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The Comparison of Working Memory Performance in Depressed Male and Female Employees

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ABSTRACT: Given the prominent role of working memory in cognitive functions, this study aims to compare the working memory performance of depressed male and female employees in the Organization of Industry, Mine and Trade of Tabriz. The study is causal-comparative. The population consisted of the employees of the Organization of Industry, Mine and Trade of Tabriz in 2014 and they were 320 people. 37 people of the depressed employees were selected as a sample. Sampling was performed in a stratified random way. To do this research, the Beck Depression Inventory, sub-test of numerical memory of Wechsler and visual memory tests of Andre Rey were used. Independent t-test was used for data analysis. The results showed that the performance of visual memory and auditory memory in depressed female employees was weaker than the depressed male ($p<0.05$).

Keywords: Depression, Working Memory, Performance, Gender.

INTRODUCTION

Today, there is a public consensus among experts that memory bias in depressed patients is common. Approximately 50 to 75 percent of depressed patients are suffering from cognitive impairment. These patients often complain of impaired concentration and forgetfulness. Ignoring the environmental discoveries shows slowness of intellectual activity and the inability of mental concentration, memory and learning deficits (Karraz, 2008).

The comparison studies of depressed and non-depressed people indicates bad functionality, and deficits in motor - cognitive and psychological functions of depressed people in actions of processing information, speed of information processing, short-term memory, decision-making and planning. Cognitive deficiencies of depressed people can be attributed to incorrect resources and processes of information processing in these individuals (Robinson et al., 2007).

On gender, there are at least 6 significant differences related including verbal ability, visuospatial analysis, mathematical ability and perception of motor and aggression skills. Although differences related to gender is unclear, biology has probably a role in it. Hormones are one of the topics of biology which are different in the two different genders. Besides the basic functions of gender hormones associated with reproduction and fertility, their effects on other organs such as the brain cannot be ignored. The effect of these hormones on the cognition in animals and humans has been studied during the studies. One of these studies has been the evaluation of the effects of synthetic hormones on the cognition, especially memory (Karraz, 2008).

Looking at the prominent feature of today's society and moving into the modern world and on increasing working efficiency, the attention to the working memory dysfunction or failure by affecting the depression is used. Also, given the prevalence of almost 2 times the rate of depression among the women, however, the comparison of working memory performance between males and females is important.

Depression is a normal biological psychological reaction (biological psycho) against stress. Depression is a disorder that the patient has symptoms of low mood and loss of energy and passion, guilt, difficulty concentrating, loss of appetite and thoughts of death and suicide (Kaplan & Sadock, 2012).

Depression is said to a set of signs which human verbal and nonverbal behaviors reflect for environmental situations or some of physiological changes. Therefore, it must be said that mild depression is transient with the signs of a slight decline of the human emotional states and timed depression with increasing signs is regarded as emotional disturbance (Zavabeti, 1986). Kraepelin knows depression as a kind of poisoning (Birjandi, 1991).

International observations unrelated to the country under studying have shown unipolar depression in the women two times more common than the men. Most studies show that mood disorders are more common in the women than the men (Pour Afkari, 1990). According to Boyd and Vebson (1981), the women are prone to depression more than the men. Kellerman and Visman say that the number of the women who is diagnosed with depression is twice as many the men (Sarason et al., 2002).

Psychosocial factors resulting in increasing the women's vulnerability to depression may play a role. Stress is among multiple jobs and family responsibilities, physical and sexual abuse, gender discrimination, lack of social support, traumatic life experiences and poverty. Gender differences in the two neurotransmitter systems have traditionally been implicated in pathophysiology of depression (noradrenaline and serotonin), but their role is still unclear.

Gender differences in the prevalence of depression have been reported in numerous studies. For example, the prevalence of depression among the women is mentioned from 1.5 to 3 times of depression to the men in some studies. Wade (2002) has shown in other studies that regardless of social - economic nationality or level, the women significantly result in more depression than the men (Piccinelli & Wilkinson, 2000).

Based on their research, Ramazani et al (2009) concluded that depressed mood was associated with active memory function weakness and depression is faced with difficulty in both verbal and visual processes.

According to their research, Behjati and Khabbaz (2012) concluded that depressed people had weaker emotional working memory than non-depressed people.

Reviewing the studies related to the effect of depression on cognitive functions, Castaneda (2008) concluded that executive functions including working memory performance in both verbal and visual in depressed patients were faced with difficulty.

Using meta-analysis, Vanreeswijk and De Wilde (2004) showed that depression with more holistic memory had a close relationship. In this way, memory has been less specific a description in the depressed patients compared to non-depressed ones and this had a tendency to more holistic.

Sutherland and Bryant (2007) in the study of the role of rumination on autobiographical memory showed that individuals with high depression versus mild depressed or non-depressed ones were more holistic to the higher rate in the personal memory retrieval after the presentations of assignments creating rumination.

Lejbak (2011) in his research also showed that the men on the performance of visual and auditory memory had better performance than the women. The reason for this difference may be fewer and differences in the age group under studying.

Behjati and Khabbaz (2012) in their research concluded that there was no difference between the scores of memory and gender.

According to the statistics of Welfare Organization, one third of the women in Tehran province suffer from depression at different levels. According to the Diagnostic and Statistical Manual of Mental Disorders, the fourth edition of major depression in the women compared to the men at a ratio of two to one to three are more common, but about two genders have been reported equal between the women and the bipolar disorder prevalence of the men.

World Health Organization studies on four continents in the depression between the men and women in primary health care centers have not reported gender differences in depression (Kohen, 2000).

Memory performance is one of the most complex and the most important components discussed by cognitive psychologists. All learnings signify memory. If we want to use our past experiences, we need the memory of the previous events. Our information learned will be suitable when we recall in the future and events in which we need (Rabinson and Rabinson, 2009).

In the broadest sense, memory signifies on learning what has been experienced. Without memory, we will respond to any such event as if we had not experienced it (Van der Senden, 1993, quoted by Yousefi Louyeh, 2000).

Gender differences in brain structure are related to different distribution from the estrogen and progesterone receptors during development. Gold Stein et al., performed a monumental study of MRI of dimorphism of brain in the men and women. Gender differences were greatest in areas of the human brain which the emergence of androgen receptors and estrogen during development was observed in those areas during non-human studies. Much of gender differences in brain structure can be related to the differences in the distribution of estrogen and androgen receptors in the brain during the development. Given the above, the main question of this study is whether there is a difference between depressed staff working memory performance of the man in comparison with the depressed employees of the women or not?

MATERIALS AND METHODS

The present study is causal-comparative based on the subject from the Ex post facto kind.

The population consists of the depressed employees of the man and woman of the Organization of Industry, Mine and Trade working in Tabriz (the number of the employees was 320 people, 208 men and 112 women) that they were working in 2014.

The study group consists of 37 people with depressed employees (15 women and 22 men).

Samples were selected through stratified random sampling among the staff.

To collect data, the Beck Depression Inventory, sub-test of numerical memory of Wechsler and visual memory tests of Andre Rey were used.

The Beck Depression Inventory

The Beck Depression Inventory is the second edition (BDI-II) of a reviewed form of the Beck Depression Inventory designed to assess the severity of depression (Beck, Brown and Steer, 2002). 21 items of depression inventory were classified in three groups of emotional, cognitive and somatic symptoms. Each question has four options. In this test, the subject was asked to choose an option in each question which states his state when responding to the question. In the depression test of Beck, given that the first option for each question is 0 point, the second option 1 point, the third option 2 points and the fourth option is 3 points, the score of the subject was collected based on the responses to each question. In this test, the subjects who achieved a score of 17 and above were considered depressed people and the subjects who achieved a score less than 17 were non-depressed people.

Wechsler numeral memory test: This test was designed in two parts of direct digit and inverse span. This test consists of multiple sequences of numbers that will be presented for listening to the test and the participant must repeat reversely, directly and respectively. Wechsler numeral memory sub-set of the adult contained two categories of sequence and reverse numbers that the subject was asked to listen carefully and he repeats after a series of the numbers were read for him. If the participant correctly repeated the first series, the second series were offered. But if he did not repeat, the second group of the series of the numbers was read for him and if the second group was just repeated, the later series was offered. Obviously, whenever the subject was not able to repeat the numbers of the two first and second groups, the test was stopped. Then, the subject of the reverse numbers was performed.

In the test of reverse numbers, the tester explains an example to the subjects that I would say some numbers that all must state their reverse. It is worth noting the test instruction as well as the numbers was sequential. After performing Wechsler numeral memory test, the important thing for scoring was the answers provided, in order to score the test, there was two scores related to the test of ordinal numbers (a total of 9 points) and the test of negative numbers (a total of 8 points) that the final score was the sum of the test scores.

Visual memory tests of Andre Rey: Test of "mixed geometric images" or visual memory tests of Andre Rey was created in 1942 in order to assess the kind of the perceived activity of visual memory of visitors to clinics of psychology and psychiatry. The test consists of two phases. Firstly, the test card was placed in front of the subjects and he was asked that he pick one like it. In the second phase, the card was taken from the front of the subject. The subject was given three minutes to relax and a non-emotional chat with him. Then, after three minutes, he was asked to take on another tab on the memory of those forms.

After implementing the test, scoring was performed. Thus, the shapes on the cards constituted 18 parts. If each of the components was taken correctly, they were in their place, 2 scores. If each of the components was taken correctly, they were not in their place, 1 score. If each of the components was taken incorrectly, they were not in their place, 0.5 score. If each of the components was taken very bad not recognized, no score included to it. Thus, the maximum score for each of the subject was 36 points.

To analyze the data, independent t-test was used

RESULTS

In this study, 15 depressed employees of the women and 22 depressed employees of the men were participated.

First hypothesis: There is a significant difference between visual working memory performance of the depressed employees of the men and women.

To investigate the above hypothesis, independent t-test was used and the results are presented in Table 1. The results show that the rate of visual memory in depressed employees of the men (m = 23.5) is more than the depressed employees of the women (m = 21.06) ($p<0.05$).

Second hypothesis: There is a significant difference between auditory working memory performance of the depressed employees of the men and women.

To investigate the above hypothesis, independent t-test was used and the results are presented in Table 1. The results show that the rate of auditory memory in depressed employees of the men (m = 9.04) is more than the depressed employees of the women (m = 8.4) ($p<0.05$).

Table 1. The results of independent t-test to compare the performance of the two groups of depressed employees of the men and women.

	Gender	Mean	SD	T	df	p
Visual memory	Man	23.5	3.08	2.595	35	0.014
	Woman	21.06	2.59			
Auditory Memory	Man	9.04	1.61	1.977	35	0.048
	Woman	8.4	0.98			

CONCLUSION

The aim of the present research was to compare working memory performance (visual memory and auditory memory) of the depressed employees of the men and women. For this purpose, the ex post facto method was used. In this method, the depressed patients were first identified. Then on the staff, auditory memory test of the Wechsler auditory memory test of the adults and visual memory test of Andre Rey were performed. The results showed that:

First hypothesis: there is a significant difference between visual working memory performance of the depressed employees of the men and women.

On the role of depression on visual memory of depressed people with each gender, it can be said that the memory function of depressed people of the male and female is different. In other words, visual memory performance in depressed female individuals is weaker than visual memory performance in males.

Second hypothesis: there is a significant difference between auditory working memory performance of the depressed employees of the men and women.

On the role of depression on auditory memory of depressed people with each gender, it can be said that the memory function of depressed people of the male and female is different. In other words, auditory memory performance in depressed female individuals is weaker than auditory memory performance in males.

According to Pelosi (2000), working memory impairments are the main problem of the memory in depressed patients. Visual and auditory memory is among working memory types. Visual memory is said to the ability to recall things that people have already seen and auditory memory is the ability to verbal processing provided orally, subjective analysis and saving it to remind again (Taqizadeh et al., 2014). On explaining gender differences in visual and auditory memory, it can be said that depressed people have biases in perception and processing of information. Therefore, as long as they act in the selective way, they cannot receive and process all of visual and auditory information and they just process a part of it and this difference may be due to more biases of the women than the men. The reason for the difference of the above result with some studies can be the difference in testing tools and sample age group.

Conflict of Interest

The authors declare no conflict of interest.

REFERENCES

Behjati, Z., & Khabbaz, M. (2012). The comparison of the affective working memory in depressed and non-depressed women. Journal of Counseling and Psychotherapy Culture, 3(9).

Birjandi, P. (1991). Psychology of abnormal behavior. Tehran: Dehkhoda Publication.

Burt, D. B. ; Zembar, M. J. ; Niederehe G. (1995). Depression and memory impairment: a meta-analysis of the association, its pattern, and specificity. Psychological Bulletin, Volume 117. Pp. 285–305.

Castaneda, A.; Tuulio-Henriksson, A.; Marttunen, M. ; Lonnqvist, J. ; Suvisaari, J. (2008). A review on cognitive impairments in depressive and anxiety disorders with a focus on young adults. Journal of Affective Disorders, Volume 106. Pp. 1–27.

Ellis, H. C. ; Ashbrook, P. W. (1988). Resource allocation model of the effects of depressed mood states on memory. In K. Fiedler & J. P. Forgas (Eds.), Affect, Cognition, and Social Behavior (pp. 25–43). Gottingen: Hogrefe.

Kaplan, H., & Sadock, B. (2012). Synopsis of Psychiatry. Translated by Nusratullah Pour Afkari. Tehran: Shahrab publications.

Karraz, J. (2008). Mental illnesses. Translated by Mahmoud Mansour and Parirokh Dadsetan. Tehra: Roshd.

Lepore, S. J. (1997). Expressive writing moderates the relation between intrusive thoughts and depressive symptoms. Journal of Personality and Social Psychology, Volume 73, Issue 5. Pp. 1030-7.

Pelosi, L. ; Slade, T. ; Bluomhardt, L. D. ; Sharma, V. K. (2000). Working memory dysfunction in major depression: An event related potential study. Clin Neurophysiol2000, Volume 111, Issue 9. Pp. 1531-43.

Pour Afkari, N. (1990). Psychiatric genetics. Tabriz: Zoqi

Ramazani, V., Moradi, A., & Ahmadi, A. (2009). Working memory function in female students with high and normal depressive symptoms. Journal of Behavioral Sciences, 3(4), 339-344.

Robinson, N., Robinson, M., & Hubert, B. (2007). Mentally retarded children. Translated by Farhad Maher. Mashhad: Astan Quds Razavi.

Rose, E. J. ; Ebmeier, K. P. (2006). Pattern of impaired working memory during major depression. Journal of Affective Disorders, Volume 90. Pp. 149-161.

Rose, E. J. ; Ebmeier, K. P. (2006). Pattern of impaired working memory during major depression. Journal of Affective Disorders, Volume 90. Pp. 149-161.

Sarason, I., Sarason, J., & Barbara, R. (2002). Morbid psychology. Translated by Bahman Najarian. Tehran: Roshd.

Taqizadeh, T., Nejati, V., Mohammadzadeh, A., & Akbarzadeh Baghban, A. (2014). Investigation of the evolution of auditory and visual working memory in primary school students. Research in Rehabilitation Sciences / Year 10, 2.

Wells, A. ; Matthews, G. (1994). Attention and emotion: A clinical perspective. Hove, UK: Lawrence Erlbaum Associates Ltd.

Williams, J. M. ; Watts, F. N. ; MacLeod, C. ; Mathews, A. (1997). Cognitive psychology and emotional disorder. Chichester, England: Wiley.

Yousefi Louyeh, M. (2000). The effect of training rehearsal strategies (preservative and extender) and organizing on the memory problems of retarded children. Tehran: Center for Exceptional Children.

Zavabeti, M. (1986). Morphology of children. Tehran: Farda publications.