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The Mediating Effect of Metacognition Learning on Mental Health of Veterans in Golestan Province, Iran

Tavakol Khanizade[1], Elaheh Angazi[2], Hadi Khanizade[3]

[1] MSc, Department of Health Psychology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran
[2] MSc in General Psychology, , Isfahan, Iran
[3] MSc, Department of Psychology, Kermanshah Branch, Islamic Azad University, Kermanshah, Iran

Empirical Study

Abstract

Background: The main purpose of the present study was to investigate the impact of metacognition learning on the mental health of veterans of Golestan Province, Iran.

Methods: The present study was an applied, semi-experimental study with a pretest-posttest design and a control group. The statistical population consists of all veterans of Golestan Province. From among this population, a sample of 200 people was selected through convenience sampling method. From among this sample, 100 people were selected as the experimental group and 100 people were selected as the control group. Both groups underwent the pretest and posttest. The members of the experimental group in each city were subjected to 6 sessions of metacognition training workshops lasting 2 hours in 10 cities of Golestan Province.

Results: The data analysis using independent group t-test showed that metacognition learning led to the reduction of disorders related to the four subscales of mental health which led to increased level of general health.

Conclusion: It can be concluded that metacognition learning led to an increase in the level of general health of the participants.

Keywords: Meta-Cognition, Learning, Mental Health

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Introduction

Various definitions have been presented for mental health hitherto, such as lack of disease, emotional balance, social adaptation, sense of comfort, personality integrity, and awareness of self and the environment. One of the definitions provided for mental health, which is widely accepted and used, is that people are mentally normal when they are in harmony with themselves and their environment, adapt to their cultural requirements and social facilities, and a medical disease or disorder does not cause the destruction of their reasoning, judgment, intellectual ability, and their personal and social adaptability (Kaplan & Sadock, 2003).

The role of mental health in various aspects of social life, working environment, family and society is indisputable and it aims to provide mental health by preventing

Corresponding Author:
Tavakol Khanizade
Email: tavakolkhanizadeh1368@gmail.com

complications, providing appropriate and timely treatment, and ultimately, creating a healthy environment for the establishment of healthy human relationships (Milani, 1999).

Metacognition is a new field of science that can lead to the formation of a training method for wise thinking and thoughtful decision-making, and better understanding and learning in educational settings. In general, metacognition is another way toward training. Metacognition can be defined as the "critical analysis of thoughts" and "knowledge and cognition of cognitive phenomenon", and in simpler words, "thinking about thinking" (Flavell, 1976). The 8-year imposed war has led to physical injuries, adverse neuropsychiatric complications, physical, emotional, and financial problems, and reduced social interactions that create a complicated life for veterans. Moreover, veterans are people who have faced the most complexities both during and after the war. Therefore, attention to mental health, communications, and interactions of veterans, and providing effective strategies, and teaching metacognitive concepts and how to use them in life are among the important goals of this study, which has also achieved important results.

Knowing that veterans have poor mental health and use more destructive communication patterns and negative thoughts, and the fact that learning metacognition can help them can assist professionals in helping these people solve their problems and manage their daily lives.

Considering the importance of pressures resulted from war and the many problems of veterans, we aimed to teach them metacognitive methods and measure their impact on their mental health. The importance of this study is due to the fact that it can result in the following functions:

- Reduced disorder in physical functions, anxiety, depression, etc., and improved social performance and interaction;
- Increased mental health and the creation of the grounds for the promotion of mental health and reduction of crises caused by physical and psychological disabilities of veterans;
- Learning metacognitive strategies and applying them in daily life.

The present study was an attempt at teaching metacognition and familiarizing veterans with cognitive trust, positive beliefs, cognitive self-awareness, how to deal with and control negative beliefs, and how to use metacognitive strategies in life, and ultimately, increase their general health.

Research hypotheses: 1. Metacognition learning leads to a reduction in veterans' physical symptoms.

2. Metacognition learning leads to the reduction of anxiety and sleep disorder in veterans.

3. Metacognition learning leads to the reduction of disorder in social function of veterans.

4. Metacognition learning leads to the reduction of severe depression in veterans.

5. Metacognition learning leads to an increased level of mental health in veterans.

Methods

A semi-experimental and pretest-posttest design with a control group was used in the present study. In this design, according to Figure 1, two groups of subjects are selected. Before applying the independent variable (only for the experimental group), both groups are evaluated in the pretest. After applying the independent variable on the experimental group (and not applying it for the control group), again both groups are evaluated in the posttest (Delavar, 2009).

E	T_1	X	T_2
C	T_1	_	T_2

Figure 1: Unequal control group design with pretest and posttest

The statistical population of the present study consisted of all veterans diagnosed with chemical, shots and fragments, blast wave, and nervous and psychosocial injuries, and mutilation. The statistical population (17,640 people) consisted of individuals who,

according to the diagnosis of doctors and medical commission, are veterans, have some percentage of injuries, and are covered by the Foundation of Martyrs and Veterans Affairs in Golestan Province, Iran. From among the statistical population, 200 people were selected from among which 100 subjects were selected as the experimental group and 100 were selected as the control group. The sampling method used was convenience sampling.

Method of holding workshops and teaching metacognition

After undergoing the administrative steps in selecting the target community and providing financial resources for the training workshops, the methodology of the training workshops was determined as listed below.

The first session: Pretest was implemented among the participants at the beginning of their entrance into the training workshops.

The second session: The second session consisted of an opening, introduction, and development and description of the metacognitive training workshops plan in patients with post-traumatic stress disorder (PTSD) and the division of the participants into groups of 9 to 15 people.

The third session: The participants made a list of their educational needs, and then, the educational sessions were directed toward metacognitive topics in the 5 categories used in metacognition including self-regulation, cognitive trust, cognitive confidence, controlling negative thoughts, and positive beliefs, and interpretation of these topics based on the temporal necessities. In the third session of the workshop, people, enjoying opportunities of the workshop, discussed the recollection and refreshing of the relevant flashbacks, and at the end of the third session, the teachers provided a description of metacognitive beliefs and the metacognition concept (pages 1 to 10 of the package).

The fourth session: In this session, metacognitive concepts associated with PTSD, metacognitive models and beliefs, and academic metacognitive strategies (pages 11 to 30 of the package) were taught. Conceptualization was performed and discussed based on the metacognitive table of Wells and Sombie under the title of automatic adaptive processing. In this section, the concepts of this model and concepts such as symptoms including disturbing thoughts and images, arousal, and biased responses were discussed as emotional processing as natural reactions after the accident (extracted from page 24 of the book).

The fifth session: In the fifth session of the workshop, other concepts of the metacognitive model in PTSD patients were described by the teachers under the titles of worry and rumination, threats review, types of confrontation avoidance, and self-evaluation. Then, participants, as a group work, listed the efficient and inefficient metacognitive strategies. In this session, they became aware of efficient metacognitive strategies such as self-regulation, cognitive trust, cognitive awareness, and positive thoughts and discussed them. The three stages of war and defense, the stages of development of defensive identities, Iraqis' belief in their disability, belief in war without a winner, belief in Iraq's isolation, and whether defensive identities are rootless or rooted in religions (pages 31 to 96 of the package) were also described.

The sixth session: In this session, inefficient metacognitive strategies such as anxiety, death due to war and violence, and sense guilt were described and taught under the titles of phenomenon of anxiety about death due to war and violence, and events and symptoms that reduce death anxiety, thoughts and mental schemas of fighters, mechanism of sense of guilt, mechanisms of thinking about death, wanting death, fighting death, and so forth. Moreover, the impact of death anxiety mechanism on war fighters and victims of accidents was discussed. At the end of the session, after completion of the workshop, the participants had the opportunity to express their individual feelings freely, and then, the mental health posttest was performed in both groups.

It is worth mentioning that the above

workshops were held and taught by Dr. Saeed Bani Fatemi and Dr. Haghighi, and the above tests were carried out by Elaheh Angazi. The workshops, as mentioned in the attached letter, were held from 2011.12.23 to 2012.02.23.

The only data collection tool used was the Goldberg General Health Questionnaire (GHQ-28). The items of the GHQ-28 are scored on a 4-point scale ranging from 0 to 3 (options A to D, respectively). Therefore, the score of each person in each subscale will range from 0 to 21, and the total score of the questionnaire will range from 0 to 84.

The scores of each participant in each scale are calculated separately, and then, the total score is obtained as the sum of the scores of the 4 subscales. In this questionnaire, a low score indicates better mental health. Based on the obtained score and using the table below, the status of the person in each subscale and in the whole questionnaire can be determined. According to this table, it can be said that a score of 17 and higher in each subscale and a score of 41 and higher in the total scale indicate very poor mental health. The results of several studies indicate that there is a strong correlation between the results obtained from GHQ-28 and the 60 articles of general health in the diagnosis of psychological disorders (Medina, Mora et al., 1983, quoted from Hamidi, 2003), and the GHQ-28 has adequate ability to assess severity of psychological disorders (Robbins and Brakes, 1981, quoted from Hamidi, 2003).

Evidences related to GHQ validity

A. Out of the country: Goldberg (1970) reported the correlation between GHQ scores and the result of clinical evaluation of the disorders to be +0.80. In addition, in another study, Goldberg, Rickels, Downing, and Hesbacher (1976) reported the correlation between GHQ scores and SCL-90 to be +0.78. Jones et al. (1978) reported the correlation between GHQ scores and PSE-90 to be 76%. Chan and Chan (1983), and Cheung and Spears (1994) reported the internal coordination coefficient of GHQ-30 and GHQ-28 questionnaires to be 0.85 and 0.85, respectively (quoted from Houman, 1992).

B. Inside the country: In Iran, several studies have been conducted on various statistical populations such as university students, and students and employees.

Hamidi (2003), Palahang (1995), Yaghobi (2008), Tabatabai and Rasouli (2016) have reported the validity of the Persian version of the GHQ-28 to be equal to 84%, 88%, 62%, 61%, 73%, 96%, respectively.

Results

The first hypothesis: Metacognition learning leads to a reduction in veterans' physical symptoms.

As can be seen in table 1, the mean differences in physical symptoms in the test group are greater than the control group.

Table 1. Descriptive statistics of the difference between pretest and posttest in terms of physical symptoms

Descriptive statistics of groups				
	Group	N	Mean ± SD	Mean standard error
Physical symptoms	Test	100	9.85 ± 2.92	0.291
	Control	100	0.70 ± 3.18	0.317

According to the results presented in table 2, significance level of sig1 = 0.339 is greater than 0.05, which proves the equality of variances.

Table 2. Independent t-test of differences between groups in physical symptoms

Independent t-test								
		Levene's test for equality of variances		Independent t-test for mean equality				
		F	P1	t	Degree of freedom	P2	95% confidence interval	
							Lower bound	Upper bound
Physical symptoms	Assumption of equality of variances	0.733	0.393	21.2	198	< 0.001	8.29	10.00
	Assumption of inequality of variances			21.2	196.5	< 0.001	8.29	10.00

Table 3. Descriptive statistics of the difference between pretest and posttest in terms of anxiety and sleep disorder

Descriptive statistics of groups				
	Group	N	Mean ± SD	Mean standard error
Difference between scores of anxiety and sleep disorder	Test	100	8.75 ± 3.118	0.311
	Control	100	0.54 ± 4.391	0.439

In t-test, the significance level is sig2 < 0.001 and less than 0.05; thus, there is a significant difference between the experimental and control groups in terms of physical symptoms in the pretest and posttest.

The second hypothesis: Metacognition learning leads to the reduction of anxiety and sleep disorder in veterans.

As can be seen in the table 3, the mean differences in anxiety and sleep disorder in the test group is greater than in the control group.

According to the results presented in table 4, the significance level of sig1 < 0.001 is less than 0.05, so the equality of variances is rejected. Therefore, assuming inequality of variances in t-test, the significance level of sig2 < 0.001 is less than 0.05. Therefore, there is a significant difference between the experimental and control groups in terms of anxiety and sleep disorder in the pretest and posttest.

The third hypothesis: Metacognition learning leads to the reduction of disorders in social function of veterans.

As can be seen in table 5, the mean differences in social function in the experimental group were greater than in the control group.

According to the results presented in table 6, the significance level of P1 = 0.440 is greater than 0.05, which proves the equality of variances. Moreover, in t-test, the significance level of P2 < 0.001 is less than 0.05. Therefore, there is a significant difference between the experimental and control groups in terms of social function disorder in the pretest and posttest.

The fourth hypothesis: Metacognition learning leads to the reduction in severe depression of veterans.

As can be seen in table 7, the mean differences in anxiety in the experimental group were greater than in the control group.

According to the results presented in table 8, the significance level of sig1 = 0.002 is less than 0.05, so the equality of variances is rejected. Assuming inequality of variances, we can see in the t-test that the significance level of sig2 < 0.001 is less than 0.05. Therefore, there is a significant difference between the experimental and control groups in terms of depression in the pretest and posttest.

The fifth hypothesis: Metacognition learning leads to increased mental health in veterans.

As can be seen in table 9, the mean differences in mental health in the experimental group is greater than in the control group.

According to the results presented in table 10, the significance level of sig1 = 0.027 is less than 0.05, so the equality of variances is rejected. Assuming inequality of variances, we can see that in the t-test, the significance level of sig2 < 0.001 is less than 0.05. Therefore, there is a significant difference between the experimental and control groups in terms of mental health in the pretest and posttest.

Discussion

Empirical and theoretical results of the research

Hypothesis 1: Metacognition learning leads to a reduction in veterans' physical symptoms.

Table 4. Independent t-test of differences between groups in terms of anxiety and sleep disorder

Independent t-test								
		Levene's test for equality of variances		Independent t-test for mean equality				
		F	P1	t	Degree of freedom	P2	95% confidence interval	
							Lower bound	Upper bound
Anxiety and sleep disorder	Assumption of equality of variances	13.651	< 0.001	15.2	198	< 0.001	7.14793	9.272
	Assumption of inequality of variances			15.2	178.6	< 0.001	7.147	9.272

Table 5. Descriptive statistics of the difference between pretest and posttest in terms of social function

Descriptive statistics of groups				
	Group	N	Mean ± SD	Mean standard error
Difference between scores of social function	Test	100	8.81 ± 2.983	0.298
	Control	100	0.62 ± 3.087	0.308

The results showed that metacognition learning leads to a reduction in veterans' physical symptoms. Previous studies have not precisely worked on this issue; however, Aversa et al. have examined the combined effect of PTSD, depression, and smoking on physical symptoms as three determining variables.

They indicated that overlapping of some of the symptoms of PTSD and depression may cause an increase in the incidence rate of physical diseases simultaneously. They suggested that both PTSD and depression are independently related to physical pain (Aversa et al., 2012). In general, the differential effect of depression has been less considered in comparison to the physical health of war veterans; a better understanding of this variable can increase our understanding of the relationship between mental and physical health (Rauch, Favorite, Giardino, Porcari, Defever, & Liberzon, 2010).

Hypothesis 2: Metacognition learning leads to the reduction of anxiety and sleep disorder in veterans.

The results showed that learning metacognition reduces anxiety and sleep disorder in individuals. These results are consistent with previous results that have examined the effect of metacognitive therapy on veterans with PTSD (Bakhtavar, Neshatdoust, Moulavi, & Bahrami, 2007). It is also consistent with the results of studies that have examined the role of metacognition in obsessive-compulsive disorder (OCD) and pervasive anxiety, and have found a significant relationship between metacognition and reduction of anxiety and OCD symptoms (Irak & Tosun, 2008).

Hypothesis 3: Metacognition learning leads to the reduction of social function disorder in veterans.

The results showed that metacognition learning improves the social performance of veterans. A previous study that has examined metacognition and performance in schizophrenic individuals found that metacognition improves social performance (Lysaker et al., 2011). Despite the difference in the studied individuals, the results are consistent with this hypothesis (Lysaker et al., 2011).

Hypothesis 4: Metacognition learning leads to the reduction in severe depression of veterans.

Table 6. Independent t-test of differences between groups in social function

Independent t-test								
		Levene's test for equality of variances		Independent t-test for mean equality				
		F	P1	t	Degree of freedom	P2	95% confidence interval	
							Lower bound	Upper bound
Difference of scores in social function	Assumption of equality of variances	0.440	0.508	21.9	198	< 0.001	8.58	10.27
	Assumption of inequality of variances			21.9	197.7	< 0.001	8.58	10.27

Table 7. Descriptive statistics of the difference between pretest and posttest in terms of depression

Descriptive statistics of groups				
	Group	N	Mean ± SD	Mean standard error
Difference between scores of depression	Test	100	11.78 ± 3.29	0.328
	Control	100	0.68 ± 4.42	0.442

Table 8. Independent t-test of differences between groups in terms of depression and tendency toward suicide

Independent t-test								
		Levene's test for equality of variances		Independent t-test for mean equality				
		F	P1	t	Degree of freedom	P2	95% confidence interval	
							Lower bound	Upper bound
Difference between scores of depression and tendency toward suicide	Assumption of equality of variances	10.155	0.002	20.1	198	< 0.001	10.013	12.186
	Assumption of inequality of variances			20.1	182.7	< 0.001	10.12	12.187

The results showed that learning metacognition and its strategies reduces depression and tendency toward suicide in veterans. These results are consistent with that of a previous study that examined the role of metacognition in anxiety and depression and their negative impact on life and smoking in 202 people and found that metacognition has a positive effect on reduction of the mentioned symptoms (Jens Sewell, 2010).

Hypothesis 5: Metacognition learning leads to increased mental health in veterans.

The results showed that metacognition learning and its components increase the mental health of veterans. There is currently no research in this area. However, as the relationship between metacognition and all mental health subscales was significant according to global researches, it can be concluded that metacognition improves mental health.

Conclusion

In all findings of this study, the important conclusion was that metacognition learning leads to an increase in the level of general health of the participants; that is, it can be said that factors affecting the increased level of general health in veterans have been learning cognitive trust, positive beliefs about worries, cognitive self-awareness, and controlling of negative beliefs and beliefs about the need to control thoughts.

Given that such trainings have not been provided so far, and general health affairs of veterans have been less considered, the related authorities should note that attention to training is a vital and continuous issue. Furthermore, these results obtained in different studies can show the need for more attention to teaching metacognition and increasing the level of general health in veterans.

Conflict of Interests

Authors have no conflict of interests.

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Table 9. Descriptive statistics of the difference between pretest and posttest in terms of the mental health scale

Descriptive statistics of groups				
	Group	N	Mean ± SD	Mean standard error
Difference between scores of mental health	Test	100	39.19 ± 8.67	0.866
	Control	100	1.30 ± 10.87	1.087

Table 10. Independent t-test of differences between groups in terms of mental health

Independent t-test								
		Levene's test for equality of variances		Independent t-test for mean equality				
		F	P1	t	Degree of freedom	P2	95% confidence interval	
							Lower bound	Upper bound
Difference between scores of mental health	Assumption of equality of variances	4.971	0.027	27.2	198	< 0.001	35.147	40.63
	Assumption of inequality of variances			27.2	188.6	< 0.001	35.146	40.63

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References

Aversa, L. H., Stoddard, J. A., Doran, N. M., Au, S., Chow, B., McFall, M. et al. (2012). PTSD and depression as predictors of physical health-related quality of life in tobacco-dependent veterans. *J Psychosom.Res*, *73*(3), 185-190. doi:S0022-3999(12)00178-X [pii];10.1016/j.jpsychores.2012.06.010 [doi]. Retrieved from PM:22850258

Bakhtavar, E., Neshatdoust, H. T., Moulavi, H., & Bahrami, F. (2007). Efficacy of meta cognitive behavioral therapy in reducing self punishment in patients with post traumatic stress disorder. *J Res Behav Sci*, *5*(2), 93-98.

Chan, D. W., & Chan, T. S. (1983). Reliability, validity and the structure of the General Health Questionnaire in a Chinese context. *Psychol Med*, *13*(2), 363-371. Retrieved from PM:6878523

Cheung, P., & Spears, G. (1994). Reliability and validity of the Cambodian version of the 28-item General Health Questionnaire. *Soc Psychiatry.Psychiatr.Epidemiol.*, *29*(2), 95-99. Retrieved from PM:8009326

Delavar, A. (2009). *Educational and psychological research* (27th ed.). Thehran, Iran: Virayesh Publicatins.

Flavell, J. H. (1976). Metacognitive aspects of problem solving. In L. B. Resnick (Ed.), The nature of intelligence (pp. 231-235). Hillsdale, NJ: Earlbaum.

Goldberg. (1970). 28 -item short form questionnaire, GHQ mental health survey.

Goldberg, D. P., Rickels, K., Downing, R., & Hesbacher, P. (1976). A comparison of two psychiatric screening tests. *Br.J Psychiatry.*, *129*, 61-67. doi:S0007125000093430 [pii];10.1192/bjp.129.1.61 [doi]. Retrieved from PM:938806

Hooman, A. (2019). *Standardization and normalization of general health questionnaire for undergraduate students of Tarbiat Moallem University*. Tehran, Iran: Educational Institution, Kharazmi University.

Irak, M., & Tosun, A. (2008). Exploring the role of metacognition in obsessive--compulsive and anxiety symptoms. *J Anxiety Disord.*, *22*(8), 1316-1325. doi:S0887-6185(08)00045-5 [pii];10.1016/j.janxdis.2008.01.012 [doi]. Retrieved from PM:18339516

Kaplan, H. I., & Sadock, B. (2003). *Synopsis of psychiatry: behavioral sciences, clinical psychiatry. Trans. Rafie, H., Rezaei F*. Arjmand Publications: Tehran, Iran.

Larkin, S. (2010). *Metacognition in young children*. London, UK: Routledge.

Lysaker, P. H., McCormick, B. P., Snethen, G., Buck, K. D., Hamm, J. A., Grant, M. et al. (2011). Metacognition and social function in schizophrenia: associations of mastery with functional skills competence. *Schizophr.Res*, *131*(1-3), 214-218. doi:S0920-9964(11)00316-1 [pii];10.1016/j.schres.2011.06.011 [doi]. Retrieved from PM:21745724

Milani, B. (1999). *Mental Health*. Theran, Iran: Ghoomes Publications.

Ormel, J., Koeter, M. W., van den Brink, W., & Giel, R. (1989). Concurrent validity of GHQ-28 and PSE as measures of change. *Psychol Med*, *19*(4), 1007-1013. Retrieved from PM:2594877

Palahang, H. (1995). *Epidemiology of mental disorders in Kashan townships [MSc Thesis]*. Tehran, Iran: Iran University of Medical Sciences.

Rauch, S. A. M., Favorite, T., Giardino, N., Porcari, C., Defever, E., & Liberzon, I. (2010). Relationship between anxiety, depression, and health satisfaction among veterans with PTSD. *Journal of Affective Disorders*, *121*(1), 165-168. Retrieved from http://www.sciencedirect.com/science/article/pii/S0165032709002341

Taghavi, S. M. R. (2002). Validity and reliability of the General Health Questionnaire (GHQ-28) in college students of Shiraz University. *Journal of Psychology*, *5*(4), 381-398.

Yaghobi, H. (2008). Screening of mental disorders:

The Place of examinations and how to determine the cutting score and validation. *Mental Health, 1*(1), 39-51.

Yaghubi, N., Nasr, M., & Shahmohammadi, D. (1995). Epidemiology of mental disorders in Urabn and rural areas of sowmaesara-Gillan. *Iran J Psychiatry Clin Psychol, 1*(4), 55-60.

Yaris, S. (2010). *The mediating role of metacognition on the relationship among depression/anxiety/ negative impact of life experiences and smoking dependence [MSc Thesis]*. Ankara, Turkey: Middle East Technical University