapy and problem-solving therapy have been able to significantly increase the average of executive functions in the post-test (P <0.001). Table 5 presents the results of the Bonferroni post hoc test to compare the effectiveness of the two therapys provided to the members of the experimental groups.

Table 5. Bonferroni test results to compare the effectiveness of the presented interventions

Intergroup				
Probability value	Standard deviation error	difference in averages	group	Variable
>0/05	0/484	0/165	MBSR* problem solving	Executive functions

The results of Bonferroni post hoc test indicate that there is no significant difference between mindfulness therapy and problem-solving therapy in terms of effectiveness on executive functions of members of experimental groups (P <0.05).

Discussion

The aim of the present study was to investigate the effectiveness of mindfulness therapy on improving emotion regulation strategies and executive functions in student soldiers of the Northeastern Air Defense Center of Imam Reza (AS). Findings obtained from the analysis of statistical data show the effectiveness of interventions on improving emotion regulation strategies and executive functions. These findings are consistent with the results obtained by Kim et al. (25), Cezan et al. (16), Asikhia et al. (2015), Kral et al. (11), Swink et al. Sevinc (26) and Moynihan et al (27).

In explaining these findings, it can be said that the concept of executive functions includes all the complex cognitive processes that are necessary in performing difficult or new goal-oriented tasks (28). Examples of these processes are the regulation of planning, memory, attention, restraint, mental flexibility, and the initiation and monitoring of functions (29). They develop more complex executive functions such as problem solving (30). Therefore, the main problem in people who have low levels of executive functions is that their cognitive functions can not use their ability to use these functions in the performance of tasks. On the other hand, in the treatment of mindfulness, the effort is made to increase the capacity and ability of the information processing system based on the teaching of conscious and self-conscious tasks. This requires new metacognitive learning and behavioral strategies to focus on attention, avoid rumination, and tend to respond to anxious responses, and reduce unpleasant emotions while spreading new ideas (31). Problem-solving approaches, on the other hand, are based on the assumption that emotional responses are formed through interpretations, or meanings that we attribute to experiences. This idea

seems relatively straightforward and has a strong empirical aspect. The emergence and direction of effective therapies for a range of emotional disorders has been proven. There is a two-way relationship between cognition and emotion, there are special interpretations or meanings that precede emotional states, but such emotional states themselves increase the likelihood of these cognitions. The key to problem-solving therapy is the relationship between thought and emotion. The theoretical foundations of rational interventions are based on the assumption that human thinking and emotion are not two separate or different categories, but they are clearly overlapping and, in some respects, for practical purposes, are essentially the same (32). Thus, these interventions increase their ability to deal with stressful situations by influencing people's perceptions of emotional situations.

It was also found that interventions based on mindfulness therapy could significantly improve the positive emotion regulation strategies in the experimental group. Explaining this finding, it should also be noted that emotion regulation strategies lead to positive emotional and physical responses to the stimulus and through problem-solving responses, conscious efforts to change. They create a stressful situation. Since problem solving is often seen as a purposeful and specific activity in solving a problem that involves brainstorming solutions and planning for an activity, it should be noted that although the answers Problem solving does not regulate emotions in a direct and direct way, but can have a beneficial effect on emotions by modulating and eliminating stressors. In this regard, mindfulness therapy tries to cultivate mindfulness by creating the ability to observe without judgment about the ongoing flow of internal and external stimuli. In other words, when faced with a difficult emotional or physical state, not judging one's experiences creates the ability to be aware of experiences in a realistic way and without distracting mindsets and because emotion regulation is synonymous with cognitive coping and Related to cognitive strategies is the management of emotions using emotionally evoked information. Cognitive processes can help us to manage or regulate emotions or emotions in order to control emotions later. Be able to deal with anxious and stressful events.

Based on the findings of this study, the treatment of mindfulness by influencing the cognitive processes of individuals and the attitudes they acquire from stressful events, helps them to be able to cope with stressful situations, while mastering Adopt their emotional and cognitive system, the best strategy and strategy to solve the problem. One of the limitations of the research is the lack of control over the marital status and economic conditions of the people present in the research and the fact that the effect of education was not controlled by using the intervention group in the research. It is suggested that future researchers compare other therapeutic approaches with mindfulness therapy.

Thanks and appreciation

The sincere assistance of all the unit and medical personnel of the Northeastern Air Defense Center of Imam Reza (AS) in Mashhad, who helped us in this research, is thanked and appreciated.

No conflict of interest

There is no conflict of interest between the authors of this article.

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